

وزارة التعليم العالي والبحث العلمي

# دليل الدراسة لكليات العلوم الصحية بالجامعات الليبية



2022



# STATE OF LIBYA GOVERNMENT OF NATIONAL UNITY MINISTRY OF HIGHER EDUCATION & SCIENTIFIC RESEARCH



# دولت ليبيا حكومة الوحدة الوطنية وزارة التعليم العالي والبحث العلمي القـــرارات

RESOLUTIONS

قـراروزيـر التعليـم العالي والبحث العلمي رقم ( الم الم الم الم الم الم الم المداد الم

# وزير التعليم العالى والبحث العلمي.

- بعد الاطلاع على الإعلان الدست وري المؤقت وتعديلاته .
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• على كتاب السيد/ رئيس اللجنة الرئيسية العليا للكليات الطبية والطبية المساعدة.

مادة (1)

يُتم بموجب أحكام هذا القرار أعتماد دليل الدراسة لكليات العلوم الصحية بالجامعات الليبية وفق المرفق بهذا القرار.

مادة (2)

يُعمل بهذا القرار من تاريخ صدوره وعلى الجهات المعنية التقيد، به وتنفيذه.

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# توطئة

إن الدول الحريصة على التعليم واكتساب المعرفة والخبرة اللازمة تعتبر من أهم استثماراتها وثرواتها تنمية وتطوير عقول أبنائها، لهذا اقتضت المنهجية العلمية أن تطرح النتيجة التي جاءت بها والفكرة التي اهتدت إليها ومن ثم يتبعها التطبيق الكاشف عن دقائقها الموضح لجزئياتها.

لهذا تم وضع هذا الدليل بشأن اللوائح التنظيمية لكليات العلوم الصحية بالجامعات الليبية والخطة الدراسية المعتمدة وفق توصيف المقررات الدراسية.

من هنا ينبغي العمل بهذا الدليل للرفع من النتاج العلمي بحثاً وتدريساً لشتى تخصصات العلوم الصحية. ولأنها توطئة سنأخذها ونسعى إلى تطبيقها للوصول إلى الجميع بمضمون الدليل بآلية متبعة من أجل الهدف وتحقيق الفكرة.

ونحن إذ نقدم هذه الجهود فإننا نأمل أن نكون قد قدمنا شيئاً يساعدنا على فتح الأبواب أمام أهل العلم والمعرفة خدمة لوطننا الحبيب ليبيا ومما يلبي احتياجات بلدنا لمؤهلين في مجال تخصصات العلوم الصحية كافة لتمكنهم من إحداث التطوير والتنمية في عالم يتسابق فيه الجميع نحو البناء ولا مكان فيه لغير العلماء والمتعلمين والمبدعين.

أ.د. عمران محمد القيبوزير التعليم العالى والبحث العلمى



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لائحة الدراسة والامتحانات لكليات العلوم الصحية بالجامعات الليبية 2022م



# الفصل الأول: أحكام تمهيدية

#### مادة ((1)) تعريفات

- مجلس الكلية: يشكل المجلس العلمي للكلية من عميد الكلية رئيساً وعضوية وكيل الشئون العلمية ورؤساء الأقسام العلمية بالكلية، ويكون مدير مكتب شؤون مجلس الكلية مقرراً للمجلس، وبحضور مدير مكتب الدراسة والامتحانات ومسجل الكلية ومدير مكتب الجودة بالكلية، ولا يحق لهم التصويت على قرارات الكلية.
- عميد الكلية: هو الشخص الذي يتولى الإشراف المباشر على سير العمل بالكلية وتصربيف أمورها العلمية والإدارية في حدود السياسات التي ترسمها الجامعة.
- **وكيل الكلية:** هو الشـخص الذي يتولى الإشراف علي البرامج العلمية و التعليمية وذلك بالتنسـيق مع رؤساء الأقسام العلمية بالكلية.
  - رئيس القسم العلمي: هو عضو هيئة تدريس يرأس المجلس العلمي للقسم.
- المجلس العلمي للقسم: يتشكل المجلس العلمي للقسم من رئيس القسم وعضوية جميع أعضاء هيئة التدريس القارين به، ويتم اختيار مقررا من بينهم, ويجوز حضور أي من الأساتذة المتعاونين وذلك عند مناقشة الجانب الذي يخصه فقط ولا يحق له التصويت على قرارات المجلس.
- عضو هيئة التدريس: هو كل من يحمل مؤهلاً علمياً عالياً (الماجستير أو الدكتوراه) أو ما يعادلهما من الشهادات التي تعترف بها الجهة المختصة بذلك؛ و الذي يؤهله للتدريس بإحدى مؤسسات التعليم العالي في إحدى التخصصات المعتمدة في الكلية ويقوم بعملية التدريس بها.
- الطالب: هو الشخص الذي يدرس في هذه الكلية ابتداءً من تاريخ تسجيله في الدراسة حتى زوال هذه الصفة عنه مهما كانت الأسباب.
- رقم القيد: رقم تسلسلي يمنح للطالب عند تسجيله في الكلية، يدل على الكلية والعام الجامعي والسنة الدراسية التي بدأ فيها الطالب.
  - الساعة الدراسية: هي انتظام الطالب في الدراسة لمدة ساعة أسبوعياً.
- السنة الميلادية: هي السنة الشمسية وتتألف من اثني عشر. شهرا وبالأيام (365) يوما للسنة البسيطة و (366) يوما للسنة الكبيسة.
- المقرر الدراسي: هو مادة دراسية متخصصة يدرسها الطالب، ويكون لكل مقرر اسم ورمز وتوصيف مفصل لمفرداته يميزه من حيث المحتوى عما سواه من مقررات.
  - الممتلكات: هي جميع ما تمتلكه الكلية من أصول مادية منقولة وغير منقولة.
- مرحلة (التدريب): هي المرحلة الأخيرة من الدراسة ومدتها (ثلاثة أشهر) وهي مرحلة إلزامية حيث يسمح لخريج كليات العلوم الصحية فيها بمزاولة المهنة ويتلقى فيها الطالب التدريب السريري بالعيادات التابعة للكلية أو أحد المستشفيات التعليمية والمراكز الصحية المعتمدة لدى الجامعة ولا تدخل في المعدل التراكمي للطالب عند تخرجه.
- طالب متدرب: هو الطالب الذي أنهي الدراسـة بالكلية بنجاح ويتلقى التدريب السرــيري بالعيادات التعليمية والمراكز الصحية المعتمدة.
- الكليات المناظرة: هي أي كلية من كليات العلوم الصحية والكليات الطبية الأخرى في أي جامعة ليبية أو غير ليبية معترف بها من قبل وزارة التعليم العالي والبحث العلمي.

الوحدة الدراسية المعتمدة: هي مقدار من العمل ممثل في نتائج التعلم المقصود ويتم التحقق منه من خلال دليل على تحصيل الطلاب وهو معادلة راسخة مؤسسياً لا تقل عن ساعة واحدة من التدريس في الفصل الدراسي أو تعليم أعضاء هيئة التدريس المباشر، وما لا يقل عن ساعتين عملي كل أسبوع.

#### مادة (( 2 )) تصنيف المقررات الدراسية

- 1) تتبع الكلية نظام احتساب الوحدات الدراسية أو نقاط الاعتماد لعدد الساعات المطلوبة في كل سنة دراسية. حيث يبلغ الحد الأقصى للوحدات الدراسية لجميع السنوات (145) وحدة بحيث تعادل كل ساعة تدريس نظري وحدة واحدة (1) بينما تعادل كل ساعتين تدريب عملي أو سريري وحدة واحدة (1).
- 2) تصنف المقررات الدراسية التي تدرس لنــــيل درجة البكالوريوس في كليات العلوم الصحية وفق الآتى:

#### • علوم صحية عامة:

يدرس الطالب في مرحلة القسم العام مقررات العلوم التمهيدية والتي تشمل العلوم العامة ومقررات العلوم العلوم الأساسية خلال السنة الأولى لكل أقسام كليات العلوم الصحية وهي مدرجة في مقررات الأقسام.

#### • علوم صحية تخصصية:

. يدرس الطالب مقررات العلوم التخصصية المعتمدة بكل قسم من أقسام كليات العلوم الصحية وهي مدرجة بكل قسم من الأقسام المعتمدة.

#### مادة (( 3 )) متطلبات الحصول على درجة البكالوريوس

درجة البكالوريوس في العلوم الصحية تتطلب دراسة 125- 145 وحدة دراسية معتمدة للحصول على درجة البكالوريوس ويتطلب ذلك دراسة لمدة 4 سنوات استنادا على نظام السنة الدراسية ويجوز للكليات تعديل الدراسة الي النظام الفصلي حسب لائحة تنظيم التعليم العالي والبحث العلمي رقم (501) لسنة 2010م، بما يتفق مع الوحدات المطلوبة للتخرج، بالإضافة الي ثلاثة أشهر تدريب والذي يعتمد على مسار الدراسة السابق، والنموذج الذي سيتم به تنفيذ الدراسة بكليات العلوم الصحية بصفة نظامية ولا يجوز فيها الإنتساب.

#### مادة (( 4 )) التفصيل العام للوحدات الدراسية

يدرس الطالب في القسم المنسب إليه ما بين 125- 145 وحدة دراسية معتمدة من المقررات الدراسية العامة للجامعة والكلية، ويترك تقسيم الوحدات لكل قسم، ويتم تنفيذ ذلك بعد الاعتماد من الجامعة التابع لها الكلية.

#### مادة (( 5 )) لغة التدريس

اللغة الانجليزية هي لغة التدريس بكليات العلوم الصحية ويجوز تدريس بعض المقررات الدراسية باللغة العربية إذا دعت الحاجة، وذلك بعد موافقة كل من القسم العلمي المختص ومجلس الكلية.

# الفصل الثاني: الأقسام العلمية بالكلية

مادة (( 6 )) الأقسام العلمية 1- تتكون كليات العلوم الصحية من الأقسام العلمية التالية:

	Department (Program)	القسم العلمي (البرنامج)
1	Department of Anesthesia &Intensive Care	1.قسم التخدير و العناية الفائقة
2	Department of Medical Laboratory	2.قسم المختبرات الطبية
3	Department of Therapeutical Nutrition	3.قسم التغدية العلاجية
4	Department of Dignostic and Therapeutic Radiology	4.قسم الأشعة التشخصية والعلاجية
5	Department of Physical Therapy	5.قسم العلاج الطبيعي
6	Department of Public Health	6.قسم الصحة العامة
7	Department of Dental Laboratories	7.قسم معامل الأسنان
8	Department of Health Administration	8.قسم الإدارة الصحية
9	Department of Medical Genetics	9.قسم الوراثة الطبية

2- يجوز لمجلس الكلية العلمي إلغاء أو دمج أو استحداث أقسام أخرى كلما دعت الحاجة إلى ذلك بعد اعتماده من مجلس الجامعة وفقاً للتشريعات النافذة.

#### الفصل الثالث: القبول والتسجيل والانتقال

مادة ((7)) قبول الطلبة

#### يشترط لقبول الطالب بالكلية ما يأتي:

1. أن يكون الطالب حاصلاً الشهادة الثانوية العامة القسم العلمي، وبنسبة لا تقل عن (65%)، ويجوز لمجلس الكلية عند تزاحم الطلاب بما يفوق القدرة الاستيعابية للكلية أن يضع نسباً للقبول، تزيد عن النسبة المنصوص عليها في الفقرة السابقة، كما يجوز له أن يرتب أولويات القبول.

 أن يكون المتقدم للدراسة لائقاً صحياً وخالياً من الأمراض المُعدية، وقادراً على متابعة الدروس النظرية والعملية.

- 3. أن يكون حسن السيرة والسلوك.
  - 4. أن يقوم بدفع الرسوم المقررة.
- 5. ألا يكون قد تم فصله من أي كلية من الكليات المناظرة أو أي جامعة من الجامعات الليبية أو خارجها لأسياب علمية أو تأديبية.
  - 6. أن يجتاز امتحان القبول بنجاح، في حالة اقتراح مجلس الكلية إجراء امتحان قبول.
  - 7. ألا يكون قد مضى على حصوله على الشهادة الثانوية العامة أكثر من ثلاث سنوات.
- 8. إذا كان الطالب المتقدم للدراسة من غير الليبيين فيشترط فيه أن يكون مقيماً في دولة ليبيا إقامة رسمية (قانونية) طيلة مدة دراسته، وأن يؤدي الرسوم الدراسية وفق اللوائح والنظم المعمول بها في الجامعات الليبية، دون الإخلال بقواعد المعاملة بالمثل المنصوص عليها في الاتفاقيات الدولية المبرمة بهذا الشأن على ألا تزيد نسبتهم عن 4% من مجموع الطلاب المقبولين وفق شروط القبول.
- 9. أن يتقدم الطالب بطلب الدراسة خلال الفترة المعلن عنها للقبول والمحددة بتاريخ بدء القبول وانتهائه، ويفتح باب القبول بالكلية في بداية كل عام جامعي ، وفي حدود القدرة الاستيعابية للكلية المحددة من مجلس الكلية أو من يمثله, ويقبل الطلاب بالكلية ويقيدون وفق الفئات التالية:
  - أ. طلاب نظاميون: تشمل هذه الفئة جميع الطلاب المتفرغين للدراسة.
- ب. طلاب وافدون: وهم الطلاب غير الليبيين الذين يتم منحهم مقاعد دراسية، وتنظم أوضاعهم وقبولهم بقرار من إدارة الجامعة أو وزارة التعليم العالى و البحث العلميالعالى و البحث العلمي.
- 10. يشترط للدراسة بكليات العلوم الصحية للطلبة الذين اجتازوا المرحلة التمهيدية حصولهم علي معدل لايقل عن 65% ويتم اختيار القسم المنسب له الطالبة حسب الرغبة و القدرة الإستعابية للاقسام.

#### مادة ((8)) التسجيل وتجديد القيد وإيقافه

- تُشكل لجنة التسجيل وتجديد القيد في بداية كل عام دراسي، وتختص هذه اللجنة بكل ما يتعلق سبر عملية قبول الطلبة الجدد وتجديد القيد وتنظيمه على الوجه التالي:
- تنظيم عملية قبول ملفات الطلبة الجدد وصرف أرقام القيود الجديدة لهم حسب التواريخ المعلن عنها في الخطة الدراسية, ووفقاً لشروط القبول المنصوص عليها بالمادة (7) من هذه اللائحة ويكون تجديد القيد برسم يحدد من الجهة المختصة ولا يجوز استرداده.
- يتم تنظيم عملية التسجيل وايقاف القيد حسب التواريخ المعلنة في الخطة الدراسية بالكلية ووفقاً للضوابط المنصوص عليها بهذه اللائحة.
- 3. تبدأ إجراءات تجديد القيد مع بداية العام الدراسي وفقاً للخطة الدراسية المعتمدة من مجلس الكلية والنموذج الخاص بذلك، خلال فترة لا تتجاوز أسبوعين، ويعد الطالب منقطعاً بعد هذه المدة ما لم يقدم مبرراً مقبولاً لغيابه في مدة لا تتجاوز الأسبوع السادس من بدء الدراسة.
- 4. يجوز للطالب إيقاف قيده خلال شهر من بداية العام الدراسي، وذلك طيلة فترة دراسته، وينتهي إيقاف القيد تلقائيا بمجرد انتهاء العام الدراسي، وعلى الطالب الشروع في تجديد قيده حال بدء العام الدراسي اللاحق، ولا تحسب فترة إيقاف القيد ضمن فترة الدراسة للطالب، ويجوز لمجلس الجامعة قبول وقف قيد الطالب بصورة استثنائية لعام دراسي آخر إذا تطلبت ظروفه ذلك ويجوز للطالب إيقاف قيده بصورة استثنائية أخرى شرط موافقة مجلس الجامعة على ذلك.

#### مادة (( 9 )) دليل الطالب

يُعَد دليل للطالب بالصورة التي تضمن إلمامه بنظام الدراسة والامتحانات ونظام الانتقال من سنة إلى أخرى والأحكام الأساسية للوائح المعمول بها وبصورة خاصة بنظام (الإنذار والفصل وإجراءات التحقيق والتأديب) وتعلن الكلية عنه ويوضع في مكان ظاهر معلوم.

#### مادة (( 10 )) الانتقال من الكليات المناظرة

يجوز قبول الطلبة المنتقلين من الكليات المناظرة شريطة أن يتقدم بطلب الى عميد الكلية يحيله بعدها العميد الى لجنة المعادلة بالكلية ويتم قرار القبول من عدمه مع قسم التسجيل بالجامعة وفقًا للشه وط التالية:

1. أن تتوافر في الطالب شروط القبول المنصوص عليها في المادة (7) من هذه اللائحة.

2. لا يسمح بالانتقال للكلية إلا من كليات العلوم الصحية والكليات الطبية المناظرة فقط لا غير.

3. أن يلتزم الطالب الراغب في الانتقال بتقديم المستندات المطلوبة معتمدة من جهات الاختصاص، على أن تحتوي على المقررات التي درسها، ومفردات هذه المقررات، وما يفيد بأنه قد اجتاز

المقررات المطلوب معادلتها.

- 4. يخضع الطالب المقبول وفقاً لهذه المادة لإجراء معادلة من قبل اللجنة العلمية المختصة بمعادلة المقررات بالكلية، ويجوز للجنة المعادلة أن تطلب مقابلة الطالب، أو أن تجرى له امتحاناً شفهياً أو تحريرياً، ويمكن اتخاذ هذه الإجراءات منفردة أو مجتمعة، ولا يجوز للطالب أن يقوم بالتسجيل في الكلية إلا بعد إتمام إجراءات المعادلة له، وفي جميع الأحوال لا تجوز معادلة أي مقرر دراسي يقل فيه تقدير الطالب المنتقل عن نسبة 60% بالنسبة للكليات المناظرة، وعلى الطالب إعادة دراسة المقرر الدراسي في حالة لم تتم معادلته.
- 5. يمكن معادلة المقرر الدراسي إذا تطابقت مفرداته مع مفردات مقرر الكلية بنسبة لا تقل عن 75%، شريطة ألا يقل عنه في عدد الساعات الدراسية، مع الأخذ في الاعتبار الجانب العملي من المقرر الدراسي.

6. أن يكون ناجحاً للسنة المنقول إليها.

7. أن يلتزم بقضاء نصف المدة الدراسية على الأقل بالكلية قبل تخرجه.

8. تستبعد كل المقررات التي أنجزها الطالب بتقدير يقل عن (60%).

9. تتم معادلة المقررات الدراسية التي أنجزها الطالب بتقدير لا يقل عن (60%) مع مراعاة أن يكون قد تم معادلة اسبقياتها من المقررات من قبل لجنة المعادلة وبشرط تطابق ما لا يقل عن "75%" من المحتوى العلمي للمقررات المعادلة.

10. أن يدرس الطالب المنتقل المقررات التي لم يسبق له دراستها أو التي لم تتم معادلتها له وذلك وفقاً للبرنامج المطلوب للحصول على الشهادة.

#### مادة (( 11 )) لجنة معادلة المقررات الدراسية

يصدر عن عميد الكلية قرار بتشكيل لجنة لمعادلة المقررات الدراسية للطلاب المنتقلين إليها من كليات العلوم الصحية المناظرة، بناءً على عرض من مسجل الكلية بعد التشاور مع الأقسام العلمية وقسم الدراسة والامتحانات، ويجرى البث في طلبات المتقدمين للنقل خلال مدة لا تتجاوز (30) يوماً من تاريخ التقديم، ولا تعتبر نتيجة المعادلة نافذة إلا بعد اعتمادها من قبل عميد الكلية وفي

حال وجدت هذه اللجنة أن طالب الانتقال قد درس وفقاً لأنظمة تعليمية مغايرة لما هو معمول به في الجامعات الليبية توجب عليها إحالة الأمر إلى اللجنة المختصة بمعادلة المؤهلات العلمية بمكتب ضمان الجودة ، ويجوز إلحاق الطالب بالدراسة وفق معادلة أولية وذلك الى حين استكمال إجراءات المعادلة النهائية ، ولا يعد الطالب منتقلاً فعلياً إلا بعد استيفاء كافة الإجراءات المطلوبة.

# الفصل الرابع: نظام الدراسة والامتحانات

#### مادة (( 12 )) نظام الدراسة

تعتمد كليات العلوم الصحية على نظام العام الدراسي أو الفصل الدراسي، حيث يدرس الطالب خلال كل عام دراسي مجموعة من المقررات الدراسية وفقاً لنظام الساعات المكتسبة، والمدة الزمنية المخصصة لكل عام دراسي لإلقاء المحاضرات تتراوح بين 28 و 34 ساعة أسبوعاً، على حسب الخطة الدراسية للعام الدراسي المعتمدة من مجلس الكلية، ولا تدخل من ضمنها مدة التسجيل ومدة الامتحانات النهائية، وتكون الدراسة بالكلية وفقاً لنظام السنة الدراسية الكاملة على النحو التالى:

- تحدد بداية ونهاية الدراسة بقرار من وزارة التعليم العالي و البحث العلمي كما يحدد القرار عطلة نصف السنة والامتحانات مع مراعاة الأوضاع الخاصة بالكليات التي تتطلب الدراسة فيها التدريب العملي.
- يبدأ العام الدراسي عادة في الأول (1) من شهر سبتمبر وينتهي في (31) من شهر يوليو إلا إذا ورد ما
   يخالف ذلك من وزارة التعليم العالي والبحث العلمي ويشترط لذلك الاتي:
- أ. تحدد موعد الامتحانات الجزئية من قبل مجلس الكلية خلال العام الدراسي بحيث لا تزيد مدتها
   عن (3) ثلاثة أسابيع متصلة، وتجوز اجازة أي طريقة علمية للتقييم في تلك الامتحانات.
  - ب. تبدأ امتحانات الدور الأول بمنتصف شهر مايو وتنتهي في النصف الثاني من شهر يونيو.
    - ت. تبدأ امتحانات الدور الثاني في بداية شهر يوليو وتنتهي بنهايته.
- ث. يجوز تغيير مواعيد بداية ونهاية العام الدراسي وكذلك الامتحانات بناء على مقترح من الكلية وموافقة مجلس الجامعة بما يتماشى مع اللوائح والقوانين المعمول بها على ان لا تتجاوز مدة الامتحانات مجتمعة عن (8) أسابيع بالسنة الدراسية الواحدة.

#### مادة (( 13 )) مدة الدراسة

مدة الدراسة بالكلية لنيل درجة البكالوريوس في كليات العلوم الصحية اربع سنوات دراسية تليها ثلاثة شهور تدريب وتقسم مدة الدراسة على النحو التالي:

المرحلة الأولى (التمهيدية) ومدتها سنة واحدة (يدرس فيها الطالب مواد عامة)

المرحلة الثانية (التخصصية) ومدتها ثلاث سنوات دراسية وتشمل السنة الثانية و الثالثة و الرابعة. المرحلة التدريبية: وهي مرحلة تدريبية إلزامية و مدتها ثلاثة أشهر كاملة في أحد العيادات أو المستشفيات التعليمية او المراكز الصحية.

#### مادة (( 14 )) الشهادات الممنوحة

الشهادة الممنوحة لخريجي الكليات العلوم الصحية هي الدرجة الجامعية "بكالوريويس علوم صحية إختصاصية" حسب التخصص الذي تم دراسته بالكلية.

#### مادة (( 15 )) الغياب

على الطالب في كافة مراحل الدراسة الإلتزام بمتابعة المحاضرات النظرية والعملية وأن يقوم عضو هيئة التدريس او من يعاونه من المعيدين برصد الحضور والغياب في كل محاضرة أو معمل أو تدريب سريري وإحالة الكشوفات لقسم الدراسة والإمتحانات بالكلية، وإذا وصلت نسبة تغيب الطالب عن الدراسة (25%) يحرم من دخول الإمتحان النهائي للمقرر المتغيب فيه.

#### مادة (( 16 )) ضوابط التسجيل في المقررات الدراسية

- 1. لا يسمح للطالب بنقل أي مادة بين السنوات الدراسية غير المتتالية.
- 2. يجوز للطالب نقل مادتين على الأكثر بين السنوات الدراسية المتتالية.
- يجوز للطالب الدخول للدور الثاني مهما كان عدد المواد التي لم ينجح فيها، وفي حالة نجاحه تحسب له الدرجة المتحصل عليها في الدور الثاني كاملة.
- يحاسب الطالب في المواد التي يتقدم بها للدور الثاني على المجموع الكلي للمادة بعد احتساب أعمال السنة.
- 5. يحاسب الطالب في المواد التي يتقدم بها للدور الثاني في جميع المقررات لتلك المواد " نظري وشفهي وعملى أو سريري" حسب الجدول المرفق لتوزيع الدرجات.

#### مادة (( 17 )) الساعات الدراسية والوحدات الدراسية المعتمدة

الجداول التالية توضح عدد الساعات الدراسية النظرية والعملية أو السريرية وكذلك عدد الوحدات لكل مقرر دراسي بحسب كل مرحلة وبحسب كل قسم علمي بكليات العلوم الصحية على النحو التالي: المرحلة الأولى: ويكون دراسته إلزميا لجميع الأقسام العلمية بكليات العلوم الصحية.

#### المرحلة الأولى (التمهيدية):

مدتها سنة دراسية جامعية كاملة (فصلين دراسيين) وتحدد المقررات وساعات تدريسها وعدد الوحدات وفقا لدليل توحيد المرحلة التمهيدية للكليات العلمية بالجامعات الليبية المعتمد من قبل السيد معالي وزير التعليم العالي والبحث العلمي بالقرار رقم (893) لسنة 2022م، وهو كالتالي:

#### فصل الخريف:

مجموع الوحدات	عدد الساعات	فررات الدراسية	أسماء المة	رمز
نظام الفصل	عدد الساعات الأسبوعي	باللغة الإنجليزية	باللغة العربية	المقرر

	مجموع الساعات بالأسبوع	عملي	نظري				
2	2		2	Arabic languages	اللغة العربية 1	AR021	1
2	2	2	2	English languages	اللغة الإنجليزية 1	EL021	2
3	4	2	2	Computer sciences	علم الحاسوب	CS021	3
3	4	2	2	General Botony	علم النبات العام	BO021	4
3	4	2	2	General Physices	الفيزياء العامة	PH021	5
4	4	-	4	Chemistery	الكيمياء	CH021	6
17	20	6	14		المجموع		

## فصل الربيع:

مجموع الوحدات	ات	عدد الساعات		قررات الدراسية	أسماء الم		
نظام الفصل	مجموع الساعات		عدد الس الأسب	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
	بالأسبوع	عملي	نظري				
2	2	5	2	Arabic languages 2	اللغة العربية 2	AR022	1
2	2	-	2	English languages 2	اللغة الإنجليزية 2	EL022	2
3	3	-	3	Biostatistic	الإحصاء الحيوي	BS022	3
3	4	2	2	General Zoology	علم الحيوان العام	Z0022	4
3	4	2	2	Medical Physices	الفيزياء الطبية	PH022	5
3	4	-	4	University skills	مهارات جامعية	US022	6
16	19	4	15		المجموع		

#### المرحلة الثانية (التخصصية):

مدتها (3) سنوات دراسية جامعية كاملة، يدرس الطالب خلالها المقررات الدراسية الموضحة حسب كل قسم من اقسام كليات العلوم الصحية بالجداول التالية:

#### 1. قسم التخدير و العناية الفائقة:

## السنة الثانية:

		أسماء ا	أسماء المقررات الدراسية			عدد الساعات الوحدات		
	رمز المقرر	باللغة العربية	باللغة الإنجليزية	عدد الس الأسب		مجموع الساعات	نظام الفصل	
		715		نظري	عملي	بالأسبوع	العصل	-0
1	AN200	الكيمياء الحيوية	Biochemistry	2	-	2	2	4
2	AN201	علم وظائف الأعضاء	Physiology	2	-	2	2	4
3	AN2O2	أساسيات الأحياء الدقيقة العامة	Essential General Microbiology	2	2	4	3	6
	AN203	علم التشريح	Anatomy	2	2	4	3	6
5	AN204	علم الانسجة	Histology	2	2	4	3	6
6	AN205	علم الأدوية	Pharmacology	2	-	2	2	4
7	AN206	السلامة المهنية	Safety	2	-	2	2	4
8	AN207	مصطلحات طبية	Medical Terminology	2		2	2	4
9	AN208	الكيمياء العضوية	Organic Chemistry	2	( <b>*</b> -	2	2	4

42	21	24	6	18	المجموع

# السنة الثالثة:

_	مجم الوحد	عدد الساعات		2	مقررات الدراسية			
نظام	The state of the s	مجموع الساعات		عدد الس	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
السنة	الفصل	بالأسبوع	عملي	نظري				
4	2	2	-	2	internal Medicine	الباطنة	AN300	1
6	3	4	2	2	Intensive Care 1	العنايةة الفائقة1	AN301	2
6	3	4	2	2	Medical Instruments	المعدات الطبية	AN302	3
4	2	2	*	2	Professional Ethics	اخلاقيات المهنة	AN303	4
4	2	2	-	2	Pathology	علم الامراض	AN304	5
4	2	2	-	2	General Surgery	الجراحة العامة	AN305	6
4	2	2	-	2	Hospital infection	عدوى المستشفيات	AN306	7
4	2	2	-	2	Research Methodology	طرق البحث	AN307	8
36	18	20	4	16		المجموع		

# السنة الرابعة:

مجموع الوحدات		عات	دد الساء	2	أسماء المقررات الدراسية			
	نظام الفصل	مجموع الساعات	-	عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
است	القصل	بالأسبوع	عملي	نظري				
6	3	4	2	2	Clinical Anaesthesia	التخدير السريري	AN400	1
6	3	4	2	2	Intensive Care2	العناية الفائقة 2	AN401	2
4	2	2	-	2	Obstetrics & Gynaecology	نساء و ولادة	AN402	3
4	2	2		2	Paediatric	أطفال	AN403	4
4	2	2	-	2	Project Graduation	بحث تخرج	AN406	5
24	12	14	4	10		المجموع		

# 2. قسم المختبرات الطبية:

#### السنة الثانية:

عدد الساعات مجموع الوحدات		ت الدراسية	أسماء المقررات					
1	نظام الفصل	مجموع الساعات	-	عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
السنه	القصل	بالأسبوع	عملی	نظري		100		
4	2	2	-	2	Organic chemistry	كيمياء عضوية	ML200	1
4	2	2	-	2	Biochemistry	الكيمياء الحيوية	ML201	2
6	3	4	2	2	General Microbiology	أحياء دقيقة عامة	ML202	3
4	2	2	-	2	Anatomy& Physiology	علم التشريح ووظائف الأعضاء	ML203	4
4	2	2	-	2	Histology	علم الانسجة	ML204	5
4	2	2	-	2	Analytical Chemistry	الكيمياء التحليلية	ML205	6
4	2	2	-	2	Medical Ethics	الاخلاقيات الطبية	ML206	7
4	2	2	-	2	Laboratories Safety, Medical instruments	السلامة المخبرية والمعدات الطبية	ML207	8
34	-17	18	2	16		المجموع		

#### السنة الثالثة:

	مجم الوحد	عات	دد الساء	c	أسماء المقررات الدراسية			
نظام السنة	نظام الفصل	مجموع الساعات		عدد الس الأسب	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
السنة	القصل	بالأسبوع	عملي	نظري				
6	3	4	2	2	Clinical Chemistry	الكيمياء الطبية	ML300	1
6	3	4	2	2	Medical Bacteriology	البكتريا الطبية	ML301	2
6	3	4	2	2	Medical Parasitology	الطفيليات الطبية	ML302	3
4	2	2		2	Medical virology	الفيروسات الطبية	ML303	4
6	3	4	2	2	Clinical Haematology and Blood Bank	علم ابحاث ومصرف الدم	ML304	5
4	2	2	-	2	Immunology	علم المناعة والامصال	ML305	6
4	2	2	-	2	Molecular biology	الأحياء الجزيئية	ML306	7
4	2	2	-	2	Research Methodology	طرق بحث	ML307	8
4	2	2	-	2	Pathology	علم الامراض	ML308	9
44	22	26	8	18		المجموع		

# السنة الرابعة:

	مجم الوحد	عات	دد الساء	2	أسماء المقررات الدراسية			
نظام	نظام	مجموع الساعات		عدد الس الأسبو	باللغة الإنجليزية		رمز المقرر	
السنة	الفصل	بالأسبوع	عملي	نظري				
6	3	4	2	2	Diagnostic Microbiology	احياء دقيقة تشخيصية	ML400	1
6	3	4	2	2	Medical Mycology	الفطريات الطبية	ML401	2
6	3	4	2	2	Techniques of diseased cells & tissue	تقنيات الخلايا والانسجة المريضة	ML402	3
2	1	2	1	1	Body fluids	سوائل جسم	ML403	4
4	2	4	4	-	Clinical Training	التدريب العملي	ML404	5
4	2	2	-	2	Project Graduation	بحث تخرج	ML405	6
28	14	20	11	9		المجموع		

# قسم التغذية العلاجية السنة الثانية:

لوحدات	مجموع ا	عات	دد الساء	2	بررات الدراسية	أسماء المة		
نظام السنة	نظام الفصل	الساعات الفه		عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
است	القصل	بالأسبوع	عملي	نظري				
4	2	2	-	2	Basics of Nutrition	أساسيات التغذية	TN200	1
6	3	4	2	2	General Microbiology	الأحياء الدقيقة العامة	TN201	2
4	2	2	-	2	Nutritional Biochemistry	الكيمياء الحيوية التغذوية	TN202	3
4	2	2		2	Anatomy and Physiology	علم التشريح ووظائف الاعضاء	TN203	4
6	3	4	2	2	Environmental Pollution and Food Toxicology	التلوث البيئي وسموم الاغذية	TN204	5
4	2	2	*	2	General Pathology	علم الأمراض العام	TN205	6
4	2	2	-	2	Medical Ethics & Communication Skills	مهارات التواصل والأخلاقيات الطبية	TN206	7
4	2	2	*	2	Nutrition Throughout the life Cycle	التغذية خلال مراحل العمر	TN207	8



4	2	2	-	2	Dietary Requirements	الاحتياجات الغذائية	TN208	9
40	20	22	4	18		المجموع		

#### السنة الثالثة

		أسم	أسماء المقررات الدراسية			عات		موع دات
الم		باللغة العربية	باللغة الإنجليزية	عدد الد الأسب	1	مجموع الساعات	نظام	نظام السنة
				نظري	عملي	بالأسبوع	الفصل	السنه
800		التقييم والمسح التغذوي	Nutrition Assessment & Surveillance	2	-	2	2	4
801		التغذية السريرية	Clinical Nutrition	2	2	4	3	6
802		تغذية المجتمع والإرشاد التغذوي	Nutrition Education & Counseling	2	-	2	2	4
803		التغذية المناعية والوباثيات	Nutritional Immunity & Epidemiology	2		2	2	4
804		علم الدواء التغذوي	Nutrition Pharmacology	2		2	2	4
305		أمراض سوء التغذية	Malnutrition Diseases	2		2	2	4
806		طرق البحث	Research Methods	2	-	2	2	4
		المجمو		14	2	16	15	30

# السنة الرابعة:

وحدات	مجموع ال	مات	دد الساء	2	لمقررات الدراسية	أسماء ا		
نظام السنة	نظام	مجموع الساعات	0.000	عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
السنه	الفصل	بالأسبوع	عملي	نظري				
4	2	2	-	2	Nutritional Economic	اقتصاديات التغذية	TN400	1
4	2	2	*	2	Sports & Fitness Nutrition	تغذية الرياضة واللياقة	TN401	2
4	2	4	4	-	Clinical Placement in Nutrition	التقييم السريري في التغذية	TN402	3
6	3	4	2	2	Food quality control in Hospitals	ضبط جودة الغذاء في المستشفيات	TN403	4
4	2	2	-	2	Enteral and Parenteral Nutrition	التغذية الوريدية والأنبوبية	TN404	5
4	2	2		2	International Health & Nutrition	التغذية والصحة الدولية	TN405	6
4	2	2	-	2	Metabolic Disorders and Nutritional genomic	الاضطرابات الأيضية والتغذية الجينومية	TN406	7
4	2	2	-	2	Project Graduation	بحث تخرج	TN407	8
34	17	20	6	14		المجموع		

# قسم الأشعة التشخيصية والعلاجية: السنة الثانية:

		أسماء المق	ررات الدراسية	1	عدد الس	اعات	مجموع الوحد	ات
	رمز المقرر	باللغة العربية	للغة العربية باللغة الإنجليزية	عدد الس الأسبوع		مجموع الساعات	نظام الفصل	نظام السنة
				نظري	عملي	بالأسبوع		السام
1	RAD200	فيزياء الاشعاع	Radiological physics	2		2	2	4
2	RAD201	الوقاية من الاشعاع	Protection Radiation	2	-	2	2	4
3	RAD202	التشريح الاشعاعي	Radiological Anatomy	2	2	4	3	6

4	2	2	-	2	Radiological pathology	علم الأمراض الإشعاعي	RAD203	4
6	3	4	2	2	Radiological imaging tech	تكنولوجيا الفحوصات بالأشعة1	RAD204	5
4	2	2	-	2	Medical Equipment 1	أجهزة طبية 1	RAD205	e
4	2	2	-	2	Patient care	رعاية المريض	RAD206	7
4	2	2	-	2	Terminology Medical	مصطلحات طبية	RAD207	8
36	18	20	4	16				

#### السنة الثالثة:

وحدات	مجموع الو	ت	عدد الساعا		ررات الدراسية	أسماء المق		
نظام	نظام	مجموع	لساعات بوعية		باللغة الإنجليزية	باللغة العربية	رمز المقرر	
السنة	الفصل	بالأسبوع	عملي	نظري	24.74	1,5-1 1		
6	3	4	2	2	Sectional anatomy	التشريح المقطعي	RAD300	1
4	2	2	12	2	Physics of nuclear medicine	فيزياء الطب النووي	RAD301	2
4	2	2	-	2	Research methodology	طرق بحث	RAD302	3
4	2	2	-	2	Medical Equipment2	أجهزة طبية 2	RAD303	4
6	3	4	2	2	Radiological imaging tech 2	تكنولوجيا الفحوصات بالأشعة 2	RAD304	5
6	3	4	2	2	Basic radiological therapy	أساسيات العلاج بالأشعة	RAD305	6
4	2	4	4	-	hospital training	تدريب ميداني بالمستشفى	RAD308	7
34	17	22	10	12	100	المجموع		

#### السنة الرابعة:

لوحدات	مجموع ا	ت	عدد الساعا	VALUE OF	قررات الدراسية	أسماء الما		15
نظام	نظام	عدد الساعات	The state of the s	عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
السنة	الفصل	الأسبوعية	عملي	نظري				
6	3	4	2	2	Radiological imaging tech 3	تكنولوجيا الفحوصات بالأشعة3	RAD400	1
4	2	2	*	2	Radiological therapy Planning	تخطيط المريض للعلاج بالأشعة	RAD401	2
4	2	2	-	2	Management of radiological departments	ادارة أقسام الأشعة	RAD402	63
6	3	4	2	2	Clinical radiology of emergency	تصوير حالات الطواري	RAD403	4
6	3	4	2	2	MRI	التصوير باستخدام الرنين المغناطيسي	RAD404	5
6	3	4	2	2	СТ	التصوير المقطعي بالكمبيوتر	RAD405	6
4	2	4	4	-	Hospital training	تدريب ميداني بالمستشفى	RAD406	7
4	2	2	-	2	Graduation Project	مشروع التخرج	RAD407	8
40	20	26	12	14		المجموع		

#### 5. قسم العلاج الطبيعي: السنة الثانية:

لوحدات	مجموع اا	ت	دد الساعاد	عا	الدراسية	أسماء المقررات		
نظام السنة	نظام الفصل	مجموع الساعات		عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
السنة	العصل	بالأسبوع	عملی	نظري				
6	3	4	2	2	Electrotherapy & therapeutic Massage	العلاج الكهربائي والتدليك العلاجي	PT200	1
4	2	2	-	2	Pharmacology	علم الادوية	PT201	2
4	2	2		2	Pathology	علم الامراض	PT202	3
6	3	4	2	2	Therapeutic exercise	التمارين العلاجية	PT203	4
6	3	4	2	2	Anatomy & physiology	علم التشريح ووظائف الأعضاء	PT204	5
6	3	4	2	2	Therapeutic testing & measurement	الاختبارات والقياسات العلاجية	PT205	6
32	16	20	8	12		المجموع		

#### السنة الثالثة:

وحدات	مجموع ال		دد الساعاد	2	الدراسية	أسماء المقررات ا		
نظام	نظام	مجموع الساعات		عدد السا الأسبو	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
السنة	الفصل	بالأسبوع	عملي	نظري		21,0-1		
6	3	4	2	2	Physiotherapy for Gynecology &Obstetric	العلاج الطبيعي لأمراض النساء والولادة	PT300	1
6	3	4	2	2	Physiotherapy for plastic surgery & burns	العلاج الطبيعي لمرضى الجراحات التجميلية والحروق	PT301	2
6	3	4	2	2	Cardio-Respiratory & physiotherapy management	العلاج الطبيعي للقلب والجهاز التنفسي	PT302	3
4	2	2	-	2	Research Methodology	طرق البحث	PT303	4
6	3	4	2	2	Physiotherapy for Orthopedic	العلاج الطبيعي لأمراض العظام	PT304	5
6	3	4	2	2	Physiotherapy for Internal medicine	العلاج الطبيعي لأمراض الباطنة	PT305	6
4	2	4	4	-	Hospital Placement & Training 1	تدريب عملي بالمستشفى 1	PT306	7
38	19	26	14	12		المجموع		

#### السنة الرابعة:

		أسماء ا	مقررات الدراسية	2	بدد الساء	بات	مجموع	الوحدات
	رمز المقرر	3 11 3 - 111	باللغة الإنجليزية	عدد الس الأسير	CONTRACTOR OF THE PARTY.	عدد الساعات	نظام الفص	نظام
		باللغة العربية	باللغة الإنجليزية	نظري	عملي	الأسبوع ية	ل	السنة
1	PT400	علاج الألم	Pain Management	2	2	4	3	6
2	PT401	العلاج الطبيعي لأمراض وجراحة الاطفال	Pediatric Pathologies, Surgery & Physiotherapy managements	2	2	4	3	6
3	PT402	إعادة التأهيل	General Rehabilitation	2	-	2	2	4

30	15	22	14	8		المجموع		
4	2	4	4	-	Hospital Placement & Training 2	تدريب عملي بالمستشفى 2	PT405	6
4	2	4	4	-	Graduation Project	مشروع التخرج	PT404	5
6	3	4	2	2	Neurology, Neurosurgery & Physiotherapy managements	العلاج الطبيعي لأمراض وجراحة الأعصاب	PT403	4

# 6. قسم الصحة العامة:

#### السنة الثانية:

وحدات	مجموع ال	ات	عدد الساء		لمقررات الدراسية	أسماء ا		
نظام السنة	نظام القصل	مجموع الساعات	10030000	عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
		بالأسبوع	عملی	نظري				
6	3	4	2	2	Microbiology & parasitology	أحياء دقيقة وطفيليات	PH200	1
4	2	2	-	2	Introduction to Public Health	مدخل في علم الصحة العامة	PH201	2
6	3	4	2	2	Anatomy and Physiology	علم التشريح ووظائف الأعضاء	PH202	3
6	3	4	2	2	Histology	علم الأنسجة	PH203	4
4	2	2	-	2	Epidemiology	علم الوبائيات	PH204	5
4	2	2	-	2	Pharmacology & Toxicology	علم الأدوية والسموم	PH205	6
4	2	2	-	2	Immunology	علم المناعة	PH206	7
4	2	2	-	2	Health Legislation and Ethics	تشريعات صحية وأخلاقيات	PH207	8
38	19	22	6	16		المجموع		

#### السنة الثالثة:

الوحدات	مجموع	ات	عدد الساعا		قررات الدراسية	أسماء الما		
نظام	نظام	مجموع الساعات	ساعات بوعية	A COLUMN TO SERVICE STATE OF THE PERSON SERVICE STATE SERVICE STATE OF THE PERSON SERVICE STATE SERV	باللغة الإنجليزبة	باللغة العربية	رمز المقرر	
السنة	الفصل	بالأسبوع	نظري	نظري				
6	3	4	2	2	Medical Microbiology	أحياء دقيقة طبية	PH300	1
4	2	2		2	Psychological and social Support	الصحة النفسية والدعم النفسي والاجتماعي	PH301	2
4	2	2	-	2	School Health & Education Health	الصحة المدرسية & التوعية الصحية	PH302	3
4	2	2	-	2	Research & Data Analysis	طرق البحث وتحليل البيانات	PH303	4
4	2	2	•	2	Healthy Food Inspection &Quality control	التفتيش الصحي ومراقبة جودة الغذاء	PH304	5
4	2	2	-	2	Basics of Healthy Nutrition	أساسيات التغذية الصحية	PH305	6
4	2	2	-	2	Chronic Diseases Control	مكافحة الأمراض المزمنة	PH306	7
4	2	2		2	Infectious disease	الأمراض المعدية	PH307	8
4	2	2	-	2	Environmental Health	الصحة البيئية	PH308	9
38	19	20	2	18		المجموع		



#### السنة الرابعة:

لوحدات	مجموع ا	ت	بدد الساعا	6	مقررات الدراسية	أسماء ال		
نظام	نظام	مجموع الساعات		عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
السنة	الفصل	بالأسبوع	عملي	نظري				
4	2	2	-	2	Health Engineering	هندسة صحية	PH400	1
4	2	2	-	2	Therapeutic Nutrition	تغذية علاجية	PH401	2
4	2	2	-	2	Health management	الإدارة والبيانات الصحية	PH402	3
4	2	2	-	2	Management of Health Crises & Occupational Safety	إدارة الأزمات والكوارث الصحية والسلامة المهنية	PH403	4
4	2	2	-	2	Mother and Child Health Care	الرعاية الصحية للأم والطفل	PH404	5
4	2	2	*	2	Public Health Pests Control &Zoonotic Diseases	مكافحة آفات الصحة العامة و الأمراض المشتركة	PH405	6
4	2	2	-	2	Hospital Infection Control	مكافحة عدوى المستشفيات	PH406	7
4	2	2	*	2	Health Economics	اقتصاديات صحية	PH407	8
4	2	2		2	Graduation Research Project	مشروع التخرج	PH408	9
36	18	18	=	18		المجموع		

# 7. قسم معامل الأسنان:

## السنة الثانية:

		أسماء المقررا	ت الدراسية		عدد الساع	ات	مجموع	لوحدات
رمز		باللغة العربية	باللغة الإنجليزية	TO DESCRIPTION	ساعات وعية	مجموع الساعات	نظام	نظام السنة
				نظري	عملي	بالأسبوع	الفصل	السنه
0		الكيمياء الحيوية	Biochemistry	2	*	2	2	4
1		علم تشريح الأسنان	dental anatomy	2	2	4	3	6
2		علم وظائف الأعضاء	Physiology	2	-	2	2	4
3		الأحياء الدقيقة العامة	general microbiology	2	2	4	3	6
4		خواص مواد الأسنان ا	Properties of dental materials I	2	-	2	2	4
5	ul lu	استعاضة الأسنان الاصطناعية	Dental Prosthodontics	2	2	4	3	6
6		كيمياء عضوية	organic chemistry	2	2 .	2	2	4
		المجموع		14	6	20	17	34

#### السنة الثالثة:

وحدات	مجموع الو	ت	عدد الساعا		قررات الدراسية	أسماء الم		
نظام	نظام	مجموع	ساعات وعية		باللغة الإنجليزية	باللغة العربية	رمز المقرر	
السنة	الفصل	بالأسبوع	عملي	نظري		230		
6	3	4	2	2	Fixed Prosthesis I	تقنية التركيبات الثابتة ا	DL300	1
6	3	4	2	2	Orthodontic I	تقنية تقويم الأسنان ا	DL301	2
6	3	4	2	2	Complete Denture removable	استعاضة الأطقم الكاملة	DL302	3

36	18	22	8	14	TOTAL STORY STORY	المجموع		
4	2	2	-	2	Research Methodology	طرق البحث	DL306	7
4	2	2	-	2	Occupational safety and professional ethics	السلامة المهنية وأخلاقيات المهنة	DL305	6
4	2	2	-	2	Properties of dental materials	خواص مواد الأسنان ١١	DL304	5
6	3	4	2	2	Partial Removable Prosthodontics I	استعاضة الأطقم الجزيئية ا	DL303	4

# السنة الرابعة:

لوحدات	مجموع ال		دد الساعات	2	مقررات الدراسية	أسماء ال	رمز	
نظام	الفصل	عدد		عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية	المقرر	
السنة		الساعات	عملي	نظري	32.77			
6	3	4	2	2	Fixed Prosthodontics II	تقنية التركيبات الثابتة 2	DL400	1
6	3	4	2	2	Orthodontic Technique II	تقنية تقويم الأسنان ١١	DL401	2
6	3	4	2	2	Complete Denture removable II	استعاضة الأطقم الكاملة 2	DL402	3
6	3	4	2	2	Partial Removable Prosth. II	استعاضة الاطقم الجزئية 2	DL403	4
4	2	2	-	2	Oral Pathology	أمراض الفم	DL404	5
4	2	4	4	2	Practical Training course	التدريب العملي	DL405	6
4	2	2	-	2	Graduation research	بحث التخرج	DL406	7
36	18	24	12	12	8	المجموع		

# 8. قسم الادارة الصحية:

#### السنة الثانية:

لوحدات	مجموع ا	عات	دد الساء	2	بررات الدراسية	أسماء المة		T
نظام السنة	نظام الفصل	مجموع الساعات		عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
مدسا	انقصن	بالأسبوع	عملي	نظري				
4	2	2	2	2	Anatomy & Physiology	علم النشريح ووظائف الأعضاء	HA201	1
4	2	2	-	2	Administration Principles	مبادئ الإدارة	HA202	2
4	2	2	7	2	Principles of Public Health	مدخل للصحة العامة	HA203	3
4	2	2	-	2	Economics Principles	مبادئ الاقتصاد	HA204	4
4	2	2	.5	2	Accounting Principles	مبادئ المحاسبة	HA205	5
4	2	2		2	Microbiology and Epidemiology	علم الاحياء الدقيقة والأوبئة	HA206	
4	2	2		2	Pathology	علم الامراض	HA207	7
4	2	2	-	2	Management Information Systems	نظم المعلومات الإدارية	HA209	8
32	16	16	10-0	16		المجموع		

#### السنة الثالثة:

مجموع	عدد الساعات	أسماء المقررات الدراسية	رمز
الوحدات			المقرر

نظام	نظام	مجموع الساعات	100000000000000000000000000000000000000	عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية		
السنة	الفصل	بالأسبوع	عملي	نظري		-1		
4	2	2	-	2	Hospital & Health Services Department	إدارة المستشفيات والخدمات الصحية	HA301	1
4	2	2	-	2	Strategic management	الإدارة الاستراتيجية	HA302	2
4	2	2	-	2	Health Economy	الاقتصاد الصحي	HA303	3
4	2	2	~	2	Financial management	الإدارة المالية	HA304	4
4	2	2	-	2	Organizational Behavior	السلوك التنظيمي	HA305	5
6	3	2	-	2	health systems and Policies	الأنظمة و السياسات الصحية	HA306	6
4	2	2	-	2	Health Marketing	التسويق الصحي	HA307	7
4	2	2	-	2	Methods research	طرق البحث	HA308	8
4	2	2	-	2	Health planning & evaluation	التخطيط و التقييم الصحي	HA309	9
38	19	18	-	18		المجموع		

السنة الرابعة:

		أسماء	المقررات الدراسية	2	مدد الساء	عات	مجموع ال	وحدات
	رمز المقرر	باللغة العربية	باللغة الإنجليزية	عدد الس الأسب	ساعات وعية	مجموع الساعات	نظام الفصل	نظام السنة
				نظري	عملي	بالأسبوع	القصل	السا
1	HA401	إدارة الازمات الصحية	Health Risk Management	2	-	2	2	4
2	HA402	نظم المعلومات والسجلات صحية	Health information & Records	2	2	4	3	6
3	HA403	الإدارة الصحية المتقدمة	Health management Advanced	2	-	2	2	4
4	HA404	إدارة جودة الرعاية الصحية	Quality of health care	2	-	2	2	4
5	HA405	الفوانين والتشريعات الصحية	Health legislation	2	-	2	2	4
6	HA406	إدارة الموارد البشرية	Human Resource Management	2	-	2	2	4
7	HA407	الرقابة والتفتيش الصحي	Health control and Inspection	2	-	2	2	4
8	HA408	مهارات التواصل والأخلاقيات الطبية	Medical Ethics & Communication Skills	2	-	2	2	4
9	HA409	مشروع التخرج	Graduation Project	2	-	2	2	4
1		المجموع		18	2	20	19	38

# 9. قسم الوراثة الطبية:

السنة الثانية:

لوحدات	مجموع	ات	دد الساعا	2	ن الدراسية	أسماء المقررات		
نظام السنة	نظام	مجموع الساعات		عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
السنة	الفصل	بالأسبوع	عملي	نظري		ALC: UNITED BY		
4	2	2	-	2	Organic chemistry	الكيمياء العضوية	MG200	1
6	3	4	2	2	Biochemistry	الكيمياء الحيوية	MG201	2
6	3	4	2	2	General Microbiology	الأحياء الدقيقة العامة	MG202	3
4	2	2	(*)	2	Anatomy and Physiology	علم التشريح ووظائف الأعضاء	MG203	4
4	2	2	-	2	Histology	علم الأنسجة	MG204	5
4	2	2	-	2	Analytical Chemistry	الكيمياء التحليلية	MG205	6
4	2	2		2	Medical Ethics & communication skills	الأخلاقيات الطبية ومهارات التواصل	MG206	7
4	2	2	-	2	Laboratories Safety and Medical instruments	السلامة المخبرية والمعدات الطبية	MG207	8
4	2	2	(#)	2	Molecular Biology	الأحياء الجزيئية	MG208	9
40	20	22	4	18		المجموع		

#### السنة الثالثة:

مجموع الوحدات		ات	دد الساء	2	رات الدراسية	أسماء المقررات الدراسية		
نظام السنة	نظام	مجموع الساعات بالأسبوع				باللغة العربية	رمز المقرر	1,8
است	الفصل		عملي	نظري			33	
6	3	4	2	2	Genetics Diagnosis	التشخيص الوراثي	MG300	1
4	2	2	3	2	Human Genetics	علم الوراثة البشري	MG301	2
4	2	2	=	2	Microscopy	المجهر	MG302	3
4	2	2	-	2	Human Reproduction and Embryology	علم التكاثر والأجنة	MG303	4
6	3	4	2	2	Cells and Tissues Culture	زراعة الأنسجة والخلايا	MG304	5
4	2	2	-	2	Immunology	علم المناعة	MG305	6
4	2	2	7	2	Bioinformatics	المعلومات الحيوبة	MG306	7
4	2	2	-	2	Research Methodology	طرق البحث	MG307	8
36	18	20	4	16		المجموع		

السنة الرابعة:

عدد الساعات مجموع الوحدات			أسماء المقررات الدراسية عدد الساعات					
نظام السنة	نظام الفصل	مجموع الساعات		عدد الس الأسبو	باللغة الإنجليزية	باللغة العربية	رمز المقرر	
44401	القصل	بالأسبوع	عملي	نظري			33	
4	2	2	-	2	Biomedical Genetics	علم الوراثة الكيميوحيوية	MG400	1
6	3	4	2	2	Human Cytogenetics	علم الوراثة الخلوية البشري	MG401	2
4	2	2	1	2	Nutrigenetics & Pharmacogenetics	علم الوراثة الغذائي والدوائي	MG402	3
6	3	4	2	2	Assisted Reproduction Technology	تقنيات الإخصاب المساعد	MG403	4
4	2	2	-	2	Medical biotechnology	التقنيات الحيوية الطبية	MG404	5
4	2	2	-	2	Immunogenic and Tumorigenic	علم الوراثة المناعي والسرطاني	MG405	6
4	2	2	-	2	Project Graduation	بحث التخرج	MG406	7
32	16	18	4	14		المجموع		

#### مادة (( 18 )) الامتحانات النصفية (أعمال السنة)

- 1. يتعين على أســتاذ المقرر أن يُعلم الطلبة مع البداية الفعلية للمحاضرات بنظام التقييم الذي ســيعتمد عليه توزيع درجات أعمال السـنة بحيث يتعرف الطالب علي نوع الامتحانات المطلوبة منه.
- 2. تبدأ الامتحانات النصفية بعد ثلاثة أشهر من بداية الدراسة لمدة ثلاثة أسابيع متواصلة "خلال الدراسة" وبعد ستة أسابيع في النظام الفصلي.
  - 3. يجرى امتحان نصفى واحد في كل سنة دراسية أو فصل دراسي.
- 4. يجوز بحسب ما يقرره مجلس القسم العلمي استبدال هذا النظام كلياً أو جزئياً بنظام التقييم المستمر عن طريق البحوث أو أوراق العمل أو التدريب العملي بعد عرضه على مجلس الكلية واعتماد مجلس الجامعة لذلك.

#### مادة (( 19 )) الامتحانات النهائية

لا يجوز عقد الامتحانات النهائية الا مرة واحدة في السنة الدراسية الواحدة أو الفصل الدراسي وكذلك امتحانات الدور الثاني مهما كانت الظروف.

#### مادة (( 20 )) توزيع الدرجات

يقوم كل قسم بتوزيع الدرجات المخصصة لكل مادة على الامتحانات النصفية (أعمال السنة والامتحانات النهائية) التحريرية و الشفوية والعملية أو السريرية على النحو التالي:

- تخصص نسبة (40%) من مجموع الدرجات لكل مقرر "أعمال السنة "، وتخصص نسبة (60%) الباقية لإمتحانات نهاية العام موزعة حسب الجدول المبين.
- 2. الامتحانات التحريرية النهائية لا تزيد مدتها عن ثلاث ساعات في كل مقرر من المقررات السابق ذكرها بالإضافة إلى الامتحانات الشفهية والعملية.
- 3. إذا رسب الطالب في الامتحان النهائي "الدور الاول" يؤدي امتحان "دور ثان " في المواد التي رسب فيها وتحسب له درجات أعمال السنة .
- إذا رسب الطالب في امتحان الدور الثاني يعيد دراسة المقرر للمادة التي رسب فيها كاملاً (أعمال سنة ونظري وعملي وشفوي) ولا يسمح له بالاحتفاظ بأعمال السنة من العام الذي رسب فيه.
- يشترط النجاح في المرحلة ما قبل التخصص على أن تحسب درجة النجاح من 50% في كل المواد العامة.
- و. يشــترط النجاح في المرحلة التخصــصــية على أن تحســب درجة النجاح من 60% في كل مواد التخصص.

#### مادة (( 21 )) الرسوب والنجاح

اولاً: يعتبر الطالب راسباً في أي مادة من مقررات المرحلة التخصصية في الحالات الآتية:

- إذا تحصل على أقل من ستين بالمائة (60%) من مجموع الدرجات المقررة في المادة الواحدة.
- إذا تحصل على أقل من خمسة وثلاثين بالمائة (35%) من مجموع درجات الامتحان التحريري مهما كان مجموع درجاته في تلك المادة.
  - ثانياً: تحديد التقديرات للمقررات الدراسية والتقدير العام:
- بالنسبة لمقررات السنة الأولى والثانية والثالثة والرابعة تكون التقديرات حسب النسبة المئوية كالتالى:

	التقديــر	النسبة المئوية	ت ا
	ممتاز	من (( 85% )) إلى (( 100% ))	1
2992	جيدجدًا	من (( 75% )) إلى أقل من (( 85% ))	2
والموجدة الوي	جيــد	من (( 65% )) إلى أقل من (( 75% ))	3
A 4	مقب_ول	من (( 60% )) إلى أقل من (( 65% ))	4

ضعيـف	من (( 35% )) إلى أقل من (( 60% ))			
ضعيف جدًا	من (( 00% )) إلى أقل من (( 35% ))	6		

#### مادة (( 22 )) لجنة الامتحانات والمراقبة

يُكلف رئيس لجنة الامتحانات والمراقبة بقرار من مجلس الكلية، مع بداية كل عام دراسي، على أن يقوم رئيس اللجنة بإحالة كشف بأسماء رؤساء وأعضاء اللجان الفرعية والملاحظين لاعتمادها من عميد الكلية.

كما تختص لجنة الامتحانات والمراقبة بكل ما يتعلق بسير الامتحانات وتنظيمها والتي تعقد بنهاية كل عام دراسي وتقوم بالمهام الآتية:

- 1. مراجعة قوائم الطلبة المسموح لهم بدخول الامتحانات النهائية، وكذلك مراجعة جدول الامتحانات النهائية وإعلانه للطلبة، وإبلاغ أعضاء هيئة التدريس بصورة رسمية به، وذلك بعد اعتماده من عميد الكلية (المشرف العام).
- تجهيز القاعات الدراسية بما يتماشى مع ضبط الامتحانات النهائية، وتوزيع الطلبة على هذه القاعات في شكل مجموعات لأكثر من مقرر في القاعة الواحدة.
  - 3. الإعلان عن التعليمات التي تراها مناسبة لضبط الامتحانات؛ لتكون معلومة مسبقاً لدى الطلبة.
- 4. استلام أسئلة الامتحانات النهائية من أعضاء هيئة التدريس بعدد الطلبة قبل موعد الامتحان بوقت كافي يقدره رئيس اللجنة.
- 5. تشكيل لجان الإشراف والمراقبة ووضع برنامج زمني للإشراف متضمناً أسماء أعضاء هيئة التدريس, كما يجوز للجنة الاستعانة بالمعيدين، وكذلك الموظفين من داخل الكلية، وذلك بعد موافقة عميد الكلية.
  - 6. استلام كشف حضورالامتحانات النهائية بأسماء الطلبة في كل مقرر من الدراسة والامتحانات.
- 7. القيام بإجراءات ضبط حالات الغش والإخلال بسير نظام الامتحانات و المراقبة, وإحالتها إلى عميد الكلية لأتخاذ الإجراء القانوني حيالها.
- 8. تسليم كراسات الإجابة وكشف حضور الامتحان للطلبة بصورة رسمية إلى كل عضو هيئة تدريس مكلف بتدريس مقرر دراسي، ويقوم بتصحيح كراسات الإجابة بالإضافة إلى نموذج تعبئة النتيجة.
- 9. استلام أوراق الإجابة المصححة من عضو هيئة التدريس المكلف بتدريس المقرر الدراسي، بالإضافة
   إلى نموذج تعبئة النتيجة، والذي يحال إلى القسم العلمي المختص وعميد الكلية لاعتماده.
- 10. إدخال النتائج النهائية للطلبة بمنظومة الدراســة والامتحانات من واقع نماذج النتائج النهائية المعتمدة، ومراجعتها تحت إشراف رئيس قسم الدراسة والامتحانات بالكلية.
- 11. إعلان النتائج النهائية للعام الدراسي للكلية دفعة واحدة، وفي شكل قوائم تتضمن رقم قيد الطالب، واسمه، ونتائج المقررات التي قام بدراستها خلال العام الدراسي، بعد اعتمادها من عميد الكلية.
  - 12. الإعلان عن موعد ومكان تقديم طلبات مراجعة إجابات الطلاب.
- 13. إحالة النتائج النهائية (الأصل وصورة ورقية وأخرى إلكترونية) إلى رئيس قسم الدراسة والامتحانات للاحتفاظ بها.

#### مادة (( 23 )) المحظورات في الامتحانات

يُحظرعلى الطالب المتقدم للامتحان ما يلي:



- 1. اصطحاب أي كتاب أو ورقة ولو كانت خالية من الكتابة، أو اصطحاب أية أدوات عليها كتابة لها علاقة بمادة الامتحان، أو أية وسيلة أخرى يمكن أن تستخدم لنقل المعلومات في الامتحان.
- الكلام أثناء الامتحانات، أو القيام بأي عمل من شأنه الإخلال بنظام الامتحان وفق التعليمات التي تصدرها لجنة الامتحانات والمراقبة.
- اصطحاب الهاتف المحمول والساعات الذكية أو غيرها من الأجهزة التي يمكن استخدامها للغش في الامتحان.
  - 4. الحضور بدون بطاقة التعريف الممنوحة من مكتب مسجل الكلية.
- 5. يُمنع الطالب من دخول قاعة الامتحان بعد مضي نصف ساعة من بداية الامتحان، كما لا يسمح له بالخروج من قاعة الامتحان قبل مضي نصف الزمن المحدد للامتحان عدا الحالات التي تسمح بها لجنة الامتحانات والمراقبة.

#### مادة (( 24 )) الغياب عن الامتحانات

الامتحانات الجزئية: إذا تغيب الطالب عن أداء الامتحانات النصفية ( الجزئية ) في أي مقرر ترصد له درجة "صفر" في ذلك الامتحان مالم يتقدم بأحد المبررات خلال " أسبوع" من نهاية الامتحان الذي تغيب عنه شرط موافقة قسم الدراسة والامتحانات بالتنسيق مع رئيس القسم المعني ويسمح بإعادة الامتحان النصفي مرة واحدة فقط، والمبررات هي:

- أ. إذا كان الطالب المعني نزيلاً بالمستشفى مع إحضار ما يفيد ذلك مصدقاً ممن يراه مجلس الكلية مناسباً.
- ب. في حالة وفاة أحد أقارب الطالب من الدرجة الأولى فقط على أن يثبت ذلك بموجب شهادة وفاة رسمية أو صورة منها.

الامتحانات النهائية: لايجوز إعادة الامتحان النهائي النظري مهما كانت الظروف وفي حالة تم تقديم مبررعذر الطالب المتغيب وفق الشروط السابقة فيحتفظ بأعمال السنة فقط ويحتسب الدور الثاني للطالب كدور أول مع فقدان فرصة الدور الثاني.

#### مادة (( 25 )) مراجعة نتائج الامتحانات النهائية

يحق للطالب الراسب تقديم طلب المراجعة فيما لا يزيد عن مقررين دراسيين في الشق النظري فقط خلال بحر "3" أيام ، و تشكل لجان المراجعة في نهاية كل سنة دراسية تختص بمراجعة إجابات الطلاب المتقدمين بالتظلم على نتائجهم للتأكد من دقة عملية التقييم، وتتكون كل لجنة من ثلاثة أعضاء هيئة تدريس لهم اختصاص في مجال المقرر المقيد للمراجعة وبحضور الطالب المعني، فإذا ثبت صحة ادعاء الطالب يتم تعديل نتيجة المقرر الدراسي مع تقرير حول سبب التعديل، وإذا لم يثبت صحة ادعائه تبقى النتيجة المطعون فيها على حالها، ولا تعتبر نتيجة المراجعة نافذة إلا بعد اعتمادها من القسم العلمي المختص، واعتمادها من عميد الكلية ويجب أن يتم النظر في الطعن والبحف فيه على وجه السرعة.

#### مادة (( 26 )) إفادة التخرج وكشف الدرجات

يتم اعتماد نتيجة الامتحانات النهائية من قبل لجنة الامتحانات والمراقبة وعميد الكلية، مرفقة بتفرير . يوضح نسب نجاح الطلبة ورسوبهم إلى مجلس الكلية، وتعتمد النتائج النهائية للتخرج من قبل رئيس. الجامعة.

#### مادة (( 27 )) إثبات المستوى العلمي

يحق للطالب المقيد بالكلية الحصول على إفادة بوضعه الدراسي (إثبات مستوى)، معتمدة من مسجل الكلية، كما يحق له الحصول على كشف بدرجات المقررات المعتمدة التي درسها، من قسم الدراسة والامتحانات وعميد الكلية.

#### مادة (( 28 )) الإفادة وكشف الدرجات

يُمنح الخريج إفادة وكشف درجات تفيد بتخرجه باللغة العربية، تشمل اسمه وتقديره العام وسنة حصوله على إجازة البكالوريوس، بحيث يعتمد كشف الدرجات من مسجل الكلية وعميد الكليه، وكذلك إفادة التخرج تعتمد من المسجل وعميد الكلية.

#### مادة (( 29 )) مرتبة الشرف

تمنح مرتبة الشرف للطالب الذي لا يقل تقديره العام عن ممتاز ولا يقل تقديره في أي سنة من السنوات الدراسية عن جيد جداً ويشترط لمنح مرتبة الشرف أيضاً الا يكون الطالب قد رسب في أي امتحان تقدم له أو صدر ضده قرار تأديبي طيلة مدة دراسته الجامعية.

#### مادة (( 30 )) الشهادة الجدارية

يمنح الخريج شهادة جدارية معتمدة من قبل مسجل عام الجامعة وعميد الكلية ورئيس الجامعة.

#### الفصل الخامس: مرحلة التدريب

#### مادة (( 31 )) مدة التدريب

هذه المرحلة مدتها "3" ثلاثة أشهر كاملة وهي مرحلة إلزامية حتى يسمح لخريج كليات العلوم الصحية مزاولة المهنة ويتلقى فيها الطالب التدريب السريرى بالعيادات التابعة للكلية أو أحد المستشفيات التعليمية او المراكز الصحية الحكوميه.

#### مادة (( 32 )) التدريب

التدريب إلزامي وهو جزء لا يتجزأ من منهج التعليم الطبي المساعد لكليات العلوم الصحية لجميع الطلبة الذين أنهوا السنة النهائية ويشترط له نجاح الطالب في جميع المقررات التي درسها بجميع المراحل ولايسمح له بمزاولة المهنة إلا بعد إنهاء هذه المرحلة.



#### مادة (( 33 )) أماكن التدريب

يتم التدريب التكميلي في العيادة التعليمية بالكلية ويجوز للجامعة تحديد غيرها من المؤسسات العلاجية والتشخيصية للقيام بمهمة التدريب بناء علي اقتراح من المجلس العلمي بالكلية إذا توفرت فيها الشروط التي يضعها المجلس العلمي بالكلية.

#### مادة (( 34 )) ضوابط التدريب التكميلي

مدة التدريب التكميلي ثلاثة أشهر كاملة ويجوز تمديدها وفق الضوابط الآتية:

 أ. تمدد من قبل القسم المختص بالتدريب إذا تجاوز غياب الطالب المتدرب (20%) من مدة التدريب المقررة بالقسم ويكون التمديد لمدة تساوي مدة الغياب إذا كان سبب الغياب مشروعاً وبضعف المدة إذا كان الغياب غير مشروع.

ب. تمدد من قبل المجلس العلمي للكلية وذلك بإعادة مدة التدريب إذا تحصل الطالب علي تقدير ضعيف في أي مرحلة من مراحل التدريب علي أن يعيد تدريب ذلك المقرر بنفس المدة.

#### مادة (( 35 )) مستوى التدريب

يراعي الابتعاد في توجيه الطلبة للتخصصات الدقيقة والتي تتعدي إمكانية الطالب، وكذلك يجب التأكيد على ضرورة أن يتخلل البرنامج التدريبي للطالب تدريس العلوم الحديثة وأساسيات طرق البحث وعلم الإحصاء الطبي والحاسوب وشبكة المعلومات الدولية من أجل تطوير قدراتهم المهنية والعلمية والوصول الى الاهداف المحددة لهذه المرحلة.

#### مادة (( 36 )) تقارير الكفاءة

- 1. يخضع الطالب المتدرب لنظام تقارير الكفاءة والملاحظة.
- يتضمن التقرير بيان معلومات عن الطالب من جميع النواحي التي تتصل بقيامه بالمهام المكلف بها من حيث المواظبة والسلوك والعمل الريادي والبحوث. وفقاً للبطاقة المعدة من قبل القسم العلمي المختص.
- يُعد تقرير عن كل طالب بمعرفة المشرفين ويعبأ في بطاقة الطالب بعد اعتمادها من رؤساء الاقسام العلمية.

#### مادة (( 37 )) واجبات الطالب المتدرب

يمارس الطالب المتدرب مهام عمله التدريبي تحت إشراف أعضاء هيئة التدريس بكليات العلوم الصحية أو من يقوم مقامهم ويتولي بوجه خاص:

- 1. الأعمال المهنية التي يري القسم تكليفه بها.
- 2. يلزم الطالب أو مجموعة من الطلاب بعمل بحث تحت إشراف أحد أعضاء هيئة التدريس
- الزيارات الميدانية للمؤســسات العامة كالمراكز الصـحية والمدارس وغيرها، لتقديم خدمة للمجتمع وللتوعيه في مجالات الصحة العامة.

#### مادة ((38)) آلية تقييم مدة التدريب

يتولى رئيس القسم وضع آلية للتقييم عن مدة التدريب على أن يشمل ذلك الحضور والالتزام بالعمل داخل الاقسام واستيفاء المتطلبات التي تقررها الاقسام.

#### مادة (( 39 )) بطاقات الكفاءة

يتولى منسق التدريب خلال فترات التدريب تدوين الملاحظات عن كل طالب وترصد تقديرات درجة الكفاءة على البطاقات المعدة لذلك في نهاية كل مرحلة تدريبية وتحال البطاقات الي رئيس القسم ومن تم إلى مسجل الكلية ومنه الى عميد الكلية لاعتمادها.

#### مادة (( 40 )) تقدير درجة الكفاءة

تقدر درجة الكفاءة طبقاً لتقديرات النجاح المنصوص عليها في اللائحة الداخلية للكلية وترصد بالبطاقة المعدة لذلك نهاية كل مرحلة من مراحل التدريب.

#### مادة ((41)) المحظورات على الطالب المتدرب

- لايجوز للمشرف المسؤول ترك الطالب دون متابعة وتوجيهه في أدائه لعمله أو تكليفه بالتوقيع على الوثائق الطبية بمفرده أو القيام بأي عمل من شأنه أن تترتب عليه أية مسؤولية جنائية.
  - 2. لايجوز للطالب المتدرب القيام بالمحظورات التالية:
  - أ- أن يشترك في دورات بالخارج قبل إتمام فترة التدريب المقررة.
  - ب- أن يجمع بين التدريب ومزاولة أية مهنة أخري ولو كانت طبية.
  - ت- أن يخالف التعليمات والتوجيهات الصادرة من منسق برنامج التدريب.

#### مادة ((42)) ساعات التدريب الاسبوعية

يكلف الطالب المتدرب بالعمل طيلة فترة التدريب المقررة مدة "36" ساعة أسبوعياً.

#### مادة ((43)) الإجازات الطارئة والمرضية للطالب المتدرب

يمنح الطالب المتدرب الإجازة الطارئة لسبب قهري والإجازة المرضية علي أن تعوض مدة الإجازة وفقاً للفقرة (أ) من المادة رقم (34) من هذه اللائحة.

#### مادة ((44)) مهام منسق برنامج التدريب

1. توزيع الطلبة على الأقسام العلمية المختلفة.

 الاجتماع بطلبة مرحلة التدريب قبل التحاقهم بالبرنامج لشر\_ح وتوضيح أهمية هذه الفترة التدريبية وكيفية الاس\_تفادة القصوي من البرنامج، كذلك تعريفهم باللائحة التنظيمية لهذه المرحلة وذلك من خلال إصدار دليل مرحلة التدريب.

- عقد الاجتماعات الدورية بالمنسقين ورؤساء الأقسام لتفعيل دورهم وتعريفهم بمسؤوليتهم تجاه العملية التعليمية من أجل تحقيق أهداف البرنامج التدريبي.
  - 4. استلام التقارير من المشرفين على التدريب بشكل منتظم.
  - 5. متابعة دورية ودقيقة لعملية التدريب بالاقسام المختلفة عن طريق المشرفين.
- 6. اســـتلام تقارير الكفاءة بالنماذج المعدة لذلك من المشر\_فين في الأقســـام ورصـــد الدرجات المتحصــل عليها، ثم تحديد التقرير العام لمدة التدريب في الشــهادة النهائية، كما يتم رصـــد التقدير العام في الشــهادة العامة دون أن يحتســب ضـمن المجموع الكلي لتحديد التقديرالعام لدرجة البكالوربوس.
- تجميع البيانات عن طريق توزيع اســتبانات دورية على الطلبة المتدربين للتعرف علي أوجه القصور والمشاكل والعراقيل التي تواجههم.
- استقبال الشكاوى والمشاكل وكذلك الطلبات الخاصة من قبل الطلاب المتدربين والعمل على إيجاد الحلول المناسبة والرد عليها.
- 9. تنظيم بعض الأنشطة العلمية والاجتماعية للطلبة المتدربين في يوم علمي وكذلك الإشراف علي إصدار نشرة علمية لطلاب هذه المرحلة إن أمكن ذلك.
  - 10. تشجيع الطلبة على اقتحام تجربة العلوم الصحية من خلال برامج معدة لذلك.

#### مادة (( 45 )) مهام المنسقين داخل الأقسام

- 1. التنسيق مع رؤساء الاقسام العلمية في متابعة التدريب.
  - 2. متابعة وتقييم العملية التدريبية بالاقسام.
- 3. الاشراف على كافة الانشطة العلمية والاجتماعية للطلاب المتدربين داخل الاقسام العلمية.
  - 4. تسلم تقارير الكفاءة وتسليمها الي منسق برنامج التدريب.

#### الفصل السادس: إعادة التنسيب والفصل من الدراسة

#### مادة (( 46 )) إعادة التنسيب

يعاد تنسيب الطالب الى كلية أخرى في الحالات الآتية:

- 1. إذا تحصل على تقدير ضعيف جداً في نهاية أي من السنتين الدراسيتين الأوليين.
  - 2. إذا رسب الطالب سنتين متتاليتين أياً كان متوسط تقديره العام .
- يجوز للطلاب المتعثرين في المراحل النهائية من الدراسة الاستمرار في الدراسة بالكلية نفسها مقابل القيام بدفع الرسوم الدراسية الكاملة وتحدد هذه الرسوم بقرار من الجهات المختصة.

#### مادة ((47)) الفصل من الدراسة

يفصل الطالب وينتهي حقه في الدراسة بالكلية في الحالات التالية:

- 1. إذا انقطع عن الدراسة بدون سبب مشروع مدة سنة دراسية كاملة.
- 2. إذا أعيد تنسيبه وتحصل على تقدير عام ضعيف جداً في نهاية السنة الأولى أو الثانية.
  - 3. إذا أعيد تنسيبه ورسب سنتين دراستين متتاليتين أياً كان متوسط تقديره العام.

إذا قضى ضعف المدة المقررة بالنسبة للطالب الذي اختار الاستمرار في الدراسة عن طريق دفع الرسوم الدراسية.

# الفصل السابع: المخالفات التأديبية

#### مادة ((48)) الحفاظ على سمعة الكلية

على الطالب الإلتزام بأداء واجباته العلمية على أحسن وجه، والحفاظ على سمعة الجامعة والكلية، بأن يسلك في تصرفاته مسلكاً يتفق مع وضعه باعتباره طالباً جامعياً، وأن تتفق تصرفاته مع القوانين واللوائح والنظم المعمول بها في مؤسسات التعليم العالي، والأصول والتقاليد الجامعية المستقرة.

#### مادة ((49)) التأديب

1. يخضع الطالب للتأديب إذا ارتكب فعلاً يشكل مخالفة للقوانين واللوائح والأنظمة المعمول بها بالكلية، سواء تم الفعل داخلها أو في أي مكان من ملحقاتها، وتقع المخالفة بارتكاب فعل محظور قانوناً، ويظل الطالب خاضعاً لأحكام التأديب من تاريخ تسجيله بالدراسة في الكلية إلى زوال هذه الصفة بتخرجه أو إلغاء تسجيله.

2. تُنفذ أحكام التأديب على الطالب سواءً أقدم على ارتكاب المخالفة بصفته فاعلاً أو كان شريكاً.

#### مادة ((50)) ارتكاب المخالفات

لا يجوز للطالب ارتكاب المخالفات التالية:

- 1. الاعتداء على أعضاء هيئة التدريس أو المعيدين أو العاملين أو على أحد زملائه الطلاب داخل الكلية أو خارجها.
  - 2. الاعتداء على أموال الكلية أو المرافق التابعة لها.
    - 3. الإخلال بنظام الدراسة والامتحانات بالكلية.
  - 4. ارتكاب أي سلوك منافٍ للأخلاق أو يمس النظام العام والآداب العامة.

#### مادة ((51)) درجة المخالفات ونوعها

يُعد من المخالفات الاعتداء على أعضاء هيئة التدريس أو العاملين أو الطلاب كأعمال الشجار أو الضرب أو الإيذاء أو السب أو القذف أو التهديد، ويتحقق الاعتداء إذا تم بصورة علنية وبحضور المعتدى عليه سواءً ارتكب الفعل شفاهة أو كتابة أو بالإشارة.

#### مادة ((52)) المحافظة على المعدات والأدوات

يُعد من مخالفات الاعتداء على أموال الكلية الاستيلاء على المعدات والأدوات التابعة لها أو الله فها المؤلفة المؤ أو على إحدى المرافق التابعة لها، سواء بجعلها غير صالحة للاستعمال كلياً أو جزئياً، وتُقْعُ المخالفة سواء تمت بصورة عمدية أو غير عمدية.

#### مادة ((53)) أنواع المخالفات بنظام الدراسة والامتحانات

يُعد من مخالفات الإخلال بنظام الدراسة والامتحانات ما يلي:

- 1. تزوير المحررات الرسمية مثل الشهادات والإفادات والوثائق الرسمية، سواء كانت صادرة عن الكلية أو خارجها، إذا كانت ذات صلة بإجراءات الدراسة.
- انتحال الشخصية سواءً لتحقيق مصلحةً للفاعل أو لغيره، ويعد انتحالاً للشخصية دخول الطالب بدل طالب آخر لأداء الامتحان وتسري العقوبة على الطالبين، وكل من كان شريكاً فيها من الطلاب.

3. إثارة الفوضى أو الشغب وعرقلة سير الدراسة أو الامتحانات بأي صورة كانت.

- 4. التأثير على الأساتذة والعاملين فيما يخص سير الامتحانات أو التقييم أو النتائج أو غيرها مما بتعلق بشؤون الدراسة والامتحانات.
- 5. ممارسة أعمال الغش في الامتحانات أو الشروع فيها بأي صورة من الصور، ويعد من قبيل الشروع في الغش إدخال الطالب إلى قاعة الامتحانات أي أوراق أو أدوات أو أجهزة ذات علاقة بالمنهج الدراسي موضوع الامتحان ما لم يكن مرخصاً بإدخالها من قبل لجنة الامتحانات.
- الامتناع عن الإدلاء بالشهادة أمام لجان التحقيق أو مجالس التأديب المشكلة وفقا لهذه اللائحة.
  - 7. أي مخالفة للقوانين واللوائح والنظم المتعلقة بالتعليم العالي.

#### مادة ((54)) النظام العام للآداب

يُعد سلوكاً منافياً للأخلاق والنظام العام والآداب العامة الأفعال الآتية:

- الاعتداء على العرض ولو تم برضى الطرف الآخر، وفي حالة الرضى يُعد الطرف الآخر شريكاً في الفعل.
  - 2. خدش الحياء العام.
  - 3. تعاطى أو تناول المخدرات أو المسكرات أو التعامل فيها بأي صورة من الصور.
    - 4. تداول الأشياء الفاضحة أو توزيعها أو عرضها بأي صورة.
- كل ما من شأنه الإخلال بالشرف، أو المساس بالآداب العامة والأخلاق وفقاً للتشريعات النافذة.
  - و في جميع الأحوال إذا شكل السلوك جريمة جنائية يتوجب على الكلية إبلاغ الجهات المختصة.

### الفصل الثامن: العقوبات التأديبية

#### مادة ((55)) العقوبات

يعاقب الطّالب بالإيقــــاف عن الدراسة لمـدة لا تقل عن سنتين دراسيتين إذا ارتكب أحد الأفعالُ المنصوص عليها في المادة (( 50 )) من هذه اللائحة، ويُفصل الطالب من الكلية إذا كان عائداً.

#### مادة ((56)) الإيقاف عن الدراسة

يعاقب الطّالب بالإيقاف عن الدراسة لمدة لا تقل عن سنة دراسية إذا ارتكب أحد الأفعال المنصوص عليها في المادة ((52)) من هذه اللائحة ، وتضاعف العقوبة عند العود، وفي جميع الأحوال لا يجوز عودة الطالب لمواصلة الدراسة إلا إذا دفع قيمة الأضرار التي أحدثها بأموال الجامعة وملحقاتها.

#### مادة ((57)) العبث بالمعدات والأدوات

يعاقب الطّالب عند ارتكابه إحدى المخالفات المنصوص عليها في المادة (( 53 )) من هذه اللائحة بالعقوبات التالية:

- الوقف عن الدراسة لمدة لا تقل عن سنة دراسية (فصلين دراسيين) ولا تزيد على سنتين دراسيتين (أربعة فصول دراسية) كل من ارتكب المخالفات الواردة في الفقرتين ((1،2)) من المادة المذكورة، وبفصل الطالب من الدراسة فصلاً نهائياً عند العود.
- الحرمان من دخول الامتحانات كلياً أو جزئياً إذا ارتكب المخالفات المحددة في الفقرتين ((3،4))
   من المادة المذكورة ، وفي جميع الأحوال يعتبر امتحانه ملغياً في المادة التي ارتكب فيها المخالفة.
- 3. إلغاء نتيجة امتحان الطالب في دور واحد (فصل دراسي واحد) على الأقل إذا ارتكب المخالفة الوارد بيانها في الفقرة (( 5 )) من المادة المذكورة، ويجوز لمجلس التأديب إلغاء امتحانه لسنة كاملة (فصلين دراسيين) ويفصل الطالب فصلاً نهائياً عند العود.
- 4. الحرمان من حقوق الطالب النظامي أو الإيقاف عن الدراسة مدة لا تزيد على سنة دراسية واحدة إذا ارتكب إحدى المخالفات المنصوص عليها في الفقرتين (( 6،7 )) من المادة المذكورة.

#### مادة ((58)) صلاحيات لجنة المراقبة

يجوز للجنة المراقبة أو المشرفين على قاعة الامتحان تفتيش الطالب إذا وجدت قرائن تدعو للاشتباه بأن في حيازته أوراقاً أو أدوات أو أجهزة لها علاقة بالمقرر موضوع الامتحان، كما يجوز لهم إخراج الطالب من قاعة الامتحان إذا خالف تعليمات لجنة الامتحان أو بدأ في ارتكاب أعمال الغش، وفي جميع الأحوال يعتبر امتحانه ملغياً.

#### مادة ((59)) عقوبة الإخلال بالآداب العامة

يعاقب بالوقف عن الدراسة لمدة لا تقل عن سنة دراسية ولا تزيد على سنتين دراسيتين كل طالب ارتكب أحد الأفعال المنصوص عليها في المادة (( 54 )) من هذه اللائحة ، ويفصل الطالب نهائيًا عند العود، ويتوجب على عميد الكلية عند ارتكاب المخالفة المنصوص عليها في الفقرة (( 5 )) من المادة المذكورة، استدعاء ولي أمر الطالب ولفت نظره إلى سلوكه وتحذيره من مغبّة هذا السلوك، فإذا أصر الطالب على مسلكه توجب الاستمرار في إجراءات التأديب.

#### مادة (( 60 )) الحرمان من الامتحانات

يترتب على الإيقاف عن الدراسة حرمان الطالب من التّقدّم إلى الامتحانات طيلة مدة الوقف، ولا يجوز للطالب الانتقال إلى كلية أخرى أثناء مدة سريان العقوبة.

# الفصل التاسع: إجراءات التّأديب

#### مادة (( 61 )) الإبلاغ عن المخالفات

على كل من علم بوقوع مخالفة للقوانين واللوائح والأنظمة المعمول بها في الكلية أو الجامعة أن يقدم بلاغاً عن هذه المخالفة، يتضمن تقريراً مكتوباً عن الواقعة إلى مجلس إدارة الكلية أو الجامعة.

#### مادة (( 62 )) لجان التحقيق

يتعين على عميد الكلية فور إبلاغه عن ارتكاب إحدى المخالفات تكليف لجنة للتّحقيق من ثلاثة أعضاء من هيئة التدريس يكون أحدهم مقرراً للّجنة.

#### مادة (( 63 )) موعد التحقيق

يتم إعلام الطالب بالتحقيق معه قبل موعده بيوم كامل على الأقل، ولا يحتسب اليوم الذي تم فيه إعلامه ويجوز أن يتم التحقيق فوراً في حالات الضرورة والاستعجال.

#### مادة (( 64 )) تقرير التحقيق

يقدم المكلف بالتحقيق تقريره بعد الانتهاء من التحقيق، أو عدم حضور الطالب للتحقيق بالرغم من إعلامه به إلى عميد الكلية و إذا ما انتهت لجنة التحقيق إلى الرأي بمعاقبة الطالب تأديبياً.

#### مادة (( 65 )) مجلس التأديب

يتم تشكيل مجلس للتأديب بقرار من عميد الكلّية، ويتكون من ثلاثة أعضاء من هيئة التدريس من ذوي الخبرة والدراية وعضو عن المكتب القانوني بالجامعة ومندوب عن اتحاد الطلبة (الرابطة الطلابية) ويرأس المجلس أقدم أعضاء هيئة التدريس. ويتم إعلام من تقرر إحالته على المجلس المذكور بالموعد الذي ينبغي فيه المثول أمامه وذلك خلال مدة لا تقل عن ثلاثة أيام، ولا يحتسب اليوم الذي تم فيه الإعلان من بينها، وفي حال عدم الحضور يصدر المجلس قراره غيابيًا، ويتم إعلام الطالب عن طريق لوحة الإعلانات بالكلّية، ولا يجوز لمن اشترك في لجنة التحقيق أن يكون عضوًا بمجلس التأديب.

### مادة (( 66 )) قرار مجلس التأديب

يصدر مجلس التأديب قراره بعد سماع أقوال الطالب، ويجوز للمجلس استدعاء الشهود كما يجوز له استدعاء من قام بالتحقيق.

#### مادة (( 67 )) لجنة التحقيق

يتولى رئيس الجامعة تشكيل لجان التحقيق أو مجالس التأديب فيما يتعلق بالقضايا التي تخص أكثر من كلية في إطار الجامعة.

#### مادة (( 68 )) الإعلان على موعد التحقيق

يتم الإعلان عن موعد التحقيق أو التأديب بلوحة الإعلانات في الكلية المسجل بها الطالب، ويعتبر ذلك قرينة على العلم به.

#### مادة (( 69 )) قرار مجلس التأديب

يصدر مجلس التأديب قراراته بأغلبية أصوات الأعضاء، ولا تُعد نافذة إلا بعد اعتمادها من مجلس إدارة الكلية، أما القرارات الصادرة عن المجلس بالفصل فلا تعد نافذة إلا بعد اعتمادها من مجلس إدارة الجامعة، وتبلّغ كافّة الجامعات والمعاهد العليا داخل ليبيا بالقرار وذلك للحيلولة دون تسجيل الطالب المفصول في أي منها.

#### مادة (( 70 )) إعلان قرار مجلس التأديب

يُعلن قرار مجلس التأديب بلوحة الإعلانات في الكلية المسجل بها الطالب، وتودع نسخة ثانية بالملف الشخصي للطالب.

## مادة (( 71 )) انقضاء الدعوة التأديبية

تنقضي الدعوة التأديبية بوفاة الطالب أو انسحابه من الكلية ولا يؤثر انقضاء الدعوى التأديبية أو الحكم فيها على الدعوى الجنائية أو المدنية الناشئة عن الواقعة.

#### مادة (( 72 )) الطعن في قرارات المجالس التأديبية

تعتبر قرارات المجالس التأديبية التي تصدر طبقاً لأحكام هذه اللائحة نهائية بعد اعتمادها ولا يجوز الاعتراض عليها إلا بالطعن فيها أمام المحكمة المختصة.

## الفصل العاشر: أحكام عامة وختامية

## مادة (( 73 )) تعديل أحكام اللائحة

يجوز تعديل الأحكام الواردة في هذه اللائحة بالإضافة أو الإلغاء وفقاً للتشريعات النافذة.

## مادة (( 74 )) سريان أحكام اللائحة

تسري أحكام هذه اللائحة اعتباراً من تاريخ اعتمادها، وتسرى أحكام لائحة تنظيم التعليم العالي الصادرة بقرار اللجنة الشعبية العامة "سابقاً" رقم ((501)) لسنة 2010م على كل ما لم يرد بشأنه نص في هذه اللائحة، ولا يسري أي حكم يخالفها.

يعتمد/

تاريخ الاعتماد: ..../.... 2022 م



# الأقسام العلمية بكليات العلوم الصحية

	Department (Program)	القسم العلمي (البرنامج)
1	Department of Anesthesia &Intensive Care	1.قسم التخدير و العناية الفائقة
2	Department of Medical Laboratory	2.قسم المختبرات الطبية
3	Department of Therapeutical Nutrition	3.قسم التغدية العلاجية
4	Department of Dignostic and Therapeutic Radiology	قسم الأشعة التشخصية 4.والعلاجية
5	Department of Physical Therapy	5.قسم العلاج الطبيعي
6	Department of Public Health	6.قسم الصحة العامة
7	Department of Dental Laboratories	7.قسم معامل الأسنان
8	Department of Health Administration	8.قسم الإدارة الصحية
9	Department of Medical Genetics	9.قسم الوراثة الطبية



# 1. قسم التخدير و العناية الفائقة



## Biochemistry

1	Course name		Biochemistry
2	Course Code		AN200
3	Course type: general/specia	lty/optional	specialty
4	Accredited unit	ts	4
5	Educational ho	urs	4
6	Pre-requisite re	equirements	Biology & General chemestary
7	Program offere	ed the course	Anesthesia and intensive care
8	Instruction Lan	guage	English
9	Date of course	approval	2022
Text for t	f Description:	chemistry, such thermodynamics of Applying equilibring cell structure. Stu proteins. Analyzi different mechan Understanding an Complete Steroid	provide students with a fundamental concept in as equilibrium, acid/base chemistry, and into an exploration of biology. The content includes: um processes to study biochemical reactions as well as adving the structure and function of amino acids and ing the kinetic parameters of enzymes including hisms of how drugs are used to inhibit enzymes. In making connections in metabolism.  Handbook 2004 Edition.  Schemistry, 2nd.Ed.(JKoolman, K. HRoehm)
Cou	rse Duration	28 weeks	
Deli	very		oup interaction and discussion, self-directed articipation, Laboratory experimentsetc.
Cou	rse Objectives:	demonstrated the 1 .Identify the ba proteins, and lipid .2 Understand th proteins, and lipid 3 .Recognize the p the integration of	sic biomolecules within human body: Carbohydrates,
Cou	rse Assessments	<ul><li>Assignment 1</li><li>Assignment 2</li><li>Final Exam: 60</li></ul>	: 10%

· 1000年1月1日	A 60 % is required for a pass in this course.
	Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topics Coverage
(Week 1)	Topics to be covered in the session (week)
	Introduction to Enzymes: Overview
	classification, nomenclature, coenzymes, intracellular enzymes
	enzyme specificity, catalytic site,
(Week 2)	Topics to be covered in the session (week)
	effect of substrate concentration, temperature, pH, on enzyme
	kinetics,
	Assignment 2 handed out
(Week 3)	Topics to be covered in the session (week)
	<ul> <li>effect of substrate concentration, temperature, pH, on enzyme kinetics, use of enzymes in clinical medicine</li> </ul>
(Week 4)	Topics to be covered in the session (week) Biological oxidation:
	Respiratory chain & ATP production
	Cytochrome system
(Week 5)	Topics to be covered in the session (week)
	Metabolism of carbohydrates:
	Digestion & absorption of carbohydrates,
(Week 6)	Topics to be covered in the session (week)
	metabolism of fructose, gluconeogenesis
(Week 7)	Topics to be covered in the session (week)
	disorders of carbohydrate metabolism, special reference to diabete
	mellitus.
(Week 8)	Midterm Exam
(Weeks 9& 10)	Topics to be covered in the session (week)
	Citric acid cycle, (TCA cycle)
	•reaction of oxidation of pyruvate, condensation with oxaloacetic acid
	•formation of citrate, isocitrate & intermediate of TCA cycle.
(Week 11)	Fat metabolism:
	Metabolism of fatty acids, B-oxidation
(Week 12)	•synthesis of fatty acids, phospholipids biosynthesis, sphingo-myelin biosynthesis, TAG (Triacyl glycerol synthesis), lipolysis
(Week 13)	•ketone bodies formation
(Week 14)	•metabolism, transportation of lipids in human body by lipoproteins 8 atherosclerosis
136/10	-

(Week 15)	Protein and amino-acid metabolism:
(AAGGK T2)	
	protein digestion and absorption, transamination, deamination
(Week 16)	•urea formation, phenylketonuria, alkaptonuria, albinism, Kwashiorkor and marasmus etc.
(Week 17)	Porphyrin & haem biosynthesis, bilirubin formation & jaundice
(Week 19)	Creatinine, histamine, serotonine
(Week 20)	Nucleic acid metabolism:
	Cellular distribution of DNA & RNA and their role in protein synthesis
(Week 21)	Purine and pyrimidine metabolism
	•uric acid biosynthesis & gout, B alanine excretion
(Week 22)	Hormones:
	The endocrine system & types of hormones
(Week 23)	Action of salivary amylase on starch digestion.
	Free & total acidity of gastric juice sample.
	Tests for special amino acids in egg & milk.
(Week 24)	Quantitative detection of abnormal constituents presents in urine e.g. sugar/glucose, protein, ketone bodies, bile salts & blood.
(W 25)	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reEasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

## Histology

1	Course name	Histology
2	Course Code	AN204
3	Course type: /general/specialty/optional	specialty

4	Accredited unit	s	6
5	Educational hou	ırs	6
6	Pre-requisite re	quirements	Biology
7	Program offere	d the course	Anesthesia and intensive care
8	Instruction Lang	guage	English
9	Date of course	approval	2022
Brie	f Description:	the nature of tissues	de students with a fundamental understanding of and their structure oscopic study of tissues and cells used in athogenesis and diagnosis of various diseases.
	tbooks required this Course:		asic Histology: Text and Atlas, Sixteenth Edition BRS Cell Biology and Histology (Board Review Histology
Cou	rse Duration	28 week 28 weeks, 2	hours per class
Deli	very	Play. Brainstorming; Project Based Learn	iswer; Problem Solving; Discussion; Case Study; Role Six Hats Thinking; Opinion Pool; Debate; Workshop ling; Problem Based Learning; Storyline; Scenarion In Based Learning; Case Based Learning.
العالى ا	rse Objectives:	<ul> <li>Acquire a basic properties of components of the component</li></ul>	background in histology and to understand the rells and their interactions with one another a tissues and organs.  It is structure and function correlate at the microscopi ormal structure and function of various cell types ans and to differentiate their histological structure through examination.  It is ckground on embryology and to understand the first
Cou	irse Assessments	Homework & Assign	0%

	that may be beneficial to the student-learning outcome.
Content Breakdown	Topics Coverage
(Week 1)	Topics to be covered in the session (week)
	Nerve Tissue:
	Development of nerve tissue Neuron
(Week 2)	Topics to be covered in the session (week)
	Perikaryon, Dendrites
*** * **	Nerve Fibers Nerves
(Week 3)	Topics to be covered in the session (week)
	Autonomic Nervous system
	Gray matter and white matte
(Week 4)	Muscle Tissue:
	Skeletal muscle
Session 5 (Week 5)	Topics to be covered in the session (week)
	Cardiac muscle
(Week 6)	Topics to be covered in the session (week)
	Smooth muscle
(Week 7)	Topics to be covered in the session (week)
	The circulatory system
8 (Week 8)	Midterm Exam
(Week 9 & 10)	Topics to be covered in the session (week)
	General structure of blood vessels
(Week 11)	Specific structure of blood vessels
(Week 12)	Immune system
(Week 13)	Thymus
(Week 14)	Lymph nodes
(Week 15)	Spleen
	Tonsils
	General structure of the Digestive tract
(Week 16)	and a structure of the bigestive tract
(Week 16) (Week 17)	The oral Cavity
MARKET AND THE PROPERTY OF THE PARTY OF THE	
Marie Company of the	The oral Cavity
(Week 17)	The oral Cavity Tongue, Pharynx, Teeth
(Week 17)	The oral Cavity Tongue, Pharynx, Teeth Oesophagus
(Week 17) (Week 19)	The oral Cavity Tongue, Pharynx, Teeth Oesophagus Stomach

(Week 22)	Gland associated with the Digestive tract :
	Salivary glands
(Week 23)	Pancreas
(WEER 25)	Liver
	Structure and functions
	Gall Bladder
(Week 24)	Respiratory system
	Nasal cavity
	Nasopharynx
	Larynx
(Week 25)	Trachea and Bronchial Tree
	Pulmonary blood Vessels
	Epidermis
	Dermis
	Hairs
(Week 26 & 27)	Urinary System
	Kidneys
	Structure
	Histophysiology
	Bladder
(Week 28)	The Neuroendocrine Hypothalamo-
	Hypophysial system (NHS)
	Component of the NHS
	Adrenals, Islets of Langerhans, thyroid,
	Parathyroids and Pinal Gland.
Attendance Expectations	Students are expected to attend every session of class, arriving on time,
Expectations	returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be
	supported with a doctor's note
Generic Skills	The faculty is committed to ensuring that students have the full range
	of knowledge and skills required for full participation in all aspects of
	their lives, including skills enabling them to be life-long learners. To
	ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical
	thinking skills will be embedded in all courses
Course Change	Information contained in this course outline is correct at the time of
sesses!	publication. Content of the courses is revised on an ongoing basis to
Ser Lace	ensure relevance to changing educational employment and marketing
* 18 8	needs. The instructor will endeavor to provide notice of changes to
الرقيالوزك	students as soon as possible. Timetable may also be revised

### Organic chemistry

1	Course name		Organic chemistry
2	Course Code		AN208
3	Course type: /general/specia	alty/optional	general
4	Accredited unit	s	4
5	Educational ho	urs	4
6	Pre-requisite re	quirements	None
7	Program offere	d the course	Anesthesia and intensive care
8	Instruction Lan	guage	English
9	Date of course	approval	2022
Ditt	ef Description:	compounds, po phenomena, form alkanes, alkenes, alcohols, ethers, esters, amides, a	organic chemistry: bases of bonding in organic lar compounds, structural formulas, isomeric ms of organic compounds; aliphatic compounds: alkynes; aromatic compounds; Functional groups: alkyl halides, aldehydes, ketones, carboxylic acids, inhydrides, amines; A complete study in terms of ructure, physical properties, methods of preparation ions.
	tbooks required this Course:	Edition, ISBN     Maitland Jone     Guide/Solution	es and Steven A. Fleming, "Organic Chemistry", Fifth 0393931498 es, Jr., Henry L. Gingrich, Steven A. Fleming, "Study ons Manual to Accompany Organic Chemistry", Fifth 978-0-393-93659-
Cou	urse Duration	28 week	
Del	livery		oup interaction and discussion, self-directed articipation, Laboratory experimentsetc.
Cou	urse Objectives:	<ul> <li>Classify and lie</li> <li>Define proble</li> <li>List and analy</li> <li>Identify ways</li> </ul>	ze the causes of problems to solve the problems gement procedures of organization and coordination.
الوزر الوزر	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Describe molecules     Describe in Demonstrial groups	emical bonding.  the structure and representation of organics.  nomenclature rate bonding, intermolecular forces, and functional

	<ul> <li>Know properties and synthesis</li> <li>Identify addition reactions</li> <li>Recognize nucleophilic substitution of alkyl halides.</li> <li>Demonstrate stereochemistry.</li> <li>Know free radical reactions</li> <li>Define aromatic compounds (arenes)</li> <li>Define reactions of aromatic compounds</li> <li>Know nmr, mass spectrometry, and infrared (ir) spectroscopy</li> <li>Describe synthesis and reactions of alcohols</li> <li>Know ethers and epoxides</li> <li>Describe enols and enolates</li> <li>Describe conjugated unsaturated systems.</li> <li>Recognize synthesis and reactions of β-bicarbonyl compounds</li> <li>Know amines</li> <li>Describe phenols and aryl halides</li> <li>Identify carbohydrates</li> </ul>
Course Assessments	Assignment 1: 30% Assignment 2: 10% Final Exam: 60% A 60 % is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topical Coverage
Session 1 (Week 1)	Topics to be covered in the session (week)  Introduction to Carbon Compounds and Chemical Bonds  The structural Theory of Organic Chemistry
Session 2 (Week 2)	Topics to be covered in the session (week)  Chemical Bonds: The Octet Rule Writing Lewis Structure Hybridization sp3, sp2, sp Assignment 2 handed out
Session 3 (Week 3)	Topics to be covered in the session (week)     Alkanes: Nomenclature     Introduction to Alkanes and cycloalkanes
Session 4 (Week 4)	Topics to be covered in the session (week) •Shapes of Alkanes
Session 5 (Week 5)	Topics to be covered in the session (week) •IUPAC Nomenclature of Alkanes
Session 6 (Week 6)	Topics to be covered in the session (week)  • Nomenclature of Cycloalkanes
Session 7 (Week 7)	Topics to be covered in the session (week)  • Physical Properties of Alkanes and Cycloalkanes

	•Chemical Reactions of Alkanes	
	Synthesis of Alkanes and Cycloalkanes	
Session 8 (Week 8)	Midterm Exam	
Session 9 (Week 9)	Topics to be covered in the session (week)	
	Alkenes and Alkynes I: Properties and Synthesis.	
Session 10 (Week	•The (E)—(Z) System for Designating Alkene Diastereomers	
10)	Cycloalkenes	
Session 11 (Week	Synthesis of Alkenes via Elimination Reactions	
11)		
Session 12 (Week	Synthesis of Alkynes by Elimination Reactions	
12)	•The Acidity of Terminal Alkynes	
Session 13 (Week	Alkenes and Alkynes II: Addition Reactions	
13)	•Introduction: Additions to Alkenes	
Session 14 (Week 14)	Addition of Hydrogen Halides to Alkenes: Markovnikov's Rule	
Session 15 (Week 15)	Stereochemistry of the Ionic Addition to an Alkene	
Session 16 (Week 16)	Addition of Sulfuric Acid to Alkenes	
Session 17 (Week 17)	Addition of Water to Alkenes: Acid-Catalyzed Hydration	
Session 19 (Week 19)	•Alcohols from Alkenes Through Oxymercuration-Demercuration: Markovnikov Addition	
Session 20 (Week 20)	Alcohols from Alkenes through Hydroboration-Oxidation:	
Session 21 (Week	Anti-Markovnikov Syn Hydration	
21)	•Addition of Bromine and Chlorine to Alkenes•Halohydrin Formation	
Session 22 (Week	Addition of Bromine and Chlorine to Alkynes	
22)	Addition of Hydrogen Halides to Alkynes	
	Oxidative Cleavage of Alkynes	
Session 23(Week	Alcohols and Ethers	
23)	Structure and Nomenclature	
	Physical Properties of Alcohols and Ethers	
	•Synthesis of Alcohols	
Session 24 (Week 24)	Aromatic Compounds	
1	Nomenclature of Benzene Derivatives	
	•Reactions of Benzene	
	•Halogenation of Benzene	
	•Nitration of Benzene	
	•Sulfonation of Benzene	
	•Friedel-Crafts Alkylation	
	•Friedel-Crafts Acylation	

	Limitations of Friedel-Crafts Reactions
Session 25 (Week	Aldehydes and Ketones
25)	Nomenclature of Aldehydes and Ketones
	Physical Properties
	•Synthesis of Aldehydes
	•Synthesis of Ketones
	•The Addition of Organometallic Reagents: The Reformatsky Reaction
	Oxidation of Aldehydes and Ketones
	Chemical Analysis of Aldehydes and Ketones
Session 26 (Week	Carboxylic Acids and Their Derivatives.
26)	Nomenclature and Physical Properties
	Preparation of Carboxylic Acids
	Acid Chlorides
	Carboxylic Acid Anhydrides
	•Esters
	•Amides
Cassian 27 (Mass), 271	Final exam
Session 27 (Week 27)	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reEasons and must be supported with a doctor's note.
Attendance	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reEasons and must be supported

### **INTENSIVE CARE UNIT 1**

1	Course name INTENSIVE CARE UNIT 1		
2	Course Code	AN 301	
3	Course type: /general/specialty/optional	specialty	
4	Accredited units	6	
5	Educational hours	6	
6	Pre-requisite requirements	Physiology	

7	Program offered	I the course	Anesthesia and intensive care	
8	Instruction Language  Date of course approval		English 2022	
9				
nature of ntensive		nature of ntensive of treatment designated	ide students with a fundamental understanding of the are represents the highest level of patient care and d for critically ill patients with potentially recoverable	
Textbooks required for this Course:		Jean-Louis Vincent, Fr	ederick Moore, Rinaldo Bellomo, John Marini, Textbook Isevier 2022	
Cou	rse Duration	28weeks, 4hours per		
Delivery			interaction and discussion, self-directed activities, aboratory experimentsetc.	
Cou	rse Objectives:	The students who suc	ceeded in this course will be able to:	
course objectives.		Explain the relacated care and treatm     Analyses and as	g needs for a patient deteriorating in vital functions ationship between nursing needs, nursing care, medical nent.  If you have a post-operative care.	
Cou	rse Assessments	Assignment 1: 30%		
		Assignment 2: 10%		
		Final Exam: 60%		
		A 60 % is required for	a pass in this course.	
		textbook, handouts, a	nents Students will be required to read chapters in their and any other material necessary for the course. raged to use and design any assignment that may be ent-learning outcome.	
Cont	tent Breakdown		Topics Coverage	
Sess	ion 1 (Week 1)	Topics to be covered i	in the session (week)	
		Introduction to ICU	(Heal)	
Spec	ion 2 (Week 2)	Topics to be covered i	in the session (week)	
JC33	ion 2 (week 2)	Ventilatory support	in the session (week)	
		Shock		
		Assignment 2 hand	dod out	
Sess	ion 3 (Week 3)	Topics to be covered i	And the second s	
		Cardiac arrest	The session (week)	
Sess	ion 4 (Week 4)		n the session (week) Tracheal intubation "indications"	
		& contraindications		
		• Coma	2555300	
		Fluid & electrolytes	s imbalance	
Sess	ion 5 (Week 5)	Topics to be covered i	n the session (week)	
		Monitoring in ICU	11 2 ( ) *   8	
		Basics of ECG	The state of the s	

Session 6 (Week 6)	Topics to be covered in the session (week)		
	Cardiopulmonary resuscitation		
Session 7 (Week 7)	Topics to be covered in the session (week)		
	Oxygen therapy		
	Piped supply pf gases & vacuum		
Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9)	Topics to be covered in the session (week)		
Session 14 (Week 14)	Monitoring in I.C.U.		
	Documentation in I.C.U		
Session 15(Week 15)	Sphygmomanometry		
Session 16(Week 16	Recording of vital parameters		
Session 17(Week 17	Intravenous fluids		
Session 18(Week 18	Cannulation ( venous )		
Session 19(Week 19	Management of shock		
Session 20(Week 20 Respiratory Critical CareManagement of hematemesis & melena			
Session 21(Week 25	Respiratory Critical CareManagement of hematemesis & melena		
Session 26(Week 26	Final exam		
Attendance	Students are expected to attend every session of class, arriving on time,		
Expectations	returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

### **INTENSIVE CARE UNIT 2**

1	Course name	INTENSIVE CARE UNIT 2	
2	Course Code	AN401	
3	Course type: /general/specialty/optional	specialty	
4	Accredited units	6	

5	Educational hours 6		6	
6	Pre-requisite requirements		INTENSIVE CARE UNIT 1	
7	Program offere	ed the course	Anesthesia and intensive care  English	
8	Instruction Lan	guage		
9	Date of course approval		2022	
Brief Description:		nature of intensiv	rovide students with a fundamental understanding of the re care represents the highest level of patient care and ated for critically ill patients with potentially recoverable	
Textbooks required for this Course:		Jean-Louis Vincent, Frederick Moore, Rinaldo Bellomo, John Marini, Textbook of Critical Care, 8 ed, Elsevier 2022		
Cour	se Duration	28 weeks.		
Deliv	very	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.		
Cour	se Objectives:	The students who succeeded in this course will be able to:		
		<ul> <li>Describe function and safe application of medical devices in the area.</li> <li>Explain the significance of the impact of intensive care environments external and internal factors on patients'/family's well-being based on the central concepts: person, health, nursing and environment.</li> </ul>		
Cour	se Assessments	Assignment 1: 30%		
		Assignment 2: 10%		
		Final Exam: 60%		
		A 60 % is required for a pass in this course.		
		Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.		
Cont	ent Breakdown		Topics Coverage	
Sessi	ion 1 (Week 1)	Topics to be covere	ed in the session (week)	
		• Introduction to	ICU2	
		Introduction, type of patients		
Sessi	on 2 (Week 2)	Topics to be covered in the session (week)		
		Monitoring in ICU		
		Assignment 2 handed out		
Sessi	on 3 (Week 3)	Topics to be covere	ed in the session (week)	
		Monitoring		
Sessi	on 4 (Week 4)	Topics to be covere     Ventilatory Supp	ed in the session (week) Tracheal intubation "indications" port	
Sessi	on 5 (Week 5)	Topics to be covere	ed in the session (week)	
		Shock including car	rdiac arrest	

Session 6 (Week 6)	Topics to be covered in the session (week)		
	Trauma care		
Session 7 (Week 7)	Topics to be covered in the session (week)		
	Trauma care		
Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9)	Topics to be covered in the session (week)		
Session 14 (Week 14)	Head injury		
Session 15(Week 15)	Head injury		
Session 16(Week 16			
Session 17(Week 17	Coma		
Session 18(Week 18	Poisoning- General		
Session 19(Week 19	Poisoning - Specific		
Session 20(Week 20	Near drowning		
Session 21(Week 21	Resuscitation of Burnt patients		
Session 22(Week 22	Veek 22 Chest trauma		
Session 23(Week 23	ARDS		
	Infection Control		
Session 24(Week 24	Hemetemesis / Malena		
	Fluid / Electrolyte imbalance Acid base		
Session 26(Week 26	Final exam		
Attendance Students are expected to attend every session of class, arrive returning from breaks promptly and remaining until class is Absences are permitted only for medical reasons and must a doctor's note.			
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

## Medicine

1	Course name	22999	Medicine	
2	Course Code	1 Secretary	AN 300	

3	Course type: /general/spec	ialty/optional	Specialty		
4	Accredited units  Educational hours		4		
5					
6	Pre-requisite	requirements	Physiology		
7	Program offer	ed the course	Anesthesia and intensive care		
8	Instruction La	nguage	English		
9	Date of course approval		2022		
Brief I	Description	The course teachs str health prioreties.	udents the importance of medical problems in contexts of		
	ooks required is Course:	The Oxford Textbook Cox, 5 ed Published:	of Medicine, John Firth, Christopher Conlon, and Timothy May 2010		
Cours	e Duration	28weeks			
Delive	ery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experimentsetc.			
		health priority o Practice the spector professional eth Identify social, eth determinants of preventive and preventive and preventive and preventive and interpretation of the perform and interpretation of the physical examination of the plan and deliver	cialty of medicine in keeping with the principles of ics; conomic, environmental, biological and emotional adult medicine and know the therapeutic, rehabilitative, promotion measures to provide holistic care to all patients; story, perform full physical examination and make a		
Course Assessments		Assignment 1: 30%  Assignment 2: 10%  Final Exam: 60%  A 60 % is required for a pass in this course.  Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course.  Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.			
Conte	nt Breakdown		Topics Coverage		
Session 1 (Week 1) Topics to be covered		Topics to be covered Introduction to Body	in the session (week) systems and organs		

	Types of diseases
	Management of diseases
Session 2 (Week 2)	Topics to be covered in the session (week)
	History taking
	Physical examination
	Assignment 2 handed out
S12 (W-1-2)	
Session 3 (Week 3)	Topics to be covered in the session (week)
	The vital signs
	Arterial pulse
	Respiratory rate.
	Temperature.
Session 4 (Week 4)	Topics to be covered in the session (week)
	Investigations, normal values commonly encountered
Session 5 (Week 5)	Topics to be covered in the session (week)
	Cardio-vascular system disorders:
	Introduction related to anatomy & physiology & function.
Session 6 (Week 6)	Topics to be covered in the session (week)
	Common symptoms related.
	The investigations used to detect the related disorder.
	The specific diseases which include:
	Ischemic heart disease which includes:
	Angina pectoris
Session 7 (Week 7)	Topics to be covered in the session (week)
	Myocardial infarction
	Cardiogenic shock.
	Congestive cardiac failure
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Topics to be covered in the session (week)
Session 14 (Week 14	Hypertension: - Classification - Risk factors
Session 15(Week 15)	Nursing management
	Drugs in common use
Session 16(Week 16	Respiratory disorder:
	Introduction related to anatomy & physiology & function.
	Common symptoms related.
	The investigations used to detect the related disorder.
	The specific diseases related:
	Pneumonia
	Tuberculosis.
	Tuberculosis. Asthma& COPD
Session 17(Week 17	Tuberculosis.
Session 17(Week 17	Tuberculosis. Asthma& COPD
Session 17(Week 17 Session 18(Week 18	Tuberculosis. Asthma& COPD  • Disorders related to endocrine – (Pancrease)
	Tuberculosis. Asthma& COPD  • Disorders related to endocrine – (Pancrease) Diabetes mellitus: type, causes, diagnosis, management, complication • Disorders related to haemopoetic system:
	Tuberculosis. Asthma& COPD  • Disorders related to endocrine – (Pancrease)  Diabetes mellitus: type, causes, diagnosis, management, complication
	Tuberculosis. Asthma& COPD  • Disorders related to endocrine – (Pancrease) Diabetes mellitus: type, causes, diagnosis, management, complication  • Disorders related to haemopoetic system: Introduction related to blood formation & function of the cellular compartment.
	Tuberculosis. Asthma& COPD  • Disorders related to endocrine – (Pancrease) Diabetes mellitus: type, causes, diagnosis, management, complication  • Disorders related to haemopoetic system: Introduction related to blood formation & function of the cellular compartment. Common symptoms related to anaemia.

Management.		
. Disorders related to gastrointestinal system:		
Introduction related to anatomy & physiology & function.		
Common symptoms of related disorders.		
The investigations used to detect the related disorders.		
Specific disorders Peptic ulcer & its complications. Diarrhea – acute & chronic		
Disorders related to urinary tract:		
Introduction related to anatomy & physiology & function of urinary		
system. Common symptoms of related disorders.		
The investigations used to detect the related disorder.		
Specific disorders:		
a- Acute & chronic renal failure		
b- UTI.		
Disorders of CNS:		
Introduction related to anatomy & physiology & function of urinary		
system. Common symptoms of related disorders.		
The investigations used to detect the related disorder		
Specific disorders		
Cerebrovascular accident.		
Epilepsy.		
Physical examination including mainly general examination		
Final exam		
Students are expected to attend every session of class, arriving on time,		
returning from breaks promptly and remaining until class is dismissed.		
Absences are permitted only for medical reasons and must be supported with		
a doctor's note.		
The faculty is committed to ensuring that students have the full range of		
knowledge and skills required for full participation in all aspects of their lives,		
including skills enabling them to be life-long learners. To ensure graduates		
have this preparation, such generic skills as literacy and numeric, computer,		
interpersonal communications, and critical thinking skills will be embedded in		
Information contained in this course outline is correct at the time of publication		
Content of the courses is revised on an ongoing basis to ensure relevance to		
changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible		

## **OBSTETRIC & GYNECOLOGY**

1	Course name	OBSTETRIC &GYNECOLOGY
2	Course Code	AN402
3	Course type: /general/specialty/optional	specialty

4	4 Accredited units 4			
5	Educational hours		4	
6	Pre-requisite requirements		PHYSIOLOGY	
7	Program offered t	the course	Anesthesia and intensive care	
8	Instruction Langua	age	English-Arabic	
9	Date of course approval		2022	
Brief	Description:	This course will provide students with a fundamental understanding of the nature of the science of Obstetric and Gynecology		
Textbooks required for this Course:		Book Title & ISBN: Ten Teacher of obstetric and Gynecology  Additional Resources: handouts, and web links may be used in this course at the discretion of your instructor.  Additional textbooks, Berek & Novak's Gynecology. 15th edition. by Jonathan S. Berek; Emil Novak : rClinical Gynecologic Oncology by Philip J. DiSaia; William T. Creasman; Robert S. Mannell; D. Scott McMeekin		
Cour	se Duration	28 weeks, 4 hours per day		
Deliv	rery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experimentsetc.		
Course Objectives:		Upon completion of this course, the student will have reliably demonstrated the ability to:  • Understandthe science of obstetric and gynecology.  • Identify different between normal and abnormal cases  • Recognize the Emergencies  • Identify representations, terms, conditions, andtreatments  • Recognize different between normal and abnormal cases  • Write reports about patient to recognize risk factors and be able to counsel patients on risk reduction. • Develop a differential diagnosis and management plan for common gynaecologic problems (dysmenorrhea, dysfunctional uterine bleeding, contraception, infertility, pelvic mass, menopausal symptoms, post menopausal bleeding, pelvic relaxation and urinary incontinence).		
• Al • Fi A 60% will be mater design		Assignment 2     Final Exam:     A 60% is required to will be required to material necessar.		
Con	tent Breakdown		Topical Coverage	

Session 1 (Week 1)	Topics to be covered in the session (week)	
	Introduction to GYNECOLOGY	
Session 2 (Week 2)	Topics to be covered in the session (week)	
	Menstrual cycle	
	Amenorrhea	
	Menorrhagia. Assignment 2 handed out	
Session 3 (Week 3)	Topics to be covered in the session (week)	
	Abortion.	
	Ectopic pregnancy	
Session 4 (Week 4)	Topics to be covered in the session (week)	
	Hydatidiform mole.	
Session 5 (Week 5)	Topics to be covered in the session (week)	
	•Carcinoma of the ovary	
	Carcinoma of the uterus	
Session 6 (Week 6)	Topics to be covered in the session (week)	
	- Carcinoma of the cervix - Benign diseases of the vagina	
Session 7 (Week 7)	Topics to be covered in the session (week)	
	Malignant diseases of the vagina	
Session 8 (Week 8)	Benign diseases of the vulva	
Session 9 (Week 9)	Topics to be covered in the session (week)	
	Benign diseases of the ovary	
Session 14 (Week 14)	Benign and malignant diseases of the uterine tubes	
Session 15 (Wee 15)	Midterm Exam	
Session 16 (Wee 16)	Endometriosis.	
Session 17 (Wee17)	Prolapse	
Session 18 (Wee18)		
Session 19(Wee 19)	Sexually transmitted diseases	
Session 20 (Week20)	Urinary incontinence and urodynamic	
Session 21 (Week 21)	Intersexuality.	
Session 25 (Week 25)	×	
Session 26 (Week 26)	Dysmenorrhea.	
Session 28(W 28)	Final exam	
STATE OF THE PARTY OF	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	

Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

## Pathology

1	Course name		Pathology
2	Course Code  Course type: /general/specialty/optional  Accredited units		AN304 General
3			
4			
5	Educational hou	ırs	4
6	Pre-requisite requirements  Program offered the course  Instruction Language  Date of course approval		Physiology & histology  Anesthesia and intensive care  English  2022
7			
8			
9			
Brie	f Description:	the basic principle the disease produ in the young min of laboratory invo	provide students with a fundamental understanding of es of Pathogenesis of disease process and the effect that uces on the various organ systems in the body. Inculcate ds the logical approach to diagnosis and interpretation estigations and introduce newly discovered genes and ave a profound impact on the pathogenesis of disease.
Textbooks required for this Course:		Additional Resour	I: Robbins basic pathology 9 <sup>th</sup> edition rces: handouts, and web links may be used in this cretion of your instructor roks, Textbook of Pathology, 6th Edition
Course Duration 28we		28weeks.	The state of the s

Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments			
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:			
	understanding of human disease.			
	diseases discussed in lecture			
	Identify cellular injury, infection, inflammation and repair, genetic disorders, immune response, circulatory disorders			
	<ul> <li>the student will be able to explain the basic nature of disease processes from the standpoint of causation, epidemiology, natural history, and the structural and functional abnormalities that result.</li> </ul>			
	Identify representations, terms, conditions, and			
	Recognize clinically different manifest and histopathologically			
	Construct a good pathological analysis			
	Develop and utilize the nomenclature used to describe inflammation in the various tissues and organs.			
	Implement population health, epidemiology principles and the scientific basis of research methods relevant to healthcare			
Course Assessments	<ul> <li>Assignment 1: 30%</li> <li>Assignment 2: 10 %</li> <li>Final Exam: 60 %</li> <li>A 60% is required for a pass in this course. Homework &amp; Assignments</li> <li>Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</li> </ul>			
Content Breakdown	Topics Coverage			
Session 1 (Week 1)				
Session I (Week I)	Topics to be covered in the session (week)			
	Introduction to Pathology			
	Types of stains, machines, reagent			
	Elements of the pathogenesis of diseases,			
Session 2 (Week 2)	Topics to be covered in the session (week)			
	cell injury and adaptation			
	causes and mechanism			
S1-2/W-12	morphology of cell injury  Taking to the second control of th			
Session 3 (Week 3)	Topics to be covered in the session (week)			
	Lysosome Autophagy and heterophagy			
Sandan A (Mr1, 4)	Causes and mechanism			
Session 4 (Week 4)	Causes and mechanism  Topics to be covered in the session (week)			
Session 4 (Week 4)	Causes and mechanism  Topics to be covered in the session (week)      Intracellular accumulation			
Session 4 (Week 4)	Causes and mechanism  Topics to be covered in the session (week)			

	cellular adaption of growth and differentiation		
	pathological calcification		
Session 6 (Week 6)	Topics to be covered in the session (week)		
	Acute inflammation		
	Vascular changes and cellular events, chemical mediators		
Session 7 (Week 7)	Topics to be covered in the session (week)		
	chronic inflammation cells		
	granulomatous inflammation		
Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9)	Topics to be covered in the session (week)		
	Repair:		
Session 14 (Week 14)	Cell growth • Regeneration • Wound healing.		
Session 15(Week 15)	Disorders of vascular flow & shock		
	•Oedema		
	Hyperemia or congestion		
Session 16(Week 16	Genetic defects		
Session 17(Week 17	Disorders of immune system :		
	Cell of immune system		
	•histocompatibility genes ( antigens		
Session 18(Week 18	Environmental diseases		
	Environmental pollution		
	•Injury by chemical agents		
	•Injury by physical agents		
	Nutritional diseases		
Session 19(Week 19	The response to infection:		
	Categories of infectious agents		
Session 20(Week 20 Session 21(Week 21	Host barriers to infection & how they break down		
Session 23(Week 23 Session 24(Week 24	How infectious agents cause disease		
Session 25(Week 25	Inflammatory response to infectious agents		
Session 26(Week 26	Final exam		
Attendance	Students are expected to attend every session of class, arriving on time,		
Expectations	returning from breaks promptly and remaining until class is dismissed.		
	Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range o		
المحالية الوا	knowledge and skills required for full participation in all aspects of their		
E   8	lives, including skills enabling them to be life-long learners. To ensure		
- x 18 8	graduates have this preparation, such generic skills as literacy and		

	numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

### **Pediatric**

1	Course name		Pediatric
2	Course Code		AN403
3	Course type: /general/specials	ty/optional	Specialty
4	Accredited units		4
5	Educational hour	'S	4
6	Pre-requisite req	uirements	None
7	Program offered	the course	Anesthesia and intensive care
8	Instruction Langu	iage	English
9	Date of course ap	oproval	2022
		are paralleled by or neonate is su adult. Congenita are of greater co physicians.	g a miniature adult. The obvious body size differences maturational changes. The smaller body of an infant obstantially different physiologically from that of an defects, genetic variance, and developmental issues oncern to pediatricians than they often are to adult
Textbooks required for this Course:		The Harriet Land Kliegman, R. M., Wilson, K. M. (Ed Philadelphia, PA: C. J. (Eds.). (2016	kins Hospital, Hughes, H. K., & Kahl, L. K. (Eds.). (2018). Handbook (21st ed.). Philadelphia, PA: Elsevier. 2. St. Geme, J. W., Blum, N. J., Shah, S. S., Tasker, R. C. & ds). (2020). Nelson textbook of pediatrics (21st ed.). Elsevier. 3. American Academy of Pediatrics & Baker, b). Red book atlas of pediatric infectious diseases (3rd llage, IL: American Academy of Pediatrics.
Course Duration		28 weeks.	
Delivery			roup interaction and discussion, self-directed participation, Laboratory experimentsetc.
Course Objectives:		By the end of the	coursethe student will be able to:
To the same of the		1	assess symptoms and treatment of different somatic tric diseases among children and youths.

	<ul> <li>Explain fluid balance and nutrition and their importance for illness in children and adolescents.</li> <li>Describe pharmacological principles in drug treatment of children and youths - identify possible integrative care suitable for children and youths.</li> <li>Explain pain physiology at children of different ages; evaluate pain and different methods for pain.</li> </ul>	
Course Assessments	<ul> <li>Assignment 1: 30%</li> <li>Assignment 2: 10 %</li> <li>Final Exam: 60 %</li> <li>A 60% is required for a pass in this course. Homework &amp; Assignments</li> <li>Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</li> </ul>	
Content Breakdown	Topics Coverage	
Session 1 (Week 1)	Topics to be covered in the session (week)  • Vital statistics  • Mortality rates in developed and developing countries	
Session 2 (Week 2)	Topics to be covered in the session (week)  • Classification and examination of newborn	
Session 3 (Week 3)	Topics to be covered in the session (week)  Growth and development  • Definition  • Genetics  • Factors affecting  • Growth centiles	
Session 4 (Week 4)	Topics to be covered in the session (week)  • Primary health care  •child health clinics  •school health	
Session 5 (Week 5)	Topi 3- Hospital nursing care health care  •The reaction to the hospitalization  •The responsibility of the nursecs to be covered in the session (week)	
Session 6 (Week 6)	Topics to be covered in the session (week)  • Vital statistics:  •Child population  •Child mortality	
Session 7 (Week 7)	Topics to be covered in the session :  New born nursing  Delivery room nursing  Nutrition  Prematurity nursing	

Company of the same	Congenital malformation		
	Neonatal jaundice		
Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9)	Topics to be covered in the session :		
	G.I.T diseases and nursing		
Session 10 (Week 10)	Acute diarrhea nursing care		
	Failure to thrive nursing care		
	Constipation nursing care		
	Procedures of the digestive system		
Session 11 (Week 11)	Respiratory diseases nursing		
	Acute respiratory infection nursing care		
	2. VRTI nursing		
	LRTI nursing     wheezing child nursing		
Session 12 (Week 12)	Cardiac diseases nursing		
	Congenital heart disease nursing care		
	Rheumatic heart disease nursing care		
	Heart failure nursing		
Session 13 (Week 13)	Infections disease nursing care		
	HIV infections and nursing precautions		
	Hepatitis nursing care		
	Vaccinations schedule		
Session 14(Week 14)	Accident and poisoning nursing management		
Session 15 (Week 15)	The diabetic child nursing		
Session 16 (Week 16)	Hematological diseases care		
	•The anemic child nursing care		
	Leukemia nursing		
Session 17 (Week 17)	Bleeding diathesis nursing care		
	Blood transfusion precautions		
Session 18 (Week 18)	Renal diseases nursing		
Session 19 (Week 19)	The C.N.S nursing		
Session 20 (Week 20)	Nursing procedures •		
	Mentally retarded child nursing		
Session 21 (Week21)	•Infections of nervous system		
	Epilepsy and its nursing care		
Session 26 (Week26)	Final exam		
Attendance	Students are expected to attend every session of class, arriving on		
Expectations	time, returning from breaks promptly and remaining until class is		
المحادة الود	dismissed. Absences are permitted only for medical reasons and must		
5/8/	be supported with a doctor's note.		

Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

### **PHARMACOLOGY**

1	Course name		Pharmacology
2	Course Code		AN205
3	Course type: /general/specia	lty/optional	specialty  4
4	Accredited units		
5	Educational hou	rs	
6	Pre-requisite red	quirements	biochemistry & Physiology
7	Program offered the course Instruction Language		Anesthesia and intensive care
8			English
9	Date of course a	pproval	2022
Brie	f Description:	the nature of dru	provide students with a fundamental understanding of egs including their origins, history, uses, and properties the science of how drugs act on biological systems and
Textbooks required for this Course:		Additional Resou Additional textbo Pharmacology: The Philadelphia, PA:	I: Goodman & Gilman's The Pharmacological Basis of rence Brunton 12th rces: Rang & Dales Pharmacology H P Rang 6 th ooks, . Golan, D., et. al., eds. Principles of he Pathophysiologic Basis of Drug Therapy. Lippincott Williams and Wilkins, 2004 cal Pharmacology.
Course Duration 28 week		28 week	
<b>Delivery</b> Lecture-based, G		1000 0000000000000000000000000000000000	roup interaction and discussion, self-directed participation, Laboratory experiments.

Course Objectives:	Upon completion of this course, the student will be able to:
	<ol> <li>Describe the general principles of pharmacotherapeutics, pharmacokinetics, pharmacodynamics, and pharmacogenetics/genomics in wellness promotion and illness prevention and treatment.</li> <li>Describe principles of safe administration of medications.</li> <li>Contrast the principles of pharmacotherapeutics across the lifespan including the effects of race, gender and, ethnicity.</li> <li>Investigate technologies and systems used for medication administration.</li> <li>Discuss legal and ethical parameters of medication administration.</li> </ol>
Course Assessments	<ul> <li>Assignment 1: 30%</li> <li>Assignment 2: 10 %</li> <li>Final Exam: 60 %</li> <li>A 60% is required for a pass in this course. Homework &amp; Assignments</li> <li>Students will be required to read chapters in their textbook, handouts,</li> </ul>
	and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Topics to be covered in the session :  Definitions of relevant terms Sources of drugs Routs of drug administration Pharmacokinetics of drugs Pharmacodynamics of drugs (mechanismsdrug actionsreceptors)
Session 2 (Week 2)	Topics to be covered in the session :  Autonomic nervous system Cholinergic system and related drugs Drugs acting on adrenergic system Neurohumoral transmission in the C.N.S.special emphasis on importance of various neurotransmitters like with GABA, Glutamate, Glycine, serotonin, dopamine.
Session 3 (Week 3)	Topics to be covered in the session :  Cardiovascular drugs and diuretics:  Drugs used in congestive heart failure
Session 4 (Week 4)	Antianginal drugs     Antihypertensive drugs     Diuretics     Anticoagulants
	160/3/0/ \11/9/

Prostaglandins		
Analgesics ,antipyretics ,anti-inflammatory drugs		
Topics to be covered in the session :		
Drugs acting on CNS:		
Opioid analgesics  Tapies to be severed in the asserter.		
Topics to be covered in the session :		
General and local anesthesia		
Drugs acting on respiratory system		
Midterm Exam		
Drugs used in bronchial asthma		
Drugs acting on GIT.		
Drugs used in peptic ulcer.		
Drugs acting on endocrine system:		
Adrenocoticosteroid		
•Insulin and oral ant diabetic drugs		
DRUGS ACTING ON GIT:		
DRUGS USED IN PEPTIC ULCER		
DRUGS ACTING ON ENDOCRINE SYSTEM:		
A ADRENOCORTICOSTEROID		
INSULIN AND ORAL ANT DIABETIC DRUGS		
DRUGS USED IN TREATMENT OF INFECTIONS DISEASES:		
ANTIBACTERIAL AGENTS		
ANTIMYOBACTERIAL AGENTS		
ANTIVIRAL AGENTS		
DEMONSTRATION OF THE STUDIED DRUGS, THEIR DOSAGE FORMS,		
AVAILABILITY AND THE MOST FAMOUS TRADE NAMES OF THAT ARE		
AVAILABLE IN LIBYAN PHARMACIES.		
MAKING PERIODIC VISITS FOR DIFFERENT DEPARTMENTS OF THE HOSPITAL		
ALLOWING STUDENTS TO TAKE IDEA ABOUT DRUG THERAPIES FOR COMMON		
DISEASE THROUGH CHECKING PATIENT'S FILES.		
Common diseases include		
CONGESTIVE HEART FAILURE		
Toro		
Hypertension		
ANGINA PECTORIS		
BRONCHIAL ASTHMA		
PEPTIC ULCER		

Session 27 (Week 27)	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised

## Hospital infection

1	Course name		Hospital infection
2	Course Code  Course type: /general/specialty/optional  Accredited units		AN306
3			general
4			4
5	Educational hours		4
6	Pre-requisite requirements  Program offered the course  Instruction Language		Microbiology
7			Anesthesia and intensive care
8			age English
9	Date of course approval		2022
measures to patient to p		measures to pre	provide students with a fundamental understanding of event transmission of blood borne pathogens from ent, healthcare worker to patient, and patient to er via contaminated injection equipment
Textbooks required for this Course:		Essentials Of Hos by SASTRY APURE	pital Infection Control January 1, 2019 BA S 3 ed
Course Duration 28 weeks		28 weeks	
		The second secon	roup interaction and discussion, self-directed participation, Laboratory experiments.

Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:
	-Be familiar with the microbial world and its relation to human lives.
	-Know the methods and equipment used to investigate the microbial world.
	-Have a background about structure, metabolic pathways, and genetics of bacterial cells.
	-Understand the growth requirements of bacteria and how to control their growth.
	<ul> <li>-Understand physical and chemical factors which affect microorganisms, principles of chemotherapy, microbial genetics, pathogenicity and microbial disease and mechanisms of resistance.</li> </ul>
	-Know the basic principles of bacterial culture techniques and general biochemical tests.
	-Describe the morphological features of bacteria microscopically and on culture.
	-Describe different laboratory diagnostic test used
Course Assessments	Assignment 1: 30%     Assignment 2: 10 %
	Assignment 2: 10 %     Final Exam: 60 %
	A 60% is required for a pass in this course. Homework & Assignments
	Students will be required to read chapters in their textbook, handouts,
	and any other material necessary for the course. Instructors are
	encouraged to use and design any assignment that may be beneficial
	to the student-learning outcome.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Topics to be covered in the session :
	Introduction, Definitions Of Epidemiology, Infection
Session 2 (Week 2)	Topics to be covered in the session :
	Dissemination, Nosocomial Infections
Session 3 (Week 3)	Topics to be covered in the session :
	Spectrum of Occurrence of case
	Incidence & Prevalence
Session 4 (Week 4)	Descriptive epidemiology
	Time, Place & Person
Session 5 (Week 5)	Topics to be covered in the session :
	Distribution Characteristics
Session 6 (Week 6)	Topics to be covered in the session :
	Dunamies of disease transmission
	Dynamics of disease transmission
	Source & Reservoir of infection
Session 7 (Week 7)	210 mg/s
Session 7 (Week 7)	Source & Reservoir of infection

Modes of transmission			
Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9)	Susceptible host		
Session 10 (Week 10)	Infection Categories		
Session 11 (Week 11)	Incidence & nature of endemic & epidemic Nosocomial infections		
Session 12 (Week 12)	Urinary tract infections		
Session 13 (Week 13)	Lower Respiratory infections		
Session 14 (Week 14)	Surgical Wound infections		
Session 15 (Week 15)	Infections gastroenteritis		
Session 16 (Week 16)	blood stream infections		
Session 17 (Week 17)	Infections of Burn Wounds		
Session 19 (Week 19)	infections of cardiac & Vascular Prosthesis		
Session 20 (Week 20)	Infections of Skeletal Prosthesis		
	Selected viruses of Nosocomial Importance		
Session 21 (Week 21)	Human Immunodeficiency Virus infection AIDS		
	Infections due to Infusion therapy		
Session 22 (Week 22)	Infection in transplant Recipients Other procedure related		
	infections		
	latrogenic or Physician Induced disease		
Session 23(Week 23)	Antibiotics & Nosocomial infections		
	Dialysis associated infections Intensive Care Unit		
Session 24 (Week 24)	The Inanimate environment		
	Clinical Lab acquired infections		
	The newborn nursery		
Session 25 (Week 25)	Infections in Nursing Homes		
Session 26 (Week 26)	Concept of legal aspects of Hospital infections Prevention & Control Programmes		
	Components of effective infection control programme		
	1- Surveillance		
Session 27 (Week 27	2- Control measures		
Session 28 (Week 28)	3- Investigation of endemic & Epidemic Nosocomial infections		
	4- infection control practitioner – concept		
	5- Hospital Epidemiologist – Concept of.		
	Plasmodium species.		
Session 29 (Week 29)	Final exam		
Attendance	Students are expected to attend every session of class, arriving on		
Expectations	time, returning from breaks promptly and remaining until class is		

	dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised	

## Research Methodology

1	Course name		Research Methodology
2	Course Code  Course type: /general/specialty/optional  Accredited units		e Code AN307
3			general
4			4
5	Educational hours		4
6	Pre-requisite requirements  Program offered the course  Instruction Language  Date of course approval		None
7			Anesthesia and intensive care
8			English
9			2022
to the use of be interpretation		to the use of b	cuses on the framework of the research process and basic statistics in the health field and the of results for improvement of levels of care an action taken
	- Fundamental of Research Methodology and Statistics - Research-Methods-in-Education-sixth-edition		
Course Duration 28weeks			
Delivery Lecture-based, Group interaction and discussion, self-directe activities, active participation, etc.			
Cour	Upon completion of this course, the students will have tell demonstrated the ability to:  a. Utilize the steps of the research process.		

	b. Recognize the importance of statistical analysis in their field of work
	c. Utilize descriptive statistics to analyze data from Medical Science project.
	Learning outcomes Knowledge and understanding:
	- Develop awareness on the importance of research in building nursing knowledge and guiding practice.
	- Discuss the research process and each of its steps.
	- Describe the characteristics of a researchable problem.
	- Recognize how to state research aim, questions and hypotheses.
	- Recognize the different types of research design.
	- Identify different methods of data collection.
	- Recognize sampling technique.
	Cognitive skills (thinking and analysis).
Course Assessments	Assignment 1: 30%
	Assignment 2: 10 %     Final Exam: 60 %
	A 60% is required for a pass in this course. Homework &
	Assignments Students will be required to read chapters in their
	textbook bandouts and any other material persons for the
	textbook, handouts, and any other material necessary for the
	course. Instructors are encouraged to use and design any
	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning
Content Breakdown	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage
Content Breakdown Session 1 (Week 1)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week)
Session 1 (Week 1)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage
Session 1 (Week 1)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week)
Session 1 (Week 1)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research
Session 1 (Week 1) Session 2 (Week 2)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research Assignment 2 handed out
Session 1 (Week 1) Session 2 (Week 2)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research
Session 1 (Week 1)  Session 2 (Week 2)  Session 3 (Week 3)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research Assignment 2 handed out  Topics to be covered in the session The major characteristics of
Session 1 (Week 1)  Session 2 (Week 2)  Session 3 (Week 3)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research Assignment 2 handed out  Topics to be covered in the session The major characteristics of research
Session 1 (Week 1)  Session 2 (Week 2)  Session 3 (Week 3)  Session 4 (Week 4)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research Assignment 2 handed out  Topics to be covered in the session The major characteristics of research Topics to be covered in the session (week)
Session 1 (Week 1)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research Assignment 2 handed out  Topics to be covered in the session The major characteristics of research  Topics to be covered in the session (week) Involvement in health research
Session 1 (Week 1)  Session 2 (Week 2)  Session 3 (Week 3)  Session 4 (Week 4)  Session 5 (Week 5)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research Assignment 2 handed out  Topics to be covered in the session The major characteristics of research  Topics to be covered in the session (week) Involvement in health research  Topics to be covered in the session (week)
Session 1 (Week 1)  Session 2 (Week 2)  Session 3 (Week 3)  Session 4 (Week 4)  Session 5 (Week 5)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research Assignment 2 handed out  Topics to be covered in the session The major characteristics of research  Topics to be covered in the session (week) Involvement in health research  Topics to be covered in the session (week) Guidelines for applied health research
Session 1 (Week 1)  Session 2 (Week 2)  Session 3 (Week 3)  Session 4 (Week 4)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research Assignment 2 handed out  Topics to be covered in the session The major characteristics of research  Topics to be covered in the session (week) Involvement in health research  Topics to be covered in the session (week) Guidelines for applied health research  Topics to be covered in the session (week) An overview about
Session 1 (Week 1)  Session 2 (Week 2)  Session 3 (Week 3)  Session 4 (Week 4)  Session 5 (Week 5)  Session 6 (Week 6)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research Assignment 2 handed out  Topics to be covered in the session The major characteristics of research  Topics to be covered in the session (week) Involvement in health research  Topics to be covered in the session (week) Guidelines for applied health research  Topics to be covered in the session (week) An overview about research steps.
Session 1 (Week 1)  Session 2 (Week 2)  Session 3 (Week 3)  Session 4 (Week 4)  Session 5 (Week 5)  Session 6 (Week 6)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research Assignment 2 handed out  Topics to be covered in the session The major characteristics of research  Topics to be covered in the session (week) Involvement in health research  Topics to be covered in the session (week) Guidelines for applied health research  Topics to be covered in the session (week) An overview about research steps.  Topics to be covered in the session (week) Purpose of health research.  Type of research.
Session 1 (Week 1)  Session 2 (Week 2)  Session 3 (Week 3)  Session 4 (Week 4)  Session 5 (Week 5)  Session 6 (Week 6)	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Topics to be covered in the session (week) Introduction.  Topics to be covered in the session (week) Definition of research Assignment 2 handed out  Topics to be covered in the session The major characteristics of research  Topics to be covered in the session (week) Involvement in health research  Topics to be covered in the session (week) Guidelines for applied health research  Topics to be covered in the session (week) An overview about research steps.  Topics to be covered in the session (week) Purpose of health research.

Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9)	Topics to be covered in the session (week)		
	Steps of research.		
Session 10(Week 10)	Step (1) formulating the problem statement.		
session rotifican rot	The information of problem statement.		
	Step (2) formulating objectives and research questions.		
	The important of formulating research question.		
	Reasonability of research question.		
	The disability of research question.		
Session 14(Week 14)	Step (3) literature review.		
	The preparatory phase.		
	The data collection phase.		
	The Different type of literature review.		
Session 16(Week 16	The source of literature review.		
	Searching for literature review.		
	Step of writing a literature review.		
	Guide lines for making a reference list.		
Session 17(Week 17	Step (4) study types and designs.		
	Exploratory studies.		
	Descriptive studies.		
	Comparative studies.		
	Intervention studies.		
	Define exploratory study.		
	Steps of descriptive study.		
	Types of comparative study.		
	Case –control study.		
Session 18(Week 18	Cohort study.		
	Advantages and disadvantages of each type of study.		
	Intervention study types.		
	Experimental study.		
	Aims of experimental study.		
	Study designs.		
	Qualitative design.		
	Quantitative design		
Session 19(Week 19	. Step of selection data collection techniques.		
	Methods of data collection techniques.		
	Using available information.		
	Observation.		
	Interviewing.		
	Self-administrated questionnaire.		
	Focus group discussion.		
	Data collection tech. and tools.		
	Advantages and disadvantages of data collection tech.	15%	

	Definition of bias.	
	Types of bias.	
	Bias in information collection.	
	Defective in instrument.	
	Observer bias.	
	Bias in selection.	
	Maximizing validity of research.	
Session 20(Week 20	Variables.	
	Numerical variables.	
	Categorical variable.	
	Types of variables.	
	Dependent and independent variables.	
	Confounding variable.	
Session 21(Week 21	Design of questionnaire.	
36331011 21(Week 21	Steps of design questionnaire.	
	Step (1) content.	
	Step (2) formulation questions.	
	Step (3) sequence of questions.	
	Format of questionnaire.	
	Translation of questionnaire.	
Session 23(Week 23	Sampling definition.	
	Sampling methods.	
	Qualitative sampling:	
	Convenience sampling.	
	Maximum variation sampling.	
	Snowball sampling.	
	Quantitative sampling methods:	
	Simple random sampling.	
	Systematic sampling.	
	Stratified sampling.	
Session 26 (Week 26)	Structure of research paper.	
Session 20 (Week 20)	Introduction.	
	Method.	
	Result.	
	Discussion.	
	Summary.	
	Title page / cover.	
	Table of contains.	
	Reference style.	
	Presentation skills:	
	What makes a good presentation?	22000
	Useful phrases for presentation.	15 10 day
	Steps towards effective presentation.	15/3/C ×
	Pronunciation and intonation.	

	Delivery skills.	
	Techniques in questioning  Final exam	
Session 27 (Week 27) Session 28 (Week 28)		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

# Microbiology

1	Course name		Microbiology	
2	Course Code  Course type: /general/specialty/optional		specialty	
3				
4	Accredited ur	nits	6	
5	Educational hours		6	
6	Pre-requisite requirements		Biology	
7	Program offered the course		Anesthesia and intensive care	
8	Instruction Language  Date of course approval		English	
9			2022	
Brief [	Description:	Perform accurately diffe	e students with a fundamental understanding of erent microbiological techniques for microscopic cultivation and identification of organisms.	
	Textbooks required Book Title & ISBN: Cl Edition.		cal Microbiology Made Ridiculous V Simple, 6th	

	Microbiology: An Introduction, 13th Edition.
	Brock Biology of Microorganisms, 14th Edition Authors: Michael T. Madigan, John M. Martinko, Kelly S. Bender, Daniel H. Buckley, David A. Stahl and Thomas Brock
Course Duration	28 week.
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:
	Describe the methods of specimen collection and transporter for bacteriological investigations
	2. Uses the light microscopic for examination of bacterial investigates
	3. Understanding the techniques used for identification of bacteria
	4. Know different biochemical tests important for identification of bacteria
	5- Perform accurately different microbiological techniques for
	microscopic examination, staining, cultivation and identification of organisms
Course Assessments	Assignment 1: 30%
	Assignment 2: 10 %
	Final Exam: 60 %  A 60% is required for a pass in this course. Homework & Assignments
	Students will be required to read chapters in their textbook, handouts,
	and any other material necessary for the course. Instructors are
	and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to
Content Breakdown	encouraged to use and design any assignment that may be beneficial to
Content Breakdown Session 1 (Week 1)	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage
	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Introduction to bacterial:
	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Introduction to bacterial: - General Characteristics of bacteria - Taxonomy - Classification of bacteria
	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Introduction to bacterial: - General Characteristics of bacteria - Taxonomy - Classification of bacteria - Morphology based on size, shape, arrangement, motility, flagella, spores
	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Introduction to bacterial: - General Characteristics of bacteria - Taxonomy - Classification of bacteria - Morphology based on size, shape, arrangement, motility, flagella, sporescapsules, cell wall, plasma membrane, pili, ribosomes.
Session 1 (Week 1)  Session 2 (Week 2)  &	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Introduction to bacterial: - General Characteristics of bacteria - Taxonomy - Classification of bacteria - Morphology based on size, shape, arrangement, motility, flagella, spores capsules, cell wall, plasma membrane, pili, ribosomes.  Lab: Collection and transport of different specimens
Session 1 (Week 1) Session 2 (Week 2)	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Introduction to bacterial: - General Characteristics of bacteria - Taxonomy - Classification of bacteria - Morphology based on size, shape, arrangement, motility, flagella, sporescapsules, cell wall, plasma membrane, pili, ribosomes.  Lab: Collection and transport of different specimens  Normal microbial flora of human body:  General attributes and virulence factors of bacteria causing infections
Session 1 (Week 1)  Session 2 (Week 2)  &	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Introduction to bacterial: General Characteristics of bacteria Taxonomy - Classification of bacteria Morphology based on size, shape, arrangement, motility, flagella, spores capsules, cell wall, plasma membrane, pili, ribosomes.  Lab: Collection and transport of different specimens  Normal microbial flora of human body: General attributes and virulence factors of bacteria causing infections Exotoxins, enterotoxins, endotoxins, neurotoxins
Session 1 (Week 1)  Session 2 (Week 2)  &	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Introduction to bacterial:  - General Characteristics of bacteria  - Taxonomy - Classification of bacteria  - Morphology based on size, shape, arrangement, motility, flagella, sporescapsules, cell wall, plasma membrane, pili, ribosomes.  Lab: Collection and transport of different specimens  Normal microbial flora of human body:  • General attributes and virulence factors of bacteria causing infections Exotoxins, enterotoxins, endotoxins, neurotoxins  • Host Parasite relationships
Session 1 (Week 1)  Session 2 (Week 2)  &	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Introduction to bacterial: - General Characteristics of bacteria - Taxonomy - Classification of bacteria - Morphology based on size, shape, arrangement, motility, flagella, spore capsules, cell wall, plasma membrane, pili, ribosomes.  Lab: Collection and transport of different specimens  Normal microbial flora of human body: - General attributes and virulence factors of bacteria causing infections Exotoxins, enterotoxins, endotoxins, neurotoxins - Host Parasite relationships  Harmful Microbial Interactions with Human:
Session 1 (Week 1)  Session 2 (Week 2)  &	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Introduction to bacterial: - General Characteristics of bacteria - Taxonomy - Classification of bacteria - Morphology based on size, shape, arrangement, motility, flagella, spores capsules, cell wall, plasma membrane, pili, ribosomes. Lab: Collection and transport of different specimens  Normal microbial flora of human body:  General attributes and virulence factors of bacteria causing infections Exotoxins, enterotoxins, endotoxins, neurotoxins  Host Parasite relationships  Harmful Microbial Interactions with Human: Entry of pathogens into the host
Session 1 (Week 1)  Session 2 (Week 2)  &	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.  Topics Coverage  Introduction to bacterial: General Characteristics of bacteria Taxonomy - Classification of bacteria Morphology based on size, shape, arrangement, motility, flagella, spores capsules, cell wall, plasma membrane, pili, ribosomes.  Lab: Collection and transport of different specimens  Normal microbial flora of human body: General attributes and virulence factors of bacteria causing infections Exotoxins, enterotoxins, endotoxins, neurotoxins Host Parasite relationships  Harmful Microbial Interactions with Human: Entry of pathogens into the host Mechanism of bacterial pathogenicity, colonization and growth

	1.Definitions		
	2.concepts of disinfection and sterilization		
	3.types and methods		
	disinfection of different hospital environments, Surgical tools and gowns.		
Session 4 (Week 4) &	Morphology, pathogenicity and laboratory diagnosis of Gram positive organisms-:		
Session 5 (Week 5)	- Gram positive cocci:		
	Staphylococci (pyogenic cocci and coagulase-negative staphylococcus)		
	a) Morphology, culture, and biological characteristics of Staphylococcu aureus		
	b) The virulence factors of Staphylococcus aureus and their effect (including SPA, coagulase, hemolysin, and enterotoxin)		
	c) The diagnostic laboratory tests for Staphylococcus aureus and the principles of controlling Staphylococcus infections		
Session 6 (Week 6)	Streptococcus and enterococcus.		
&	Streptococcus (classification)		
Session 7 (Week 7)	a) Morphology, culture, and biological characteristics of Streptococcus		
	b) The virulence factors of group A streptococcus, the pyogenic and nor pyogenic infections caused by group A streptococcus, diseases caused by group B, D streptococcus and enterococcus		
	c) The diagnostic laboratory tests for streptococcus and pneumococcus antistreptolysin O test (ASO test)		
Session 8 (Week 8)	Gram positive spore forming bacilli		
	Bacillus		
Session 9 (Week 9)	Gram positive spore forming bacilli		
	Clostridium		
Session 10 (Week	Gram positive non spore forming bacilli		
10)	Corynebacterium		
Session 11 (Week	- Gram positive non spore forming bacilli		
11)	Listeria		
Session 12 (Week	Gram- negative bacteria:		
12)	Neisseria		
Session 13 (Week	a) Classification of Neisseria (Neisseria meningitides and Neisseria		
13)	gonorrhoeae)		
	b) The biological characteristics and pathogenicity of - and immune response to - Neisseria meningitides		
	c) Principles of diagnostic laboratory tests, and principles of prevention and treatment of the diseases caused by <i>Neisseria meningitides</i>		
	d) Neisseria gonorrhoeae and infection		
Session 14 (Week	2 33 413 46		

Session 15 (Week 15)	Morphology, pathogenicity and laboratory diagnosis of Enterobacteriaceae- I: - Escherichia coli - Klebsiella			
Session 16 (Week	Morphology, pathogenicity and laboratory diagnosis of Proteus			
16)	- Shigella			
Session 17 (Week	- Enterobacter			
17)	- Citrobacter			
	- Yersinia			
	- Serratia			
Session 18 (Week	- Salmonella			
18)	Emerging bacterial disease			
Session 19 (Week	Non-Enterobacteriaceae:			
19)	- Pseudomonas			
	- Vibrio			
Session 20 (Week	Morphology, pathogenicity and laboratory diagnosis of			
20)	Gram negative bacteria: - Haemophilus			
Session 21 (Week	- Bordetella			
21)	- Rickettsia			
Session 22 (Week 22)				
Session 23 (Week 23)	Zoonotic bacteria – Brocella - Basturella - Francecella			
Session 24 (Week 24)	1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			
Session 25 (Week	Spirochaetes and Syphilis			
25)	Mycoplasma			
Session 26 (Week	Legionella			
26)	Chamydial infections			
(Week 27) (Week 28)	Final Exam			
Attendance	Students are expected to attend every session of class, arriving on time,			
Expectations	returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.			
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.			
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure			

relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

#### Anatomy

1	Course name		Anatomy
2	Course Code		AN203
3	Course type: /general/specialty/optional		specialty
4	Accredited units		6
5	Educational hours	•	6
6	Pre-requisite requ	uirements	Biology
7	Program offered t	the course	Anesthesia and intensive care
8	Instruction Langu	age	English
9	Date of course ap	proval	2022
for t	structure of various orga vascular, respiratory, dige part will be devoted to tut different body organs in ea		Atlas of Human Anatomy Anatomy
	ourse Duration 28 weeks.		
Deliv			participation, Laboratory experiments.
Cour	demonstrated t		n of this course, the student will have reliably ne ability to: ne four basic tissues: epithelial, connective, muscular,
			ections' of the skins epidermis, dermis, and yers (Integument

	Identify the bones of the skeleton, their surfaces, parts, articulations and movements or lack of movements at various articulations ( Joints		
	Recognize identify by name, location and action, superficial muscles of the human.		
Course Assessments	<ul> <li>Assignment 1: 30%</li> <li>Assignment 2: 10 %</li> <li>Final Exam: 60 %</li> <li>A 60% is required for a pass in this course. Homework &amp; Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</li> </ul>		
Content Breakdown	Topics Coverage		
Session 1 (Week 1)	Topics to be covered in the session (week)		
	Introduction to Introduction, Body Organization		
Session 2 (Week 2)	Topics to be covered in the session (week)		
	Terminology OF Anatomy		
Session 3 (Week 3)	Topics to be covered in the session (week)		
	Skeletal System		
Session 4 (Week 4)	Topics to be covered in the session (week) Tracheal intubation "indications" Articulations		
Session 5 (Week 5)	Topics to be covered in the session (week)		
	Muscular System		
Session 6 (Week 6)	Topics to be covered in the session (week)		
	Heart and Circulation		
Session 7 (Week 7)	Topics to be covered in the session (week)		
	Circulatory System		
Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9)	Respiratory System		
Session 14 (Week 14)			
Session 15(Week 15)	Central Nervous System		
Session 16(Week 16	Peripheral Nervous System		
Session 17(Week 17	Autonomic Nervous System		
Session 18(Week 18	Skin & Sensory System		
Session 19(Week 19	Urinary System		
Session 20(Week 20			
Session 21(Week 21	Enduocrine System		
Session 22/Week 22	Fmale Reproductive		
Session 22(Week 22	I male reproductive		

Session 24(Week 24	Review Review		
Session 25(Week 25 Session 26(Week 26			
(Week 27) (Week 28)	Final exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

# Physiology

1	Course none		DL -:-I
1	Course name		Physiology
2	Course Code		AN201
3	Course type: /general/specialty/optional		
4	Accredited unit	red units 4	4
5	Educational hours  Pre-requisite requirements  Program offered the course  Instruction Language  Date of course approval		4
6			Biology  Anesthesia and intensive care
7			
8			English
9			2022
Brie	f Description	structure of the physiology of v vascular, respira part will be devo	n to physiology course will study the function and human body and its parts. Content includes basic rarious organ systems of the body, neurons, cardiotory, digestive and uro-genital systems. The practical sted to tutorials and studying on anatomical models or gans in each system that is mentioned above

Textbooks required for this Course:	Book Title & ISBN: Medical Physiology Eleventh Edition Arthur C. Guyton, M.D. Professor Emeritus Department of Physiology and Biophysics University of Mississippi Medical Center Jackson, Mississippi Deceased John E. Hall, Ph.D. Professor and Chairman Department of Physiology and Biophysics University of Mississippi Medical Center Jackson, Mississippi Additional Resources: Human Physiology by Wikibooks contributo
Course Duration	28 weeks
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.
Course Assessments	<ol> <li>Upon completion of this course, the student will have reliably demonstrated the ability to:</li> <li>Demonstrate an understanding of the physiology and basic regulatory concepts related to the functioning of life processes.</li> <li>studied in the course will include Cell Physiology, Neurophysiology, Endocrinology, Muscle Physiology, and Immunology.</li> <li>Understand the key physiology themes (homeostasis &amp; regulation, structure/function relationships, compartmentation, biological energy transformation, and communication &amp; information flow).</li> <li>Provide or recognize examples of each from the different organ systems.</li> <li>Assignment 1: 30%</li> <li>Assignment 2: 10 %</li> <li>Final Exam: 60 %</li> <li>A 60% is required for a pass in this course. Homework &amp; Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial</li> </ol>
Content Breakdown	to the student-learning outcome.  Topics Coverage
Session 1 (Week 1)	Topics to be covered in the session (week) Introduction to Introduction to physiology The cell & it is function Transport through the cell membrane
Session 2 (Week 2)	Topics to be covered in the session (week)
	Nerve Membrane potentials and action potentials
Session 3 (Week 3)	Membrane potentials and action potentials  Topics to be covered in the session (week)  Muscle Membrane potential Contrition of skeletal muscle Neuromuscular transmission
Session 3 (Week 3)  Session 4 (Week 4)	Membrane potentials and action potentials  Topics to be covered in the session (week)  Muscle  Membrane potential  Contrition of skeletal muscle

	Rhythmical excitation of the heart
	The Electrocardiogram
Session 5 (Week 5)	Topics to be covered in the session (week)
	The circulation
	Overview of the circulation, medical physics of pressure flow resistance
	Special functions of the systemic circulation arteries
	Veins and capillaries
	Cardiac out put
	Heart Sounds
	Capillary fluid exchange interstitial fluid dynamics and liymph flow
	Local control of blood flow by the tissues
	Nervous control of the circulation
	Role of the kidney in long term regulation of arterial Pressure and in hypertension
Session 6 (Week 6)	Topics to be covered in the session (week)
	The kidney
	Nephron structure
Session 7 (Week 7)	Topics to be covered in the session (week)
	Types of nephron
	Basic theory of nephron function
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Topics to be covered in the session (week)
	Formation of the urine by the kidney
Session 10 (Week 10)	Composition of glomerular filtrate how to Measure glomerular filtration rate.
	Control of glomerular filtration rate renal auto regulation .
	Absorptive capabilities of different tubule segments.
	Concentration and diluting of the urine.
	Acid base balance.
Session 11 (Week 11)	Blood cells RBCs, WBCs, platelet
	Immunity allergy blood groups and transfusion
Session 12 (Week 12)	Homeostasis and blood coagulation
	Types of anemia
Session 13 (Week 13)	Respiration
	Pulmonary ventilation
	Distance of the later
Session 14 (Week 14)	Pulmonary circulation
Session 14 (Week 14) Session 15 (Week 15)	Transport of oxygen and carbon dioxide between the alveoli and the tissue cells

Session 17 (Week 17)	The gastrointestinal tract
	Structure of gastrointestinal tract
	Innervations of GIT
Session 19 (Week 19)	Gastrointestinal hormones
	Gastrointestinal secretion
Session 20 (Week 20)	Digestion and absorption of proteins
	Digestion and absorption of lipid
Session 21 (Week 21)	Digestion and absorption of carbohydrates
	Absorption of salts and water along the GIT
Session 22 (Week 22)	Endocrinology & reproduction
	Nature of hormone
	Mechanisms of hormonal action
	Pituitary hormones
Session 23(Week 23)	Thyroid gland & thyroid hormone
	The adrenocortical hormone
	Insulin, glucagon & diabetes mellitus
	Parathyroid hormone
Session 24 (Week 24)	Male reproductive functions the male sex hormones
	Female reproductive system
Session 25 (Week 25)	The nervous system
	Organization of the nervous system
	Sensory receptors, neural ciruits for processing information, tactile
	and position senses
Session 26 (Week 26)	Neurophysiology of vision
	The sense of hearing
	The chemical senses of taste and smell
	Metabolism and temperature regulation
Session 27 (Week 27	Metabolism of carbohydrates
	Lipid and protein metabolism
	Energetic, metabolic rate and regulation of body temperature
Session 28 (Week 28)	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on
Expectations	time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must
	be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range
1000000	of knowledge and skills required for full participation in all aspects of
100 1001	their lives, including skills enabling them to be life-long learners. To
370000	ensure graduates have this preparation, such generic skills as literacy

	and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised

### **Medical Terminology**

Course Code Course type: gene Accredited units Educational hours Pre-requisite requirements Program offered to Instruction Langua Date of course ap Description:	uirements the course age proval The study of medical termi	AN207  specialty  4  4  English  Anesthesia and intensive care  English  2022  inology introduces students to the language I gain an understanding of basic elements
Accredited units Educational hours Pre-requisite requerors Program offered to Instruction Language	the course age proval The study of medical termi	4 English Anesthesia and intensive care English 2022 inology introduces students to the language
Pre-requisite requirements of the contraction of the course appears of the course appear	the course age proval The study of medical termi of medicine. Students will	English  Anesthesia and intensive care  English  2022  inology introduces students to the language
Pre-requisite requirement of the contraction of the course appropriate of course appropriate appropriate of course appropriate appropr	the course age proval The study of medical termi of medicine. Students will	English  Anesthesia and intensive care  English  2022  inology introduces students to the language
Program offered to nstruction Langu Date of course ap	the course age proval The study of medical termi of medicine. Students will	Anesthesia and intensive care  English  2022 inology introduces students to the language
nstruction Langu Date of course ap	proval  The study of medical termi of medicine. Students will	English 2022 inology introduces students to the language
Date of course ap	The study of medical termi of medicine. Students will	2022 inology introduces students to the language
	The study of medical termi of medicine. Students will	inology introduces students to the language
Description:	of medicine. Students will	
	student will define, interpressive structure and function, oncology, and pharmacology	is a whole. Utilizing a systems-approach, the ret, and pronounce medical terms relating to pathology, diagnosis, clinical procedures ogy. In addition to medical terms, common o each system will be interpreted
Course:  Medical Terminology for Health Professions, Spiral bound Version 8 <sup>th</sup> Edition by Ann Ehrlich (Author), Carol L. Schroeder (Author), Laura Ehrlich (Author), Katrina A. Schroeder, 2008		
<b>Duration</b>	28weeks.	. Schroeder, 2006
ry	The state of the s	raction and discussion, self-directed ion, Laboratory experimentsetc.
e Objectives:	At the end of the course st	udents will be able to:
A Second	suffixes, roots, combining for Identify medical terminology physiology of the human b	gy as it relates to the anatomy and
		Objectives:  At the end of the course st Identify the basic structure suffixes, roots, combining Identify medical terminolo physiology of the human b Identify the rules of building the rules of buil

Course Assessments	<ul> <li>Assignment 1: 30%</li> <li>Assignment 2: 10 %</li> <li>Final Exam: 60 %</li> <li>A 60% is required for a pass in this course. Homework &amp; Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</li> </ul>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Topics to be covered in the session (week)
	Introduction to Advanced English grammar in detail
Session 2 (Week 2)	Topics to be covered in the session (week)
	Parts of speech & Tenses (Review).
	Prepositions & Usage.
	Conjunctions, Sentence-Linkers & their uses.
	Words often confused
	Assignment 2 handed out
Session 3 (Week 3)	Topics to be covered in the session (week)
	Interchange of Active & Passive Voice.
	Direct & Indirect Speech
Session 4 (Week 4)	Topics to be covered in the session (week)
	Formation of Compound words (Root words, Prefixes & Suffixes).
Session 5 (Week 5)	Topics to be covered in the session (week)
	•Root words, Prefixes & Suffixes used in the Medical field with special
	emphasis on body parts & organs
Session 6 (Week 6)	Topics to be covered in the session (week)
	Specialists & Specialties & formation of their adjectives using
	suffixes
Session 7 (Week 7)	Topics to be covered in the session (week)
	Prefixes & Suffixes used to indicate Surgical procedures
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Topics to be covered in the session (week)
	Terminology of some common diseases & conditions.
Session 14 (Week 14)	Prefixes and Suffixes used to indicate Instruments; Machines &
	Techniques used in the diagnostic field.
Session 15(Week 15)	•Terms without clear root words.
	Commonly used Medical Abbreviations.
Session 16(Week 16	Comprehensions& composition
Session 17(Week 17	•Reading Comprehension
	The state of the s

Session 18(Week 18	Selecting & writing short answers.	
Session 19(Week 19 Summarizing.		
Session 20(Week 20	Some commonly used Proverbs of the English Language and their Explanation.	
Session 21(Week 21	Paragraph – writing.	
Session 23(Week 23	General Topics.	
Session 24(Week 24	Topics related to Science & Medicine	
Session 24(Week 24	Some Proverbs & their expansion into a paragraph.	
Session 26(Week 26	Final exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

### Anesthesia Techniques

AN302 specialty
specialty
6
6
None
esthesia and intensive care
English
2022

of the medical information, Unauthorized disclosure, retention of

	medical records and other various aspects and the importance of
	Records and document related to MLC
Textbooks required for this Course:	The Anesthesia Technician & Technologist's Manual: All You Need to Know for Study and Reference 1st Edition by M.D. Woodworth, Glenn (Author), Shannon Sayers-rana (Author), M.D. Kirsch, Jeffrey R. (Author)
Course Duration	28weeks
Delivery	Lecture-based, Group interaction and discussion,
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:
	<ul> <li>Explicate the Medico legal aspects of medical records, medicolegal case and type.</li> <li>Describe the importance of Records and document related to MLC</li> </ul>
	<ul> <li>Ensure confidentiality</li> <li>Discuss when to release medical information, Unauthorized disclosure, retention of medical records and other various aspects</li> </ul>
Course Assessments	<ul> <li>Assignment 1: 30%</li> <li>Assignment 2: 10 %</li> <li>Final Exam: 60 %</li> <li>A 60% is required for a pass in this course. Homework &amp; Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</li> </ul>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul> <li>Topics to be covered in the session (week)</li> <li>Introduction Endotracheal Intubations: Types, indications, contraindications.</li> <li>Types of Liquefaction of Gases, Cylinders:</li> <li>Critical temp-, differences between O<sub>2</sub> cylinder, N<sub>2</sub>O cylinder.</li> <li>Elements of Anesthesia Machine: Components, function</li> </ul>
Session 2 (Week 2)	Topics to be covered in the session (week) Vaporiziers: Types, characteristics. Local Anesthesia: Assignment 2 handed out
Session 3 (Week 3)	Topics to be covered in the session (week) Chemistry, mechanism of action, metabolism, systemic toxicity,
Session 4 (Week 4)	Topics to be covered in the session (week) Factors affecting duration
session 4 (vveek 4)	of action.

Session 5 (Week 5)	Topics to be covered in the session (week)
	Spinal Analgesia
Session 6 (Week 6)	Topics to be covered in the session (week)
	Epidural Analgesia: Indications, complications, procedure
Session 7 (Week 7)	Topics to be covered in the session (week)
	Respiratory Obstruction (Upper, Lower)
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Topics to be covered in the session (week)
Session 14 (Week 14)	Pain Relief Labour
Session 15(Week 15)	Disorders of vascular flow & shock
	Anatomy of n.supply of + genital system, how to qlleriale pain
Session 16(Week 16	Positioning During Anesthesia: Lazards, precantions
Session 17(Week 17	Pediatric Anesthesia:
Session 18(Week 18	<ul> <li>Anatomical and physiological differences between pediatric and adult respiratory tract, demonstration of Ayre's T-piece.</li> </ul>
Session 19(Week 19	Demonstration of different types of endotracheal tubes (ordinary, Lessaped, armoured, polar, Ring Adair Elwyn, laser resistant, double lumen endo-broncheal tube)
Session 20(Week 20	Demonstration of spinal needle and epidural (Touhy) needle.
Session 21(Week 21	Demonstration of anaesthesia machine (flowmeter , flow control valve , O <sub>2</sub> flush valve , vaporizer , magill attachment)
Session 23(Week 23	Demonstration of some intubation aids ( magill forceps , naso- pharyngeal airway , oro-pharyngeal airway , satellite , laryngoscope)
Session 26(Week 26	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reEasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

#### **CLINICAL ANESTHESIA**

1	Course name		CLINICAL ANESTHESIA
2	Course Code		AN400
3	Course type: gen	eral/specialty/optional	specialty
4	Accredited units		6
5	Educational hou	rs	6
6	Pre-requisite rec	uirements	Human Anatomy - Anesthesia Technology Clinical Physiology
7	Program offered	the course	Anesthesia and intensive care
8	Instruction Lang	ıage	English
9	Date of course approval		2022
	books required	knoledge in Monitoring various specialty and anaesthesiology.  Book Title & ISBN: Practic	n Blood & blood products transfusion, detailed and the basic knowledge in Anaesthesia for the detailed knowledge in Procedures in ce of Anaesthesiology – Wylie – Churchill testhesiology – Gray, Nunn, Utting. 3.
		Anaesthetist – Harold Wi Equipments – Dorsh & Do	e – Ronald D.Miller. 4. Anatomy for Ilis. 5. Understanding Anaesthesis orsh
	rse Duration	28 weeks	
Deli	very	The state of the s	eraction and discussion, self-directed ition, Laboratory experiments.
Cou	rse Objectives:	the ability to:  Perform a thorough history Recognize patient comorbid the patient.  Aware of indications for furt optimization prior to surger Perform a thorough airway	lities and how they relate to the anesthetic care of ther patient testing or need for further y.
Cour	rse Assessments	<ul> <li>Assignment 1: 30%</li> <li>Assignment 2: 10 %</li> <li>Final Exam: 60 %</li> <li>A 60% is required for a passignment of the second of</li></ul>	ass in this course. Homework & Assignments to read chapters in their textbook, handouts, ecessary for the course. Instructors are

	encouraged to use and design any assignment that may be beneficial to the student-learning outcome.		
Content Breakdown	Topics Coverage		
Session 1 (Week 1)	Topics to be covered in the session (week)		
	Introduction to Anaesthesia and different types of anaesthesia		
	Types of Elements.		
Session 2 (Week 2)	Topics to be covered in the session (week)		
	Introduction, History		
	-responsibility of anesthesiologist		
	Assignment 2 handed out		
Session 3 (Week 3)	Topics to be covered in the session (week)		
	<ul> <li>Principles and Practice of Anaesthesiology including pre, per and post operative care.</li> </ul>		
Session 4 (Week 4)	Topics to be covered in the session (week)		
	Preanesthetic examination		
	Preanesthetic medication		
Session 5 (Week 5)	Topics to be covered in the session (week) Stages of anesthesia		
Session 6 (Week 6)	Topics to be covered in the session (week) . Monitoring of patient under anesthesia		
Session 7 (Week 7)	Topics to be covered in the session (week) Types of anesthesia		
	"General		
Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9)	Topics to be covered in the session (week)		
Session 10 (Week 10)	Drugs used to supplement general anesthesia		
	Intra operative fluid therapy		
Session 11 (Week 11)	Different methods of Anaesthetic Techniques.		
Session 12 (Week 12)	Regional anaesthesia including, spinal, epidural and caudal etc		
Session 13 (Week 13)	Local anaesthesia including nerve blocks, management of chronic pain		
Session 14 (Week 14)	Blood transfusion – Fluid and electrolyte balance.		
Session 15 (Week 15)	Fires and explosion.		
Session 16 (Week 16)	Oxygen therapy and Management of both acute and chronic respiratory insufficiencies, and ventilator commitments in I.C.U.		
Session 17 (Week 17)	Anesthesia in unprepared patient		
Session 17 (Week 17) Session 19 (Week 19)	Anesthesia in unprepared patient  Post anesthesia complications		
Session 19 (Week 19)	Post anesthesia complications		
Session 19 (Week 19) Session 20 (Week 20)	Post anesthesia complications  Recovery room		

Session 23(Week 23)	Anaesthesia in abnormal environments like high attitude anaesthesia etc. Complication in Anaesthesiology and their management both per and post operatively	
Session 24 (Week 24)	Pre anesthetic checkup	
Session 25 (Week 25)	Preparation of O.T. for general anesthesia	
Session 26 (Week 26) Reviw		
Session 27 (Week 27)	Final exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reEasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

#### Surgery

1	Course name		Surgery
2	Course Code		AN305
3	Course type: general/specialty/optional		specialty
4	Accredited units		4
5	Educational hours		4
6	Pre-requisite requirements		Anatomy
7	Program offered the course		Anesthesia and intensive care
8	Instruction Language		English
9	Date of course approval		2022
Brie	f Description:		dents with a fundamental understanding res the generic and specialty knowledg

clinical and technical skills and behaviours to manage patients presenting with a wide range of emergency general surgery conditions

and elective conditions in the generality of General Surgery.

Textbooks required for this Course:	Textbook of Surgery, 3rd Edition, by Shaik Zaheer Ahmed, Medicine And Surgery: A Concise Textbook August 2005, Edition: 1, Publisher: Wiley-Blackwell, Authors: Giles Simon Kendall and Kin Yee Shiu 28 weeks
Delivery	Lecture-based, Group interaction and discussion, self-directed
	activities, active participation, Laboratory experimentsetc.
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:
	Understand common surgical problems
	For each presenting symptom, condition, or disease state, the student should be expected to know:
	Anatomy
	Pathophysiology
	Common associated symptoms
	Positive physical findings
	Differential diagnosis
	Treatment
	medical/surgical alternatives
	when treated medically, indications for surgical intervention
	risk factor assessment
	Identify pre- and post-operative management
	complications: recognition and treatment Adjuvant therapies – indications and outcome
Course Assessments	<ul> <li>Assignment 1: 30%</li> <li>Assignment 2: 10 %</li> <li>Final Exam: 60 %</li> <li>A 60% is required for a pass in this course. Homework &amp; Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</li> </ul>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Topics to be covered in the session (week)
	Introduction to surgery
	Types of preparations
	Elements of Operative
Session 2 (Week 2)	Topics to be covered in the session (week)
	Hemorrhage,     chest injuries     head trauma
Session 3 (Week 3)	Assignment 2 handed out
Jession 5 (Week 5)	Topics to be covered in the session (week)

	<ul> <li>post operative-nursing</li> <li>Assessment of respiratory system complication &amp;management</li> <li>Nutrition</li> </ul>	
	Bowel elimination	
Session 4 (Week 4)	Topics to be covered in the session (week)	
	Clinical history of surgical part with clinical examination	
	Administration of drugs.	
	Wound drain care	
	Sutures, suturing, removal, complication.	
	Isolation.	
	Tracheostomy care.	
	Gastric aspiration.	
	Enteral feeding types, complications.	
	Gastric lavage.	
	Parenternal nutrition.	
	Urinary catheterization.	
	Rectal examination & enema	
	Flatus tube.	
	Stoma care.	
	Skin, nail, mouth care.	
Session 5 (Week 5)	Topics to be covered in the session (week)	
	1- Shock – blood loss and fluid balance.	
	2- Burns, types, effect, complications, management.	
	3- Wounds, types, healing, suture, complication of	
	healing.	
	Inflammation and cross infection, types, spread, complications,	
	treatment, surgical treatment of abscess	
Session 6 (Week 6)	Topics to be covered in the session (week)	
	Acute abdomen – symptoms, signs, investigation, causes and	
	management	
	Appendix, acute appendicitis, pathology, types, clinical features,	
	treatment, complications.	
	Disorders of stomach and duodenum: peptic ulcer.	
Session 7 (Week 7)	Topics to be covered in the session (week)	
	Disorders of rectum & anus, anatomy, sign & symptoms.	
	<ul> <li>Disorders of rectum &amp; anus, anatomy, sign &amp; symptoms, investigations, types, hemorrhoids, abscess, fistula.</li> </ul>	
Session 8 (Week 8)		
Session 8 (Week 8) Session 9 (Week 9)	investigations, types, hemorrhoids, abscess, fistula.	
Session 9 (Week 9)	investigations, types, hemorrhoids, abscess, fistula.  Midterm Exam	
	Midterm Exam  Topics to be covered in the session (week) Appendix, acute	

Session 12 (Week 12)	Diseases of gall bladd	
Session 13 (Week 13)	Gallstone and cholecystitis, & obstructive jundice, anatomy, clinical	
	features, investigations, treatment and complication.	
	Portal hypertension. Causes, investigations, complications,	
	management	
Session 14 (Week 14)	General Surgery (practical	
Session 15 (Week 15)	History taking	
Session 16 (Week 16)	History taking	
Session 17 (Week 17)	Measurement of blood pressure, pulse, temperature and respiration	
Session 19 (Week 19)	Analysis of pain	
Session 20 (Week 20)	Preparation of patient for O.T	
Session 21 (Week 21)	Dressings	
Session 22 (Week 22)	I.V. access	
Session 23(Week 23)	Bowl preparation	
Session 24 (Week 24)	Wounds and burns	
Session 25 (Week 25)	Post operative care	
Session 26 (Week 26)	Demonstration of different surgical conditions	
Session 27 (Week 27)	Final exam	
Attendance	Students are expected to attend every session of class, arriving on	
Expectations	time, returning from breaks promptly and remaining until class is	
	dismissed. Absences are permitted only for medical reEasons and must be supported with a doctor's note.	
Generic Skills		
Generic Skins	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of	
	their lives, including skills enabling them to be life-long learners. To	
	ensure graduates have this preparation, such generic skills as literacy	
	and numeric, computer, interpersonal communications, and critical	
	thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of	
	publication. Content of the courses is revised on an ongoing basis to	
	ensure relevance to changing educational employment and marketing	
	needs. The instructor will endeavor to provide notice of changes to	
	students as soon as possible.	



#### Safety Measure

1	1 Course name Safety Measures		Safety Measures
2	Course Code  Course type: /general/specialty/optional		AN206 general
3			
4	Accredited units		4
5	Educational hou	rs	4
6	Pre-requisite rec	quirements	None
7	Program offered	the course	Anesthesia and intensive care
8	Instruction Lang	uage	English
9	Date of course a	pproval	2022
compliance, man studies of univer and animals, and  Textbooks required for this Course:  Course Duration  Delivery  Course Duration  Delivery  Course Objectives:  By the end of the experience by Develop critic on Develop critic on Develop expense of the project of the project of the project of the course of the project of the course of the project of the project of the project of the course of the project of		include laborator compliance, man studies of univers and animals, and - Sibel Uzun, Fatih Ve Halk Sağlığı Lak SecurityY.Hakan A Rehberi, Sağlık Ba Mikrobiyoloji Refe 28 weeks.  Lecture; Question Play, Brainstormin	ry emergencies, chemical hazards, lab inspections and aging and working with chemicals, waste handling, case sity accidents, laboratory equipment, biosafety, radiation, microfabrication and nanomaterials.  Özçelik, Laboratuvar Güvenliği El Kitabı, Tüketici Güvenliği boratuvarları Dairesi Başkanlığı, 2017, 12-21.  Abacıoğlu, Cemile Sönmez, UMS Laboratuvar Güvenliği kanlığı, Türkiye Halksağlığı Kurumu Başkanlığı, enrans Laboratuvarları Daire Başkanlığı 2014, 141-157  Answer; Problem Solving; Discussion; Case Study; Role ng; Six Hats Thinking; Opinion Pool; Debate; Workshop
		The state of the s	rning; Problem Based Learning; Storyline; Scenario Based ised Learning; Case Based Learning
		<ul> <li>Develop intuit</li> <li>Apply concept</li> <li>Experience bate</li> <li>Develop critic</li> <li>Develop expe</li> <li>Learn to use stime</li> <li>Develop report</li> <li>Practice collable</li> <li>Exercise curio</li> </ul>	course the student will be able to:  tion and deepen understanding of concepts.  ts learned in class to new situations.  sic phenomena.  al, quantitative thinking.  rimental and data analysis skills.  cientific apparatus.  nate statistical errors and recognize systematic errors.  rting skills (written and oral).  corative problem solving.  posity and creativity by designing a procedure to test a
Cou	hypothesis.  ourse Assessments Assignment 1 Assignment 2 Final Exam:		

	A 60% is required for a pass in this course. Homework & Assignments	
	Students will be required to read chapters in their textbook, handouts, and	
	any other material necessary for the course. Instructors are encouraged to	
	use and design any assignment that may be beneficial to the student-	
	learning outcome.	
Content Breakdown Topics Coverage		
Session 1 (Week 1)	Introduction of the course.	
Session 2 (Week 2)	Classification of medical laboratories	
Session 3 (Week 3)	Medical Laboratory Safety – Overview	
Session 4 (Week 4)	Risk management in medical laboratory	
Session 5 (Week 5)	Personal protective equipment	
Session 6 (Week 6)	Chemical safety	
Session 7 (Week 7)	Chemical safety	
Session 8 (Week 8)	Midterm Exam	
Session 9 (Week 9)	Biological safety	
	Physical security and data security	
Session 14 (Week	Waste management	
14)	First aid-Emergency action plans in medical laboratory accidents	
	Rules to be followed in the medical laboratory - Class work	
	Review of the semester	
	Final Exam	
Session 16 (W 16)	Final Exam	
Attendance	Students are expected to attend every session of class, arriving on time,	
Expectations	returning from breaks promptly and remaining until class is dismissed.	
	Absences are permitted only for medical reasons and must be supported	
	with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of	
	knowledge and skills required for full participation in all aspects of their	
	lives, including skills enabling them to be life-long learners. To ensure	
	graduates have this preparation, such generic skills as literacy and numeric,	
	computer, interpersonal communications, and critical thinking skills will be	
	embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of	
	publication. Content of the courses is revised on an ongoing basis to ensure	
	relevance to changing educational employment and marketing needs. The	
	instructor will endeavor to provide notice of changes to students as soon a	
	possible. Timetable may also be revised.	



#### **Medical Ethics**

1	Course name	Medical Ethics
2	Course Code	AN303
3	Course type: /general/specialty/optional	general
4	Accredited units	4
5	Educational hours	4
6	Pre-requisite requirements	None
7	Program offered the course	Anesthesia and intensive care
8	Instruction Language	English
9	Date of course approval	2022



Brief Description	This course will explore the major ethical issues confronting the practices of
	medicine and biomedical science. We will become familiar with legal and
	institutional positions, consider and debate opposing arguments on the
Touth calls as autoral	various topics, and examine relevant case studies.
Textbooks required	1.Principles of Ethics for The Health Profession 2nd Edition. Timby, and
for this Course:	Black, Evolve
	2. Bioethics, 1st edition, Letty Kwan, C and E Publishing
	3. Tom L. Beauchamp (Author), James F. Childress (Author). Principles of Biomedical Ethics. 4th Edition. Oxford University Press. 1994. ISBN-
	10:019508537X
	4- Klinik Biyokimya Analiz Metodları, Bahattin Adam ve Yasemin Ardıçoğlu,
	Atlas Kitapçılık, 2002, ISO 15189
	5- Principles of Ethics for the Health Profession 2nd Edition. Tim by, and
	Black, Evolve
	6- Bioethics, 1st edition, Letty Kwan, C and E Publishing
Course Duration	28 weeks
Delivery	Lecture; Question Answer; Problem Solving; Discussion; Case Study; Role
	Play, Brainstorming; Six Hats Thinking; Opinion Pool; Debate; Workshop
	Project Based Learning; Problem Based Learning; Storyline; Scenario Based
	Learning; Brain Based Learning; Case Based Learning
Course Objectives:	By the end of the course the student will be able to:
	Discuss ethical cases using ethical principles
	<ol><li>Ensure a sound ethical dimension to all cases in health care;</li></ol>
	acknowledging that each case has its ethical component.
	<ol> <li>Understand and impart a proper informed consent process</li> </ol>
	Understand negligence and malpractice
	Understand the principle of invoking double effect
	6. Distinguish between utilitarian approaches to health care and,
	deontological approaches.
Course Assessments	7. Understand what we mean by respecting the autonomy of patients.
Course Assessments	• Assignment 1: 30%
036	Assignment 2: 10 %     Final Exam: 60 %
340 80	
× /8/8/	A 60% is required for a pass in this course. Homework & Assignments
11 2 11	Students will be required to read chapters in their textbook, handouts, and
19/5/11	any other material necessary for the course. Instructors are encouraged to
Jell of	use and design any assignment that may be beneficial to the student-
Content Breakdown	learning outcome.
Session 1 (Week 1)	Topics Coverage  Orientation to course/Overview of medical ethics
Session 2 (Week 2)	
Session 3 (Week 3)	Rights & duties of doctors, patients, family and community
Session 4 (Week 4)	Inter professional relationships  Accountability & misconduct of profession
Session 5 (Week 5)	
Session 6 (Week 6)	Rules & regulations of the medical profession
	Islamic principles & jurisdiction related to disease and practice of profession
Session 7 (Week 7)	Ethical aspects of newer medical issues,
Session 8 (Week 8)	Midterm Exam
The second second	

Session 9 (Week 9)	Ethical aspects of medical research	
Session 14 (Week 14)	Patient's secrets, file and reassurance & other topics	
Session 16 (Week 16)	Final Exam	
Attendance	Students are expected to attend every session of class, arriving on time,	
Expectations	returning from breaks promptly and remaining until class is dismissed.	
	Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

# **Graduation Research project**

1	Cour	se name	Graduation Research project	
2	Course Code		ACCUPATION	
	Cou	se code	AN406	
3	Course type: gene	ral/specialty/optional	Specialty	
4	Accredited units  Educational hours  Pre-requisite requirements  Program offered the course  Instruction Language  Date of course approval		4	
5			4	
6			Research Methods and Data Analysis	
7			Anesthesia and intensive care  English  2022	
8				
9				
Brief Description: Training on project es			tablishment and methodology of execution including duse scientific information resources	
Textbo	ooks and References:	The students will use d	dents will use different resources.	
Course	e Duration	28 weeks		
Course	e Objectives:	- KNOWLEDGE & UNDERSTANDING:		
		a1-Define the Principles of research planning and design		
		a2- Describe principles of basics of experimental design and analysis.		
		b- INTELLECTUAL SKILLS	253553	
		b1- Identify suitable rese	arch topics.	

	b2- Undertake independent research.	
	b3- Be able to do Critical review and analysis of related literature.	
	c-PROFESSIONAL AND PRACTICAL SKILLS	
	c1- Design research study	
	c2- Perform method validation and presentation of research report.	
	c3- Write the research proposal and theses.	
	d- GENERAL AND TRANSFERABLE SKILLS	
	d1-Demonstrate appropriate communication skills.	
	d2- Present clearly and effectively scientific topic in a tutorial or a staff meeting.	
	d3- Work separately or in a team to research and prepare a scientific topic.	
Course Assessments	PPT Slides -End of semester after presentation	
Content Breakdown	Topical Coverage	
Session 1 (Week 1)	Development of a research protocol	
Session 26 (Week 26)	Fieldwork and data analysis	
	<ul> <li>The research project course involves the generation of new scientific information and a review and understanding of the scientific literature.</li> <li>The research may be conducted in a laboratory, hospital, community laboratories, different company, etc., depending on the project and the supervisor.</li> <li>Students are divided into groups and each group is working together.</li> <li>Students are expected to work approximately 56 hours. This will include working in the laboratory, etc., reading or searching literature, and writing up the research project.</li> <li>Fields of study available may include:</li> <li>O Biomedical genetics</li> <li>o Immunogenic</li> <li>o Cancer genetics</li> <li>o Biochemistry</li> <li>o Genetics Diagnosis</li> <li>o Embryology</li> </ul>	
Session 27 (Week 27)	Final Exam	
Session 28 (Week 28)	Final Exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on time returning from breaks promptly and remaining until class is dismissed Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure	

relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



# 2. قسم المختبرات الطبية



#### Organic chemistry

1	Course name	Organic chemistry
2	Course Code	ML200
3	Course type: /general/specialty/opt	onal
4	Accredited units	4
5	Educational hours	4
6	Pre-requisite requirem	ents General chemistry
7	Program offered the co	urse Medical Laboratory
8	Instruction Language	English
9	Date of course approva	2022
	f Description:	Introduction to organic chemistry: bases of bonding in organic compounds, polar compounds, structural formulas, isomeric phenomena, forms of organic compounds; aliphatic compounds alkanes, alkenes, alkynes; aromatic compounds; Functional groups alcohols, ethers, alkyl halides, aldehydes, ketones, carboxylic acids esters, amides, anhydrides, amines; A complete study in terms of nomenclature, structure, physical properties, methods of preparation and famous reactions.
Text	books and References	Lecturer's materials
Cour	rse Duration	28 weeks
Cour	rse Objectives	<ul> <li>Define chemical bonding.</li> <li>Describe the structure and representation of organic molecules.</li> <li>Describe nomenclature</li> <li>Demonstrate bonding, intermolecular forces, and functional groups</li> <li>Describe nomenclature for alkyl halides, alcohols, alkenes and alkynes</li> <li>Know properties and synthesis</li> <li>Identify addition reactions</li> <li>Recognize nucleophilic substitution of alkyl halides.</li> <li>Demonstrate stereochemistry.</li> <li>Know free radical reactions</li> </ul>
	The state of the s	<ul> <li>Define aromatic compounds (arenes)</li> <li>Define reactions of aromatic compounds</li> <li>Know nmr, mass spectrometry, and infrared (ir spectroscopy</li> <li>Describe synthesis and reactions of alcohols</li> <li>Know ethers and epoxides</li> <li>Describe enols and enolates</li> <li>Describe conjugated unsaturated systems.</li> </ul>

	<ul> <li>Recognize synthesis and reactions of β-bicarbonyl compounds</li> <li>Know amines</li> <li>Describe phenols and aryl halides</li> <li>Identify carbohydrates</li> </ul>
Course Assessments	Assignment 1: 10%
	Assignment 2: 30%
	Final Exam: 60% Daily Assessments: 10%
	A 60 % is required for a pass in this course.
Content Breakdown	Topical Coverage
Session 1 (Week 1)	Introduction to organic chemistry
	Division of organic matter
Session 2 (Week 2)	Saturated hydrocarbons
Session 3 (Week 3)	Unsaturated hydrocarbons
Session 4 (Week 4)	Cyclic and aromatic hydrocarbons
Session 5 (Week 5)	Cyclic and aromatic hydrocarbons
Session 6 (Week 6)	Alcohols
Session 7 (Week 7)	Alcohols
Session 8 (Week 8)	Aldehydes
Session 9 (Week 9)	Aldehydes
Session 10 (Week 10)	Ketones
Session 11(Week 11)	Carboxylic acids
Session 12(Week 12)	Carboxylic acids
Session 13(Week 13)	Ketones Review
Session 14 (Week 14)	Midterm Exam
Session 15(Week 15)	Carboxylic acids
Session 16(Week 16	Esters
Session 17 (Week 17)	Isomerism and isomerism
Session 18 (Week 18)	Vital organic compounds such as carbohydrates
Session 19 (Week 19)	Carbohydrates
Session 20 (Week 20)	Proteins
Session 21 (Week 21)	Proteins
Session 22 (Week 22)	Proteins
Session 23 (Week 23)	Fats and some other compounds
Session 24 (Week 24)	Fats and some other compounds
Session 25 (Week 25)	Fats and some other compounds
Session 26(Week 26)	Fats and some other compounds
Session 27 (Week 27) Session 28 (Week 28)	Final Exam

Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

### **Biochemistry**

1	Course name	Militar	Biochemistry
2	Course Code	All Carries	ML201
3	Course type: /general/specia	alty/optional	General
4	Accredited unit	ts	4
5	Educational ho	urs	4
6	Pre-requisite re	equirements	Organic chemistry
7	Program offere	ed the course	Medical Laboratory
8	Instruction Language		English
9	Date of course	approval	2022
Brie	f Description	such as equilibre exploration of bid Applying equilibre structure. Studying Analyzing the kin	provide students with a fundamental concept in chemistry, fium, acid/base chemistry and thermodynamics into an ology. The content includes: ium processes to study biochemical reactions as well as celling the structure and function of amino acids and proteins, etic parameters of enzymes including different mechanisms re used to inhibit enzymes. Understanding and making etabolism.
-	tbooks and rences:	2. Garrett, C.M.	Tymoczko, L. Stryer, Biochemistry, Macmillan, 2019.R.H. Grisham, Biochemistry, Thomson 2012. M. M. Cox Lehninger Principles of Biochemistry, Macmillan,

Course Duration	28 weeks
Delivery	Lecture; Question Answer; Problem Solving; Discussion; Case Study; Role Play. Brainstorming; Six Hats Thinking; Opinion Pool; Debate; Workshop Project Based Learning; Problem Based Learning; Storyline; Scenario Based Learning; Brain Based Learning; Case Based Learning.
Course Objectives:	At the first part of the year the student will be able to:
	<ol> <li>Identify the basic biomolecules within human body: Carbohydrates, proteins, and lipids.</li> </ol>
	<ol><li>Understand the basic concepts of biochemistry of Carbohydrates, proteins, and lipids: digestion, absorption and metabolism.</li></ol>
	3. Recognize the process of energy conservation and consumption, and the integration of metabolic processes within the body.
	<ol> <li>Recognize the fact that biochemical processes in the human body are adapted to need.</li> </ol>
	The second part year will focus on metabolic biochemistry: the study of chemical reactions that provide the cell with the energy and raw materials necessary for life. Students will examine metabolism of glycogen, fatty acids, amino acids. Medical relevance is emphasized throughout the course.
Course Assessments	Assignment 1: 40 %
	Final Exam: 60%
	60% is required for a pass in this course.
	Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topical Coverage
Session 1 (Week 1)	Molecular base of life Water (Vital of life)
Session I (Week I)	-Structure of water.
	-Physiochemical properties of water.
	-Self-ionization of water.
Session 2 (Week 2)	рН
Session 2 (Week 2)	pH Acid and base.
Session 2 (Week 2)	pH Acid and baseHenderson-Hasselbalch equation.
Session 2 (Week 2)	pH Acid and baseHenderson-Hasselbalch equationdirect contact.
Session 2 (Week 2)	pH Acid and baseHenderson-Hasselbalch equationdirect contact. Buffer
	pH Acid and baseHenderson-Hasselbalch equationdirect contact. Buffer -Biological buffers.
	pH Acid and baseHenderson-Hasselbalch equationdirect contact. Buffer -Biological buffers.  Carbohydrates -Introduction to carbohydrates
	pH Acid and baseHenderson-Hasselbalch equationdirect contact. Buffer -Biological buffers.
Session 2 (Week 2)  Session 3 (Week 3)	pH Acid and baseHenderson-Hasselbalch equationdirect contact. Buffer -Biological buffers.  Carbohydrates -Introduction to carbohydrates
	pH Acid and baseHenderson-Hasselbalch equationdirect contact. Buffer -Biological buffers.  Carbohydrates -Introduction to carbohydrates -Function and classification of carbohydrates
	pH Acid and baseHenderson-Hasselbalch equationdirect contact. Buffer -Biological buffers.  Carbohydrates -Introduction to carbohydrates -Function and classification of carbohydrates Monosaccharides -Nomenclature and classification of monosaccharides -Optical activity of monosaccharides - Cyclic forms of monosaccharides
	pH Acid and baseHenderson-Hasselbalch equationdirect contact. Buffer -Biological buffers.  Carbohydrates -Introduction to carbohydrates -Function and classification of carbohydrates Monosaccharides -Nomenclature and classification of monosaccharides -Optical activity of monosaccharides - Cyclic forms of monosaccharides -Monosaccharides derivatives
	pH Acid and baseHenderson-Hasselbalch equationdirect contact. Buffer -Biological buffers.  Carbohydrates -Introduction to carbohydrates -Function and classification of carbohydrates Monosaccharides -Nomenclature and classification of monosaccharides -Optical activity of monosaccharides - Cyclic forms of monosaccharides

	-Disaccharides	
	-Example of common oligosaccharides	
	Polysaccharides	
	-Homoglycans	
	Section 1 Sectio	
	-Heteroglycans	
Session 5 (Week 5)	Proteins	
	- Introduction to proteins	
	- Function of proteins	
	Amino acids	
	- Structure of amino acids	
	- Classification of amino acids.	
	Acidic amino acids o Basic amino acids	
	Naturally occurring amino acid derivatives	
	Disulfide bond formation	
	Optical activity of amino acids	
Session 6 (Week 6)	Acid-Base reactions of amino acids	
	- Titration curve of amino acids o Glycine Acid-Base titration o Glutamate	
	Acid-Base titration	
	Peptides	
	- Peptide bond formation	
	- Structure and nomenclature of peptides	
	- Biological activities of peptides	
Session 7 (Week 7)	Proteins have a unique sequence of amino acids	
	- Protein Structure: Primary, Secondary, Tertiary and Quaternary	
	- Classification of proteins	
	Post-translation modification	
	Glycoproteins	
	Lipoproteins Denaturation	
Session 8 (Week 8)	Proteins extraction and purifications  Lipids	
session b (week b)	- Introduction to lipids	
	- Function and classification of lipids Fatty acids	
	- Function and classification of lipids	
	- Nomenclature and classification of fatty acids	
	- Trans and Cis fatty acid	
	- Characterization of fatty acid	
	Glycerol Triacylglycerol	
	Waxes	
Session 9 (Week 9)	Glycerophospholipids	
	Sphingolipids	
	Glycolipids	
	- Roles of oligosaccharides in recognition and adhesion at the cell surface	
	<ul> <li>Roles of oligosaccharides in recognition and adhesion at the cell surface Steroids</li> </ul>	
	Steroids	
	Steroids 1. Cholesterol.	

Session 10 (Week 10)	Enzymes		
	General characterizations of enzymes		
	Applications of enzymes		
	Nomenclature of enzymes		
	Classifications of enzymes		
	1. Transferase.		
	2. Oxidoreductase.		
	3. Hydrolase.		
	4. Lyase.		
	5. Isomerase.		
	6. Ligase		
Session 11 (Week 11)	Mechanism enzyme action		
	1. Lock and key model		
	2. Induce-fit model		
	Factors affecting enzyme activity		
	Enzyme inhibitors		
	Holoenzyme and Apoenzyme		
Session 12 (Week 12)	Hormones structure and function		
	- Introduction to hormones		
	<ul> <li>Classification of hormones</li> </ul>		
	Peptide hormones.		
	Amine-derived hormones.		
	3. Steroid hormones		
Session 13 (Week 13)	Hormone receptors		
	Membrane receptors		
	G protein-coupled receptors (GPCRs).		
	Receptor tyrosine kinases (RTKs).		
	3. Cytokine receptors		
	Receptor protein serine/threonine kinase		
	Nuclear receptors		
	Mechanism hormone action		
	Intracellular.     Extracellular		
	Fat of hormones		
Session 14 (Week 14)	Midterm Exam		
	1 3/1		
Session 15 (Week 15)	Metabolism – the general definition		
Session 16 (Week 16)	Carbohydrate metabolism and regulation		
Session 17 (Week 17)	-Gluconeogenesis, Bioenergetics and Glycolysis		
	-Enzyme Regulation and Glycolysis Regulation		
	Glycogen Metabolism		
	Allosteric & Hormonal Regulation of Glucose Metabolism Pentose Phosphate Pathway & Coordination with Glycolygis		
	Pentose Phosphate Pathway & Coordination with Glycolysis Galactose/Fructose Metabolism and Reactive Oxygen Species		
Session 18 (Week 18)	Lipid Metabolism and Regulation		
Session 19 (Week 19)	-Pyruvate Dehydrogenase Complex Mechanism		
Session 13 (WEEK 13)			
CHIEF CHIEF THE THE	-Citric Acid Cycle Energetics, Regulation and Ketone Bodies		

	Fatty Acid Catabolism and Biosynthesis Cholesterol Biosynthesis and Transport Coordinated Regulation of Lipid Metabolism Metabolism of glycerophospholipids, sphingolipids, isoprenoid compounds and coronoids	
Session 20 (Week 20) Session 21 (Week 21)	Nitrogen Metabolism: Amino Acids, Nucleotides, DNA Protein Turnover, Nitrogen Transport and Urea Cycle Amino Acid Catabolism, Regulation, and Fates of Carbon Skeletons Amino Acid Biosynthesis and Carbon Donors Nucleotide Biosynthesis: Ribonucleotides, Deoxyribonucleotides Biosynthesis and degradation of proteins	
Session 22 (Week 22) Session 23 (Week 23) Session 24 (Week 24) Session 26 (Week 26)	Vitamins - Biological function of vitamins - Classification of Vitamins Fat-soluble vitamins Water-soluble vitamins	
Session 27 (Week 27) Session 28 (Week 28)	Final Exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a lecturer's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

#### General Microbiology

1	Course name	General Microbiology
2	Course Code	ML202
3	Course type: /general/specialty/optional	General
4	Accredited units	6 units

5	Educational hours		6 hours	
6	Pre-requisite requirements		General biology	
7	Program offered th	e course	Medical Laboratory	
8	Instruction Language	ge	English	
9	Date of course app	roval	2022	
Text	tbooks and erences:	consisting of better the course consisting of better the course considered to the course considered to the course of microorgan physiology (regressions affecting i.e. aspects of relationship, response to microorgan physiology (regressions)	olyng .Black microbiology – oles and Explorations- Gerard j raBerdellR.FunkechristineeL.case Microbiology and uction . Klinik Biyokimya Analiz Metodları, Bahattin ve Yasemin Ardıçoğlu, Atlas Kitapçılık, 2002, ISO	
		- Green - France Diagno 2003.	r, Medical Microbiology © 2005 Thieme. wood et al: <i>Medical microbiology</i> , 2002. es T Fischbach RN,: A Manual of Laboratory and estic Tests 7th edition; Lippincott Williams & Wilkins:	
Course Duration Delivery		28 weeks  Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experimentsetc.		
A KA	]:/ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		ic principles of bacterial culture techniques and general ests.	

	- Describe the morphological features of bacteria microscopically and on culture.	
	- Describe different laboratory diagnostic test used	
Course Assessments	Assignment 1: 10%	
	Assignment 2: 30%	
	Final Exam: 60%	
	A 60% is required for a pass in this course.	
Content Breakdown	Topical Coverage	
Session 1 (Week 1)	Introduction to microbiology	
	The Microbial World	
	Introduction and brief history of Microbiology.	
	Classification of microorganisms.	
Session 2 (Week 2)	General characters and classification of Bacteria.	
	Bacterial Anatomy.	
	Size, shape, and arrangement of bacterial cells,	
	Structures external to the cell wall (glcocalyx, flagella, axial filaments	
	and Pilli).	
Session 3 (Week 3)	The cell wall, Structures internal to the cell wall (cytoplasm, nuclear,	
	area, ribosomes, inclusions, and endospores).	
	Capsule, Flagella, Inclusion, Granule, Spore	
Session 4 (Week 4)	Microbial Growth	
	Growth and nutrition of Microbes	
	- Bacterial growth requirements.	
	Bacterial division, Batch Culture, Continuous culture, bacteria growth- total count, viable count, bacterial nutrition, oxyger requirement, CO2 requirement, temperature, pH, light.	
Session 5 (Week 5)	- Culturing of bacteria and media types	
	- Preserving bacterial cultures and growth	
Session 6 (Week 6)	Control of Microbial Growth	
	Sterilization and Disinfection	
	Physical agents- Sunlight, Temperature less than 1000C, Temperature at 1000C, steam at atmospheric pressure and steam under pressure irradiation, filtration.	
Session 7 (Week 7)	Chemical Agents- Alcohol, aldehyde, Dyes, Halogens, Phenols, Ethylene oxide.	
Session 8 (Week 8)	Bacterial Genetics	
	Genetic material	
SCHOOL SILVE	Structure and function of the genetic material.	
San September 1	Structure and function of the genetic material.  Plasmids, replication.	

	- Genetic transfer (transformation, conjugation, transduction, and recombination).	
Session 9 (Week 9)	Microbial virulence factors and pathogenesis of bacterial infection.	
Session 10 (Week 10)	Antibacterial antibiotics and their mode of action.	
& Session 11 (Week 11)	-Epidemiological aspects: Transmission, (sources and mode of infection),	
	-Chemotherapy and antibiotic resistance.	
Session 12 (Mesh 12)	- Vaccination.	
Session 12 (Week 12)	Normal bacterial flora of human body.	
Session 13 (Week 13)		
Session 14(Week 14)	Midterm exam	
Session 15(Week 15)	Parasitology	
36331011 13(Week 13)	Morphology and life cycle	
Session 16 (Week 16)	The state of the s	
Session to (week 10)	Laboratory diagnosis of following parasites	
Session 17 (Week 17)	E. histolytica and Plasmodium	
	Tape worms and Intestinal nematodes	
Session 18 (Week 18)	Mycology	
Session 10 (March 10)	Morphology, diseases and causes	
Session 19 (Week 19)	Museless #	
Session 20 (Week 20)	Mycology Lab diagnosis of Fungi	
Session 21 (Week 21)	Virology	
Session 22 (Week 22)	General properties of viruses, diseases caused,	
Session 22 (Week 22) Session 24 (Week 24)	Virology, lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV, Rabies and Poliomyelitis.	
Session 25 (Week 25)	Virology, Rabies and Poliomyelitis.	
Session 26 (Week 26)		
Session 27 (Week 27)	Final Exam	
Session 28 (Week 28)	Final Exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to	

ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

#### Anatomy and Physiology

1	Course name		Anatomy and p	hysiology
2	Course Code		ML203	3
3	Course type: /general/specialty/op	otional	Genera	al
4	Accredited units		4 units	5
5	Educational hours		4 hour	s
6	Pre-requisite requirer	ments		
7	Program offered the	course	Medical Labo	oratory
8	Instruction Language		English	1
9	Date of course approx	val	2022	
anatomy an neurons, ca systems. Th on anatomic is mentione  Textbooks and Anatomy &		anatomy and neurons, car systems. The on anatomica is mentioned Anatomy &	the human body and its parts. It structure of various organ dio-vascular, respiratory, dig practical part will be devoted to all models of different body orgabove  Physiology Coloring Workbodition) by Elaine N. Marieb (Au	systems of the body, gestive and uro-genital to tutorials and studying gans in each system that ok: A Complete Study
10000	rences:	28 weeks	action) by <u>claime N. Marieb</u> (Ac	11101).
Deli	very	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.		
Cou	Upon the completion of this course student is expected:  1. Explain interrelationships among molecular, cellular, tissue and of functions in each system.  2. Describe the interdependency and interactions of the systems.  3. Explain contributions of organs and systems to the maintenance homeostasis.  4. Identify causes and effects of homeostatic imbalances.			ions of the systems and the maintenance of
Course Assessments Assignment Final Exam: Daily Assess		: 30% 0 %	a55500	
		A 50% is requ	uncu ioi a pass in tilis course.	الما الموحدة الموحدة
Cont	tent Breakdown	A 50% is requ	Topical Coverage	وريد الوحدي الواق

	Organization of the human body		
	Definition of Anatomy		
	Level of organization		
	Anatomical positions		
	Body regions and cavities		
	Terms used in Describing Body Structure		
	Body planes and sections		
	Directional terms		
Session 2 (Week 2)	Cell Cycle		
	2. Epithelial Tissues		
	a. Forms and characteristics of epithelial cells		
	b. Specialization of the cell surface		
	c. Types of epithelia		
Session 3 (Week 3)	3. Connective Tissue		
	a. Cells, fibers and ground substance		
	b. Types of Connective tissues		
	c. Adipose tissue		
	d. Cartilage		
	e. Bone tissue		
Session 4 (Week 4)	4. Nerve Tissue		
	a. Neurons and parts		
	b. Glial cells and neuronal activity		
	c. Synaptic communications		
Session 5 (Week 5)	5. Blood Cells		
	a. Composition of Plasma		
	b. Red Blood Cells/Erythrocytes		
	c. White Blood Cells/Leukocytes		
	d. Hematopoiesis		
	III. Integumentary System		
	1. Structure of the Skin		
	a. Epidermis		
	b. Dermis		
	2. Appendages of Skin		
	a. Hair		
	b. Nails		
	C. Skin Glands		
Session 6 (Week 6)	Body regions		
	Upper limb		
	Lower limb		
	Thorax		

	Pelvis	
Session 7 (Week 7)	Head and neck  Body Systems	
Session / (week //	Musculoskeletal system: Bones, joints and muscles	
	Musculoskeletal system: Bones, joints and muscles -Function o	
	urinary organs.	
	-Fluid & electrolytes balances.	
Session 8 (Week 8)	Digestive system	
	Function of digestive organs.	
	-Movements of alimentary canal	
	-Role of enzymes in digestive process	
Session 9 (Week 9)	Digestive system II: Accessories and glands	
Session 10 (Week 10)	Cardiovascular system: heart and blood vessels	
Session 11 (Week 11)	-Function of heart	
	-Cardiac cycle (blood circulation)	
Session 12 (Week 12)	-Blood pressure and its regulation	
Session 13 (Week 13)	-ECG: methods of recording, normal record and common abnormalities.	
Session 14(Week 14)	Midterm Exam	
Session 15 (Week 15)	Lymphatic system	
Session 16 (Week 16)	Respiratory system	
&	Physiology of respiration.	
Session 17 (Week 17)	-Control of respiration	
	-Hypoxia, cyanosis and dyspnea	
	-Pulmonary function tests	
Session 18 (Week 18)	Nervous system I: Central nervous system: brain and spinal cord	
Session 19 (Week 19)	Nervous system II: Peripheral nervous system and cranial nerves	
Session 20 (Week 20)	Nervous system III: Autonomic nervous system Special senses	
Session 21 (Week 21)	Special senses	
Session 22 (Week 22)	Endocrine system	
Session 23 (Week 23)	Urinary system	
Session 24 (Week 24)	Reproductive system	
Session 25 (Week 25)	Gynecology, pregnancy, and childbirth	
Session 26 (Week 26)	Embryology	
Session 27 (Week 27) &	Final Exam	
Session 28 (Week 28)		
Attendance Expectations	Students are expected to attend every session of class, arriving o	
	time, returning from breaks promptly and remaining until class	
	dismissed. Absences are permitted only for medical reasons an	
Canada Stilla	must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of the	

	lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

## Histology

1 Course name		Histology
2 Course Code		ML204
3 Course type: /g	eneral/specialty/optional	General
4 Accredited unit		4 units
5 Educational hou	irs	4 hours
6 Pre-requisite re	quirements	-
7 Program offere	d the course	Medical Laboratory
8 Instruction Lang	guage	English
9 Date of course	approval	2022
Textbooks and References:	features of the human body organs and systems.  Gartner LP, Hiatt JL. Color Textbook of Histology W.B. Saunders Company Philedelphia, 2001  Junqueira LC, Carneiro J. Temel Histoloji, Text & Atlas. Lange Medical	
Second Service Infection of the service of the serv	Wheater's Functional History - Color Textbook of History -Concise Histology Book,	2. Baskı Nobel Akademi Yayıncılık 2014 stology. Young and Heath. 4th Edition.2000. UK. ology July 2010, by Gartner ok, December 2009, by Kerr

Course Duration	-Netter's Histology Flash Cards Updated Edition Book, August 2013, by Ovalle -Oral Anatomy, Histology and Embryology Book, January 2009, by Berkovitz 28 weeks
Delivery	Lecture; Question Answer; Problem Solving; Discussion; Case Study; Role Play.Brainstorming; Six Hats Thinking; Opinion Pool; Debate; Workshop, Project Based Learning; Problem Based Learning; Storyline; Scenario Based Learning; Brain Based Learning; Case Based Learning
Course Objectives:	<ul> <li>By the end of the course the student will be able to:</li> <li>Acquire a basic background in histology and to understand the properties of cells and their interactions with one another as components of tissues and organs.</li> <li>Understand how structure and function correlate at the microscopic level.</li> <li>Describe the normal structure and function of various cell types, tissues, and organs, and to differentiate their histological structures from each other through examination.</li> <li>Acquire basic background on embryology and to understand the first weeks of development.</li> <li>Describe the growth of the foetus and the maturation of the organ system.</li> </ul>
Course Assessments	Assignment 1: 30 %  Assignment 2: 10%  Final Exam: 60%  50% is required for a pass in this course.  Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topical Coverage
Session 1 (Week 1)	Basic Knowledge of Cytology  Cell structure & types  (cell, cell skeleton, cytoplasm and organelles, nucleus, Nucleic Acids, Cell Cycle, Cell Division, Cell Differentiation, Cell Death)
Session 2 (Week 2)	Extracellular Matrix
Session 3 (Week 3)	Epithelial Tissue (surface epithelium, glandular epithelium, cell junctions)
Session 4 (Week 4)	Connective Tissue (CT) general characters, and CT fibers - Connective tissues cells, CT proper

Session 5 (Week 5)	Cartilage Tissue - Cartilage cells, types of cartilage
Session 6 (Week 6)	Bone Tissue - bone cells, types of bone, bone healing
Session 7 (Week 7)	Muscle Tissue - structure of muscle cell fibers, types of muscles (skeleta muscles, cardiac muscle, smooth muscles)
Session 8 (Week 8) Session 9 (Week 9)	Nervous tissue; brain, spinal cord, structure and types of nerve cells types of nerve fibers, nerve ganglion, injury and healing of nerve cells)
Session 10 (Week 10)	Nervous system
Session 11 (Week 11)	Circulatory system
Session 12 (Week 12) Session 13 (Week 13)	Blood; blood plasma, blood cells, bone marrow, hematopoiesis - Vascular system: arteries, veins, blood capillaries, blood sinusoids -
Session 14 (Week 14)	Midterm Exam
Session 15 (Week 15)	Lymphatic system: immunity, lymph nodes, spleen, thymus gland Skin
Session 16 (Week 16)	Skin
Session 17 (Week 17)	Respiratory system: nasal cavity, trachea, bronchial tree, lung
Session 18 (Week 18)	Digestive system: oral cavity, gastro-intestinal tube, liver, pancreas
Session 19 (Week 19)	Urinary system: kidney, urinary tract.
Session 20 (Week 20)	- Reproductive system: male and female reproductive organs, such as testis, ovary, uterus.
Session 21 (Week 21)	Basic Histology Techniques
Session 23 (Week 23)	Basic Stage of Histological Techniques
Session 24 (Week 24)	Histochemical and Cytochemical Staining Techniques
Session 25 (Week 25) Session 26 (Week 26)	Immuno-histochemical and Immuno-cytochemical Painting Techniques
Session 27 (Week 27) Session 28 (Week 28)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time returning from breaks promptly and remaining until class is dismissed Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer interpersonal communications, and critical thinking skills will be embedded in a courses.

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#### **Analytical Chemistry**

1	Course name Analytical Chemistry			
2	Course Code		ML205	
3	Course type: /general/specialty/optional		General	
4	Accredited units  Educational hours  Pre-requisite requirements		4 units 4 hours General Chemistry	
5				
6				
7	Program offer	ed the course	Medical Laboratory	
8	Instruction	Language	English	
9	Date of cour	se approval	2022	
		quantitative anal in volumetric ana	g the theoretical and practical knowledge concerning lysis as well as how to manipulate different techniques alysis. In addition to provide students with a broad and ation of analytical knowledge and practical skills in tries	
	books and rences:		Analytical Chemistry, Skoog, West and Holler, 7th Ed, Publishing, 2000 (we prefer the latest edition)	
			ya Analiz Metodları, Bahattin Adam ve Yasemin Kitapçılık, 2002, ISO 15189	
		1. Text book of edition	Medical Laboratory Technology by P. B. Godker-3rd	
ودي	500	2. Medical Labo edition	ratory Technology by KL Mukherjee volume III-3rd	
وحدة	13 3 3 S	3. Practical Clinical Biochemistry by Harold Varley-6th edition		
	* 18 8	4. Principal of Biochemistry by M. A. Siddiqi		
	ال قرالون	5. Instrumental Analysis by Chatwal Anand-5th edition		
الى والبية	13/11	6. Text book of N	Medical Biochemistry by Chaterjee Shinde-8th edition	
100		7. Principal of Bio	ochemistry by Lehninger-7th edition	
		8. Biochemistry b	by Voet & Voet-4th edition	
		9. Biochemistry b	by Stryer-9th edition	
Cour	rse Duration	28 weeks		

Delivery	Lecture; Question Answer; Problem Solving; Discussion; Case Study; Role Play Brainstorming; Six Hats Thinking; Opinion Pool; Debate; Workshop Project Based Learning; Problem Based Learning; Storyline; Scenario Based Learning; Brain Based Learning; Case Based Learning
Course Objectives:	Throughout this course, we will focus on the following learning objectives:
	<ol> <li>Understand the fundamental concepts of chemical equilibrium</li> <li>Parameterize solution behavior and calculate solution concentrations given the appropriate equilibrium constants</li> <li>Apply knowledge of equilibrium constraints to a range of systems of interest including solubility, acid/base chemistry, complex formation, oxidation/reduction, hydrolysis, and phase partitioning.</li> <li>Investigate solution behavior using electrochemical methods, including potentiometry, voltammetry, and ion selective electrodes.</li> </ol>
Course Assessments	Assignment 1: 30%
	Assignment 2: 10%
	Final Exam: 60%
	60% is required for a pass in this course.
	Homework & Assignments Students will be required to read chapters
	in their textbook, handouts, and any other material necessary for the
	course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topical Coverage
Session 1 (Week 1)	Introduction to the course
Session 2 (Week 2)	Quantitative Analysis Sections
	1. Types of chemical analysis (descriptive analysis and quantitative
	analysis)
Session 3 (Week 3)	analysis)
	analysis)  2. Quantitative Analysis Sections  3. Methods for expressing weights in analytical chemistry  4. Methods of expressing focus.
Session 4 (Week 4)	analysis)  2. Quantitative Analysis Sections  3. Methods for expressing weights in analytical chemistry  4. Methods of expressing focus.  Volumetric analysis
	analysis)  2. Quantitative Analysis Sections  3. Methods for expressing weights in analytical chemistry  4. Methods of expressing focus.
Session 4 (Week 4) Session 5 (Week 5)	analysis)  2. Quantitative Analysis Sections  3. Methods for expressing weights in analytical chemistry  4. Methods of expressing focus.  Volumetric analysis  1- Definition and division.  2- Types of volumetric quantitative analysis: acidity and alkalinity.
Session 4 (Week 4) Session 5 (Week 5)	analysis)  2. Quantitative Analysis Sections  3. Methods for expressing weights in analytical chemistry  4. Methods of expressing focus.  Volumetric analysis  1- Definition and division.  2- Types of volumetric quantitative analysis: acidity and alkalinity.  A- Definition of acids and alkalis and their types.
Session 4 (Week 4) Session 5 (Week 5)	analysis)  2. Quantitative Analysis Sections  3. Methods for expressing weights in analytical chemistry  4. Methods of expressing focus.  Volumetric analysis  1- Definition and division.  2- Types of volumetric quantitative analysis: acidity and alkalinity.  A- Definition of acids and alkalis and their types.  C - Preparation of solutions of acids and alkalis.
Session 4 (Week 4) Session 5 (Week 5) Session 6 (Week 6)	analysis)  2. Quantitative Analysis Sections  3. Methods for expressing weights in analytical chemistry  4. Methods of expressing focus.  Volumetric analysis  1- Definition and division.  2- Types of volumetric quantitative analysis: acidity and alkalinity.  A- Definition of acids and alkalis and their types.  C - Preparation of solutions of acids and alkalis.  D-Standard solutions.
Session 4 (Week 4) Session 5 (Week 5) Session 6 (Week 6)	analysis)  2. Quantitative Analysis Sections  3. Methods for expressing weights in analytical chemistry  4. Methods of expressing focus.  Volumetric analysis  1- Definition and division.  2- Types of volumetric quantitative analysis: acidity and alkalinity.  A- Definition of acids and alkalis and their types.  C - Preparation of solutions of acids and alkalis.  D-Standard solutions.  E- Types of calibration and the terms used for it.
Session 4 (Week 4) Session 5 (Week 5) Session 6 (Week 6) Session 7 (Week 7)	analysis)  2. Quantitative Analysis Sections  3. Methods for expressing weights in analytical chemistry  4. Methods of expressing focus.  Volumetric analysis  1- Definition and division.  2- Types of volumetric quantitative analysis: acidity and alkalinity.  A- Definition of acids and alkalis and their types.  C - Preparation of solutions of acids and alkalis.  D-Standard solutions.  E- Types of calibration and the terms used for it.  3- Calibration curves.
Session 4 (Week 4) Session 5 (Week 5) Session 6 (Week 6) Session 7 (Week 7)	analysis)  2. Quantitative Analysis Sections  3. Methods for expressing weights in analytical chemistry  4. Methods of expressing focus.  Volumetric analysis  1- Definition and division.  2- Types of volumetric quantitative analysis: acidity and alkalinity.  A- Definition of acids and alkalis and their types.  C - Preparation of solutions of acids and alkalis.  D-Standard solutions.  E- Types of calibration and the terms used for it.  3- Calibration curves.  4- Evidence and its types?
Session 4 (Week 4) Session 5 (Week 5) Session 6 (Week 6) Session 7 (Week 7) Session 8 (Week 8)	analysis)  2. Quantitative Analysis Sections  3. Methods for expressing weights in analytical chemistry  4. Methods of expressing focus.  Volumetric analysis  1- Definition and division.  2- Types of volumetric quantitative analysis: acidity and alkalinity.  A- Definition of acids and alkalis and their types.  C - Preparation of solutions of acids and alkalis.  D-Standard solutions.  E- Types of calibration and the terms used for it.  3- Calibration curves.  4- Evidence and its types?

	4- Calculation of the pH degrees of salts and their laws.		
Session 11 (Week 11)	5- Organized solutions.		
	A- Definition and division.		
Session 12 (Week 12)	b- Calculating the pH degrees of the buffer solutions.		
Session 13 (Week 13)	c- The regulatory capacity of the organized solutions		
Session 14 (Week 14)	Midterm Exam		
Session 15 (Week 15)	Volumetric oxidation-reduction reactions		
	1- Definition of oxidizing and reducing agents and their interaction.		
Session 16 (Week 16)	2- Ionic Equations and Calculating Equivalent Weight.		
Session 17 (Week 17)	3- Electric cells and their relationship to oxidation and reduction.		
Session 18 (Week 18)	4- The Nernset equation and its relationship to oxidation and		
Session 19 (Week 19)	reduction.		
Session 20 (Week 20)	5- Calculation of oxidation potential and electromotive force.		
Session 21 (Week 21)	6- Reactions of hydrogen peroxide.		
	7- lodine reactions.		
Session 23 (Week 23)	8- Permanganate reactions.		
Session 24 (Week 24)	Quantitative weight analysis.		
	1- Definition of gravimetric sedimentation reactions and sedimentation methods.		
	2- How to obtain the precipitate in its pure form or its weight		
Session 25 (Week 25)	3- The solubility product and its role in precipitation reactions.		
Session 26 (Week 26)	4- Effect of salts on sedimentation.		
Session 27 (Week 27)	Final Exam		
Session 28 (Week 28)	Final Exam		
Attendance	Students are expected to attend every session of class, arriving on		
Expectations	time, returning from breaks promptly and remaining until class is		
	dismissed. Absences are permitted only for medical reasons and must		
	be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range		
	of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To		
	ensure graduates have this preparation, such generic skills as literacy		
	and numeric, computer, interpersonal communications, and critical		
	thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of		
	publication. Content of the courses is revised on an ongoing basis to		
	ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to		
	students as soon as possible. Timetable may also be revised.		
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#### Medical Ethics and healthcare communication skills

Course Code Course type: Igeneral/specialt Accredited units Educational hour Pre-requisite req Program offered Instruction Language Date of course appression	s uirements the course	ML206  General  4 units  4 hours  -  Medical Laboratory  English
general/specialt Accredited units Educational hour Pre-requisite req Program offered Instruction Langu Date of course ap	s uirements the course	4 units  4 hours  -  Medical Laboratory
Educational hour Pre-requisite req Program offered Instruction Langu Date of course ap	uirements the course	4 hours  - Medical Laboratory
Pre-requisite req Program offered Instruction Langu Date of course ap	uirements the course	- Medical Laboratory
Program offered  Instruction Langu  Date of course a	the course	, , , , , , , , , , , , , , , , , , ,
nstruction Langu	age	· ·
Date of course ap		English
	proval	
escription		2022
ooks and	practices of med with legal and in arguments on th -The Ethical Slut:	explore the major ethical issues confronting the icine and biomedical science. We will become familiar estitutional positions, consider and debate opposing e various topics, and examine relevant case studies.  A Practical Guide to Polyamory, Open Relationships & Star 10, 2009 by Dossie Easton and Janet W. Hardy
	Black, Evolve 2. Bioethics, 1st 3. Tom L. Beauch of Biomedical Et	thics for The Health Profession 2nd Edition. Timby, and edition, Letty Kwan, C and E Publishing namp (Author), James F. Childress (Author). Principles hics. 4th Edition. Oxford University Press. 1994. ISBN-
		mya Analiz Metodları, Bahattin Adam ve Yasemin Kitapçılık, 2002, ISO 15189
	5- Principles of E Black, Evolve	thics for the Health Profession 2nd Edition. Tim by, and
Duration	6- Bioethics, 1st 28 weeks	edition, Letty Kwan, C and E Publishing
Delivery  Lecture; Question Role Play. Brain Workshop Project Based Learning;		on Answer; Problem Solving; Discussion; Case Study; storming; Six Hats Thinking; Opinion Pool; Debate; earning; Problem Based Learning; Storyline; Scenario
		Brain Based Learning; Case Based Learning e course the student will be able to:
Discuss ethic     Ensure a so     acknowledgi     Understand		cal cases using ethical principles ound ethical dimension to all cases in health care; ong that each case has its ethical component. and impart a proper informed consent process negligence and malpractice
		Role Play. Brain Workshop Project Based Le Based Learning;  Objectives:  By the end of the 1. Discuss ethic 2. Ensure a so acknowledgi 3. Understand

Course Assessments	<ul><li>6. Distinguish between utilitarian approaches to health care and, deontological approaches.</li><li>7. Understand what we mean by respecting the autonomy of patients.</li><li>Assignment 1: 40 %</li></ul>		
edurac Assessments	Final Exam: 60%  60% is required for a pass in this course.		
	Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.		
Content Breakdown	Topical Coverage		
Session 1 (Week 1)	Orientation to course/Overview of medical ethics		
	Rights & duties of doctors, patients, family and community		
Session 2 (Week 2)	Inter professional relationships		
Session 3 (Week 3)	Accountability & misconduct of profession		
Session 4 (Week 4)	Rules & regulations of the medical profession		
Session 5 (Week 5)	Islamic principles & jurisdiction related to disease and practice of profession		
Session 6 (Week 6)	Ethical aspects of newer medical issues,		
Session 7 (Week 7)	Ethical aspects of medical research		
Session 8 (Week 8)	Patient's secrets, file and reassurance & other topics		
Session 9 (Week 9)	The role of the laboratory in the health service -		
Session 10 (Week 10)	Laboratory customers		
Session 11 (Week 11)			
Session 12 (Week 12)	The organization of the hospital and the laboratory		
Session 13 (Week 13)			
Session 14 (Week 14)	Midterm Exam		
Session 15 (Week 15)	Introduction to the Course		
Session 16 (Week 16)	Why is Health Communication Important?		
	<ul> <li>Sociohistorical Considerations</li> <li>Public &amp; Political Considerations</li> </ul>		
	Social Considerations     Social Considerations		
	Cultural Considerations		
Session 17 (Week 17)	Stigma & Mental Health		
Session 18 (Week 18)	Guest speaker: Elizabeth Flood Reading TBA		
Session 19 (Week 19)	Interview Paper due Interpersonally & Narratively Making Sense of Health		
Session 20 (Week 20)	Patient Caregiver Communication		
Session 21 (Week 21)	Narrative Medicine, PerspectiveTaking, Patient Perspectives		
Control of the Contro			

Health Caregiver Perspectives     Family Caregiver Perspectives		
- Family Caraginar Paranastinas		
Family Caregiver Perspectives		
Family caregivers: Social support & Silence		
Death & Dying: Palliative Care		
Death & Dying: Final Conversations		
Community based Participatory Research		
Education Wittenberg		
Health Campaigns.		
Communication Matters Campaign		
Final exam		
Students are expected to attend every session of class, arriving on time		
returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.		
The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literact and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
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#### **Laboratories Safety and Medical instruments:**

1	Course name		Laboratory Safety and N	Medical instruments
2	Course Code  Course type: general/specialty/optional		ML207	
3			General	
4	Accredited units		4 units	
5	Educational hour	'S	4 hours	
6	Pre-requisite requirements		-	
7	Program offered	the course	Medical Laboratory	
8	Instruction Langu	ıage	Englis	h
9	Date of course ap	pproval	2022	2
Brie	The course teachs students' laboratories safety and the proper use of medical instruments.		d the proper use of the	
References:  - Sibel Ve Ha - Secure Rehber		- Sibel Uzun, Fatih Özçe Ve Halk Sağlığı Laboratu - SecurityY.Hakan Abad Rehberi, Sağlık Bakanlığ	dam B, Nobel Yayınları, Anka lik, Laboratuvar Güvenliği El k uvarları Dairesi Başkanlığı, 201 cıoğlu, Cemile Sönmez, UMS ı, Türkiye Halksağlığı Kurumu arı Daire Başkanlığı 2014, 141	Kitabı, Tüketici Güvenliği 17, 12-21. 6 Laboratuvar Güvenliği Başkanlığı, Mikrobiyoloji
Cou	rse Duration	28 weeks	arı Daire Başkarılığı 2014, 141	-15/
Deli	Delivery  Lecture; Question Answer; Problem Solving; Discussion; Case Study; Role Brainstorming; Six Hats Thinking; Opinion Pool; Debate; Workshop.Pro Based Learning; Problem Based Learning; Storyline; Scenario Based Learn Brain Based Learning; Case Based Learning			bate; Workshop.Project
<ul> <li>Develop intuition</li> <li>Apply concepts le</li> <li>Experience basic</li> <li>Develop critical,</li> <li>Develop experim</li> <li>Learn to use scie</li> <li>Learn to estimate</li> <li>Develop reportin</li> <li>Practice collabor</li> <li>Exercise curiosit hypothesis.</li> </ul>		<ul> <li>Develop intuition at</li> <li>Apply concepts lear</li> <li>Experience basic ph</li> <li>Develop critical, qu</li> <li>Develop experiment</li> <li>Learn to use scienti</li> <li>Learn to estimate st</li> <li>Develop reporting st</li> <li>Practice collaborati</li> <li>Exercise curiosity hypothesis.</li> <li>Better appreciate the</li> </ul>	antitative thinking. Ital and data analysis skills. Ital and data analysis skills. Ital apparatus. Italistical errors and recognize	e systematic errors.  a procedure to test a
Course Assessments		Test important laws     Assignment: 40 %	s and rules.	ST STAN STORY

	Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.		
Content Breakdown	Topical Coverage		
Session 1 (Week 1)	Introduction of the course.		
&	Classification of medical laboratories		
Session 2 (Week 2)	Medical Laboratory Safety – Overview		
Session 3 (Week 3)	Risk management in medical laboratory		
Session 4 (Week 4)	Personal protective equipment		
Session 5 (Week 5)	Chemical safety		
Session 6 (Week 6)	Biological safety		
Session 7 (Week 7)	Physical security and data security		
Session 8 (Week 8)	Waste management		
Session 9 (Week 9)	First aid-Emergency action plans in medical laboratory accidents		
	Rules to be followed in the medical laboratory		
Session 10 (Week 10)	Identifying Glass and Plastic Materials		
Session 11 (Week 11)	Solvents and Concentration Concepts		
Session 12 (Week 12)	Distilled Water, Cleaning and Sterilization of Materials		
Session 13 (Week 13)	Identifying laboratory devices		
Session 14 (Week 14)	Midterm Exam		
Session 15 (Week 15)	General introduction to the course,		
Session 16 (Week 16)	Identifying Glass and Plastic Materials		
	Identifying laboratory devices		
Session 17 (Week 17)	Solvents and Concentration Concepts		
	Distilled Water, Cleaning and Sterilization of Materials		
Session 18 (Week 18)	Microscope		
Session 19 (Week 19)	Brightfield microscope		
	Simple microscope		
	Compound microscope		
	Parts& principle of the microscope		
	Illumination, Magnification and resolution		
	Setting up, uses, Care & safety		
Session 20 (Week 20)	Phase Contrast microscopy		
	Darkfield microscopy		
	Fluorescent microscope		
	Parts & principle Setting up, uses, Care & safety		
	Setting up, uses, care a safety		

	Electron Microscope
	Parts & principle
	Magnification & resolution
	Uses
Session 21 (Week 21)	Acid-Bases and Buffer Solutions
Session 22 (Week 22)	Centrifuge and centrifugation
	Parts & principle of the centrifuge
	Setting up
	Types &Uses
	Care and safety
Session 23 (Week 23)	Spectrophotometric methods
	Spectrophotometer
	Parts & principle
	setting up &Calibration
	Uses and care
Session 24 (Week 24)	Turbidimetric, Nephelometric, Fluorometric Methods
	Autoanalyzers
	Chromatographic methods
	Principle& types
	Paper chromatography
	Thin layer chromatography
	Column chromatography
	Electrophoresis
	electrophoresis apparatus
	Principle, Uses, Care and safety
Session 25 (Week 25)	Filtration apparatus
	Types &Uses of the filters
Session 26 (Week 26)	Equipment for culturing organisms
	-Microbiological safety cabinet - Incubator
	-Pipettes, Bunsen Burner - Water bath & Dry oven
	Sterilization & Decontamination - Autoclave
Session 27 (Week 27)	Final Exam
Session 28 (Week 28)	
Attendance	Students are expected to attend every session of class, arriving on time,
Expectations	returning from breaks promptly and remaining until class is dismissed.
	Absences are permitted only for medical reasons and must be supported with
	a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of
	knowledge and skills required for full participation in all aspects of their lives,
	including skills enabling them to be life-long learners. To ensure graduates

	have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

#### Molecular biology

1	Course name		Molecular biology
2	Course Code		ML306
3 Course type: /general/specialty/optional		ty/optional	Specialty
4	Accredited units		4 units 4 hours
5	Educational hou	rs	
6	Pre-requisite requirements		-
7	Program offered	the course	Medical Laboratory
8	Instruction Langu	uage	English
9	Date of course a	pproval	2022
	tbooks and	completing this of function of the multiple paradig to dissect comple	s course, with an emphasis on genetic analysis. After course, students should be able integrate the structure and genome, describe how gene expression is regulated in ms, and be able to understand how genetic analysis is used ex regulatory processes. olecular biology of the gene, 7th, 2014. Pearson education
Cou	rse Duration	28 weeks	
Delivery Required Reading			gs: assigned review articles. d reading articles will be distributed.
1. Identi perta 2. Infer analy: 3. Apply		Identify the pertains to	basic taxonomy and principles of the scientific method as it the natural, physical world. Inships; make predictions and solving problems based on an evidence or scientific information. Itific concepts, quantitative techniques and methods to blems and making decisions.

	Describe the relevance of some aspect of the natural science to their lives and society.
Course Assessments	Assignment 1: 40 %
course reseasements	Final Exam: 60%
	60% is required for a pass in this course.
	Homework & Assignments Students will be required to read chapters in
	their textbook, handouts, and any other material necessary for the course.
	Instructors are encouraged to use and design any assignment that may be
	beneficial to the student-learning outcome.
Content Breakdown	Topical Coverage
Session 1 (Week 1)	Course overview
	Introduction to molecular biology
Session 2 (Week 2)	DNA and RNA structure in details
Session 3 (Week 3)	The replication of DNA:
Session 5 (Week 5)	- Chemistry of DNA synthesis
	- The replication fork components in details - Finishing of replication
Session 6 (Week 6)	Mechanisms of Transcription:
Session 7 (Week 7)	- Transcription cycle in Bacteria
Session 7 (Week 7)	- Transcription in eukaryotes
	- Transcription by RNA pol I and III
Session 8 (Week 8)	RNA splicing:
Session 9 (Week 9)	- Spliceosome machinery and pathway - Alternative splicing
Session 10 (Week 10)	Translation:
Session 12 (Wee12)	-Initiation of translation
	-Translation elongation
	-Translation termination
Session 13 (Week 13)	The mutability and repair of DNA
Session 14 (Week 14)	Midterm Exam
Session 15 (Week 15)	Review Physical and chemical structure of genetic material: denature and
	renature process of DNA molecule, Tm and Cot curves, determination of
	DNA molecular weight and concentration.
Session 16 (Week 16)	Gene structure and organized in pro and eukaryotic cell. A general structure
	of typical human and bacterial genes with labeled features of up and down stream regulatory elements.
Session 17 (Week 17)	Principle of gene expression in pro and eukaryotic cells. Control sequences
Jession Ir (Week Ir)	(Enhancers, silencers; cofactors'), coding sequence RNA polymerase,
	Initiation of transcription, basal transcription factors (TBP, TFIIB, IIF, IIE, IIH).
Session 18 (Week 18)	Post transcription events; RNA splicing, 5cap ,and poly A formation
Session 19 (Week 19)	Control of RNA splicing. 5UTR and 3UTR cleavage site of intrans, Splicing
	machine, Splicing intermediate; alternative splicing and their relation to gene
	expression control.
	Translation control in pro and eukaryotic

Session 21 (Week 21)	Major molecular level events of translation in eukaryotic cell; cap-dependent and cap- independent translation; role initiation factors; PABP and poly A tail in gene translation.
Session 22 (Week 22)	Post translation events. Methylation, acetylation; phosphorylation process
Session 23 (Week 23)	Chromosome modification or remolding; DNA methylation; Histone acetylation
Session 24 (Week 24)	Blockage of translation; Degradation rate of m-RNA; poly A tail length; si-RNA and mi-RNA role; control of enzyme activity by effectors and inhibitors.
Session 25 (Week 25)	Detection of gene control sequence by biochemical approaches in vitro and recombinant DNA transfected into culture cells
Session 26 (Week 26)	Methods to determine the important of certain sequence or factor for gene expression at transcription or translation level; real time PCR ,DNA foot print; Northern blot; western blot and microarray
Session 27 (Week 27)	Final Exam
Session 28 (Week 28)	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a lecturer's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

#### **Clinical Chemistry**

1	Course name	Clinical Chemistry	
2	Course Code	ML300	
3	Course type: /general/specialty/optional	Specialty	
4	Accredited units	6 units	
5	Educational hours	6 hours	
6	Pre-requisite requirements	Biochemistry	
7	Program offered the course	Medical Laboratory	
8	Instruction Language	English 2/3/	

9 Date of course a	approval 2022	
Brief Description:	This course introduces the theory, practical application, technical performance and evaluation of clinical chemistry laboratory procedures. Correlation of clinical laboratory data with the diagnosis and treatment of carbohydrate, renal, liver, cardiac, lipid, protein, and pancreatic disorders, as well as acid-base and electrolyte disturbances is emphasized	
Textbooks and References:	1- Ravel R: Clinical Laboratory Medicine: Clinical Applications of Laboratory Data; 6th ed; Mosby 1995 2- Burits CA, and Ashwood ER: Titez Text Book of Clinical Chemistry; 3rd ed Saunders Co, N.Y., 2002	
Course Duration	28 weeks	
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experimentsetc.	
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:  Upon successful completion of Clinical Chemistry I, the Medica	
	laboratory science student will:  1.Demonstrate a working knowledge of the theory and techniques utilized in	
	standard laboratory procedures applied to Chemistry.  2.Perform manual and automated laboratory procedures with accuracy and	
	efficiency to provide quality patient care.	
	3.Perform routine maintenance and basic troubleshooting techniques properly.	
	4.Evaluate the validity of test results by correlating interfering substances,	
	QC results, test conditions and specimen integrity.  5. Perform calculations without error to ensure the reporting of accurate and valid test results.	
	6. Correlate test results with normal and abnormal physiologic conditions.	
	7. Demonstrate the ability to effectively communicate with the health care team, peers, patients and the public.	
	8. Effectively utilize clinical information systems to access and process patient data.	
	Upon completion of the course the student will be able to:	
Second Services	Identify and explain various physiological and analytical causes of variability in results on patient laboratory tests.	
C* II &	Explain the biochemical consequences of disease in the major organ systems	

	3) Interpret the meaning of laboratory tests and assess their significance in patient disease states		
	4) Explain the correct use of reference intervals and identify possible factors affecting them		
	5) Clinically correlate laboratory values with clinical disease states.		
	6) Write a clinical case as seen in the concept applications throughout the course.		
Course Assessments	Assignment 1: 10.%		
	Assignment 2: 30%		
	Final Exam: 60% Daily Assessments: 10%		
	A 60 % is required for a pass in this course.		
Content Breakdown	Topical Coverage		
Session 1 (Week 1)	WATER HOMEOSTASIS		
Session 2 (Week 2)	MINERAL METABOLISM:		
Session 3 (Week 3)	- Electrolytes: Na, K, Cl, Mg, Ca		
	- Trace elements: Fe, Cu, Zn, Mn, F		
Session 4 (Week 4)	Suger, Diabetes mellitus		
Session 5 (Week 5)			
Session 6 (Week 6)	LIVER:		
	- Physiology and role in metabolism		
	- Bilirubin metabolism		
	- Bile salts & gall stones		
	- Liver function tests		
Session 7 (Week 7)	Disorders of the Liver:		
	i) Jaundice & Neonatal Jaundice		
	ii) Alcoholic Liver disease		
	iii) Hepatitis		
	iv) Cirrhosis		
	v) Liver tumors		
Session 8 (Week 8)	KIDNEY:		
	- Functions		
	- Renal functions tests		
Session 9 (Week 9)	KIDNEY:		
	- Proteinuria		
	- Renal failure (Acute:Chronic)		
Session 10 (Week 10)	Disorder in lipid metabolism		
Session 11 (Week 11)	T.G,phospholipids lipoprotein Tests (lipid profile)		
Session 12 (Week 12)	HEART:		

	- Enzymes affected in heart diseases and pulmonary embolism (infarction, angina, pulmonary embolism)	
Session 13 (Week 13)	Pancreatic function ,exocrine,function,Pathology P.F.T Disease	
Session 14 (Week 14)	Midterm Exam	
Session 15 (Week 15)	Serum protein components diseases	
Session 16 (Week 16) Session 17 (Week 17)	Tumor Markers	
Session 18(Week 18 Session 19 (Week 19)	Enzymes isoenzymes patterns to pathology .T,Aldolase, CK, LDH	
Session 20 (Week 20)	LP , A.la T ASP .T ASAcp	
Session 21 (Week 21) Session 22 (Week 22)	General aspect of hormone	
Session 23 (Week 23)	Transport regulation	
Session 24 (Week 24)	Thyroid ,gastointestinal steroid Hormones	
Session 25 (Week 25)	Parathyroid ,adrenal hormone	
Session 26 (Week 26)	Sex hormones	
Session 27 (Week 27) Session 28 (Week 28)	Final Exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

# **Medical Bacteriology**

٠,	Course name		Medical Bacteriology	
2	Course Code	Solice of the second	ML301	

3	Course type: /general/specialty,	optional	Specialty	
4	Accredited units	6 units		
5	5 Educational hours 6 hours			
6	Pre-requisite requi	rements	General Microbiology	
7	Program offered th	ne course	Medical Laborato	ry
8	Instruction Langua	ge	English	
9				
	Date of course approval 2022			
Brie	This course covers systemic pathoger modes of transmission, epidemiolo identification.  Areas of study include: Gram-position in the course covers systemic pathoger modes of transmission, epidemiolo identification.		smission, epidemiology, methods	for isolation and bacilli, as well as
Tout	books and			riai agents.
915000	rences:		ical Microbiology © 2005 Thieme.	
		3- Frances T Fi	et al: Medical microbiology, 2002. schbach RN,: A Manual of Laborato on; Lippincott Williams & Wilkins: 20	National and the second section is a second second
	4- Sağlık Biliml		erinde Mikrobiyoloji, Özgül Kısa, No krobiyoloji Laboratuar Kitabı. Musta 2013	
Cou	Course Duration 28 weeks			
Deli	very	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experimentsetc.		
Cou	rse Objectives:	Upon complet demonstrated	ion of this course, the student the ability to:	will have reliably
		Describe the bacteriological	e methods of specimen collection a investigations	nd transporter for
		2. Uses the ligh	t microscopic for examination of ba	cterial investigates
		3. Understandi	ng the techniques used for identific	ation of bacteria
		4. Know differ bacteria	ent biochemical tests important fo	or identification of
			ccurately different microbiologica camination, staining, cultivation an	The state of the s
Cou	rse Assessments	Assignment 1:	10.%	
		Assignment 2:	30%	2000000
		Final Exam: 609	% Daily Assessments: 10%	13/2
		A 60 % is requi	red for a pass in this course.	18 3 (*

Session 1 (Week 1)	Introduction to bacterial:
	- General Characteristics of bacteria
	- Taxonomy - Classification of bacteria
	- Morphology based on size, shape, arrangement, motility, flagella, spores, capsules, cell wall, plasma membrane, pili, ribosomes.
	Lab: Collection and transport of different specimens
Session 2 (Week 2)	Normal microbial flora of human body:
Session 3 (Week 3)	General attributes and virulence factors of bacteria causing
	infections: Exotoxins, enterotoxins, endotoxins, neurotoxins
	Host Parasite relationships
	Harmful Microbial Interactions with Human:
	Entry of pathogens into the host
	<ul> <li>Mechanism of bacterial pathogenicity, colonization and growth</li> </ul>
	<ul> <li>Host factors for infection and innate resistance to infection</li> </ul>
	Lab: Operation and maintenance of autoclave, hot air oven, distillation plant
	Disinfection and sterilization:
	1.Definitions
	2.concepts of disinfection and sterilization
	3.types and methods
	disinfection of different hospital environments, Surgical tools and gowns.
Session 4 (Week 4)	Morphology, pathogenicity and laboratory diagnosis of Gram
Session 5 (Week 5)	positive organisms- :
	- Gram positive cocci:
	Staphylococci (pyogenic cocci and coagulase-negative staphylococcus)
	a) Morphology, culture, and biological characteristics of Staphylococcus aureus
	b) The virulence factors of Staphylococcus aureus and their effects (including SPA, coagulase, hemolysin, and enterotoxin)
	c) The diagnostic laboratory tests for Staphylococcus aureus and the principles of controlling Staphylococcus infections
Session 6 (Week 6)	Streptococcus and enterococcus.
Session 7 (Week 7)	Streptococcus (classification)
	a) Morphology, culture, and biological characteristics of Streptococcus
220000	b) The virulence factors of group A streptococcus, the pyogenic and non pyogenic infections caused by group A streptococcus, diseases caused by group B, D streptococcus and enterococcus
100/2012	c) The diagnostic laboratory tests for streptococcus and

Session 8 (Week 8)	Gram positive spore forming bacilli
	Bacillus
Session 9 (Week 9)	Gram positive spore forming bacilli
	Clostridium
Session 10 (Week 10)	Gram positive non spore forming bacilli
	Corynebacterium
Session 11 (Week 11)	- Gram positive non spore forming bacilli
	Listeria
Session 12 (Week 12)	Gram- negative bacteria:
Session 13 (Week 13)	Neisseria
	a) Classification of Neisseria (Neisseria meningitides and Neisseria gonorrhoeae)
	b) The biological characteristics and pathogenicity of - and immune response to - Neisseria meningitides
	<ul> <li>c) Principles of diagnostic laboratory tests, and principles of prevention and treatment of the diseases caused by Neisseria meningitides</li> </ul>
	d) Neisseria gonorrhoeae and infection
Session 14 (Week 14)	Midterm Exam
Session 15 (Week 15)	Morphology, pathogenicity and laboratory diagnosis of
Session 16 (Week 16)	Enterobacteriaceae-I:
	- Escherichia coli
	- Klebsiella
	Morphology, pathogenicity and laboratory diagnosis of Proteus
	- Shigella
Session 17 (Week 17)	- Enterobacter
	- Citrobacter
	- Yersinia
	- Serratia
Session 18 (Week 18)	- Salmonella
	Emerging bacterial disease
Session 19 (Week 19)	Non-Enterobacteriaceae:
	- Pseudomonas
	- Vibrio
Session 20 (Week 20)	Morphology, pathogenicity and laboratory diagnosis of
	Gram negative bacteria:
	- Haemophilus
	- Bordetella
Session 21 (Week 21)	- Bordetella
Session 21 (Week 21) Session 22 (Week 22)	- Rickettsia
	113

Session 24 (Week 24)	- Brocella	
	- Basturella	
	- Francecella	
Session 25 (Week 25)	Spirochaetes and Syphilis	
	Mycoplasma	
Session 26 (Week 26)	Legionella	
	Chamydial infections	
Session 27 (Week 27)	Final Exam	
Session 28 (Week 28)		
Attendance	Students are expected to attend every session of class, arriving on	
Expectations	time, returning from breaks promptly and remaining until class is	
	dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

## **Medical Parasitology**

1	Course name Medical Parasitology	
2	Course Code	ML302
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	6 units
5	Educational hours	6 hours
6	Pre-requisite requirements	General Microbiology
7	Program offered the course	Medical Laboratory
8	Instruction Language English	
9	Date of course approval	2022

and the taxonomy, biology, epidemiology, diseases caused by medically important parasites, diagnosis and prevention of the		
diseases they cause; as well as to guide them in their working areas		
by the basic knowledge they will gain through these lectures &		
practice the basic skills and techniques as well as the quality control of stool examination		
- Atlas of Medical Helminthology and Protozoology -		
- Textbook of Medical Parasitology: Protozoology and		
Helminthology, 4 th edition by S. C. Parija.		
4 hours per week		
Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experimentsetc.		
Upon completion of this course, the student will have reliably demonstrated the ability to:		
1- Demonstrate adequate knowledge and understanding of the scope of medical parasitology		
together with the basic definitions and terminology as well as classification and nomenclature of protozoan parasites of human		
2- Know the biology and taxonomy medical importance parasite.		
3- Practice the basic skills and techniques as well as the quality control of stool examination (direct		
preparation and concentration techniques used for parasites examination)		
4- Demonstrate adequate knowledge as well as to describe and discuss the following about parasites:		
- Biology and morphological characteristics		
- Lifecycle and transmission		
- Clinical features		
- Laboratory detection and identification		
- Comparison between relevant species		
- Geographical occurrence and distribution		
Assignment 1: 10.%		
Assignment 2: 30%		
Final Exam: 60% Daily Assessments: 10%		
A 60 % is required for a pass in this course.		
Topical Coverage		
Introduction to parasitology:		
- Definitions and terms related to the subject.		
Parasite - Host – symbiosis, ectoparasite, endoparasite, accidental		
parasite, obligate parasite, facultative parasite - parasite relationship		

	- Kinds of parasites – Host- Vectors
	- Classification and characteristics of parasites
	scientific nomenclature, type of life cycles, type of hosts
	Epidemiology of parasites
	Diagnosis
	Treatment
	Prevention and control
Session 2 (Week 2)	Protozoalogy:
	Introduction to protozoology.
	Classification and characteristics of protozoa.
	Diseases cause by intestinal and urogenital protozoa.
	- Amoebiasis
	Entamoeba histolytica and other amoebae
	1-Intestinal amoebiasis.
	2-Extra intestinal amoebiasis.
Session 3 (Week 3)	Entamoeba coli
	E. gingivalis.
	Endolimax nana
	lodamoeba butschlii.
	Neglaria folari
Session 4 (Week 4)	Mastigophora, general characters.
	Pathogenic Flagellates
	Intestinal flagellates.
	Giardia lamblia.
	Biology , medical importance and Lab. Diagnosis of each species.
Session 5 (Week 5)	Genus Trichomonas.
	T. vaginalis/ urogenital flagellate.
	T. hominis
	T. tenax
	Biology , medical importance and Lab. Diagnosis of each species.
Socion 6 (Mark 6)	
Session 6 (Week 6)	Heamo- flagellates ( blood & tissue flagellates), general characters.
	Developmental stages in the vertebrate & invertebrate hosts.
	Genus leishmania ,species of leishmania, biology, vector, medical importance of eachspecies, types of leishmaiasis , life cycle ,Lab.
	Diagnosis, incloding immunological tests.
Session 7 (Week 7)	Genus Trypanosoma, species of trypanosome, biology, vector,
Coston / (Week /)	medical importance of each species, forms of parasite, life cycle, Lab.
	Diagnosis.
Session 8 (Week 8)	Apicomplex: General charcter.
	Sporozoa 6/3/
	10 × × × ×

enital toxoplasosis. Life cycle, role of domesticate animals insmission of the disease. Lab. Diagnosis.  asmodium.  tion to malarial parasites, malarial paroxysm, the general of the plasmodium, species of plasmodium.  rum, P. vivax, P ovale, P. malarae  pathology, medical importance, distribution, and main les during the life cycle.  oridiadse  cryptosporidium, species belong the genus, biology, y, epidemiology, Lab. diagnosis.  y important ciliates
tion to malarial parasites, malarial paroxysm, the general of the plasmodium, species of plasmodium.  rum, P. vivax, P ovale, P. malarae  pathology, medical importance, distribution, and main test during the life cycle.  oridiadse  cryptosporidium, species belong the genus, biology, y, epidemiology, Lab. diagnosis.  y important ciliates
of the plasmodium, species of plasmodium. rum, P. vivax, P ovale, P. malarae pathology, medical importance, distribution, and main es during the life cycle. oridiadse cryptosporidium, species belong the genus, biology, y, epidemiology, Lab. diagnosis. y important ciliates
pathology, medical importance, distribution, and main les during the life cycle.  oridiadse cryptosporidium, species belong the genus, biology, y, epidemiology, Lab. diagnosis.  y important ciliates
oridiadse cryptosporidium, species belong the genus, biology, y, epidemiology, Lab. diagnosis. y important ciliates
cryptosporidium, species belong the genus, biology, y, epidemiology, Lab. diagnosis. y important ciliates
y, epidemiology, Lab. diagnosis. y important ciliates
y important ciliates
m sell Dielem, medical importance Lab Discussion
m coli ,Biology , medical importance, Lab. Diagnosis.
nology:
tion , General characteristics oh helminthes, Classification nthes
matoda: General characters.
histosoma.
human schistosoma, life cycle.
oma hematobium.
oma mansoni.
of adult worm, habitat, pathgenicity, Lab.diagnosis
Midterm Exam
des other than Schistosoma
hepatica
life cycle, pathogenicity, Lab diagnosis.
minth: Class cestoda: General characters.
aginata:
olium: Morphology & the adult warm and the larval stages species, biology, life cycle of each species, pathologinicity of ecies, Lab. Diagnosis
bothiasis
n caninum, Diphyllobathrium latum, Biology, morphology nicity of eachspecies, Lab. Diagnosis.
, c. cachapecies, cab. blaghosis.
lepis nana, Hymenolepis diminuta.
lepis nana, Hymenolepis diminuta.
lepis nana, Hymenolepis diminuta. morphology, pathoginicity of eachspecies,Lab. Diagnosis.
)

	Classification of Nemtoda, general characters.		
	- Enterobius vermicularis.		
	Biology of adult worm, lifecycle, pathgenicity and medical importance of each species, Lab. Diagnosis of each species.		
Session 22 (Week 22)	- Ascaris lambricoides		
	Biology of adult worm, lifecycle, pathgenicity and medical importance of each species, Lab. Diagnosis of each species.  - Ancylostoma duadenale, Necator Americans (Hooks worm)		
	Biology, life cycle, pathogenicity, medical importance of each species, Lab. Diagnosis.		
Session 24 (Week 24)	- Trichuris trichura.		
	Trichenala spiralis.		
	Biology , life cycle , pathogenicity, medical importanceof each species, Lab. Diagnosis of each species.		
Session 25 (Week 25)	- Strogyloides stercoralis.		
	Biology, life cycle, pathgenicity, medical importance, Lab. Diagnosis		
	The filariae: Biology, pathgenicity and medical importanceof each species, Lab. Diagnosis of each species. Visceral larvae migrance, Cutaneaus larvae migrance.		
Session 26 (Week 26)	Entomology: Arthropods with medical importance.		
	Sand fly, Black fly, Mosqiutoes, Ticks & Mites, Fleas		
Session 27 (Week 27)	Final Exam		
Session 28 (Week 28)			
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the for range of knowledge and skills required for full participation in aspects of their lives, including skills enabling them to be life-look learners. To ensure graduates have this preparation, such general skills as literacy and numeric, computer, interperson communications, and critical thinking skills will be embedded in a courses.		

## Medical Mycology

1	2 Course Code		ode ML401  /pe:
2			
3			
4	4 Accredited units		6 units
5			6 weeks  General Microbiology
6			
7	Program offered	the course	Medical Laboratory
8	Instruction Language		English
9	Date of course a	pproval	2020
Dire	f Description:	yeast to enable p	signed to help the students knowledge about fungi and perform the diagnostic procedure of mycoses. ease which caused by the fungus & carry out the types necessary investigation for various diseases
Textbooks and References:		2. Bailey and So Latest Edition. 3. Color Atlas of Mosby-year bool 4. Manual of Clin Edition. 5. Manual for Susceptibility To Importance in th 6. District labo Cambridge Univ. 7. Topley and Wi and Sussman M.	cott's Diagnostic Microbiology. Baron and Finegold diagnostic Microbiology. Maza LD, Pezzlo M, Baron E k Inc., USA. Latest Edition nical Microbiology. Murray PR, et al. ASM Press. Latest the Laboratory Identification and Antimicrobia esting of Bacterial Pathogens of Public Health e Developing World. Perilla MJ et al. CDC and WHO. Press. Latest edition.  Ison's Microbiology and microbial infections. Balows A Hodder Arnold Publication. Latest edition.  Ilogy. Wolfgang et al. Appelton & Lange Co., CA, USA
Course Duration 28 weeks		28 weeks	
Delivery  Lecture-based, Group interaction and discarding activities, active participation, Laboratory experi		Group interaction and discussion, self-directed participation, Laboratory experiments.	
Course Objectives:  Upon com demonstrat  • Perform		demonstrated th     Perform accur	on of this course, the student will have reliably be ability to: urately cultivation of fungi, n by slide culture.

	<ul> <li>Recognize the pathogenic fungi and gain knowledge about human mycotic infections regarding mode of transmission, pathogenesis, and methods of laboratory diagnosis.</li> <li>Acquire laboratory skills for performing standard techniques in staining and cultivating fungi.</li> <li>Acquire laboratory skills for identification of pathogenic fungi</li> </ul>
Course Assessments	Assignment: 40.%
	Final Exam: 60.%
	60% is required for a pass in this course.
Content Breakdown	Topical Coverage
Session 1 (Week 1)	- General Introduction to Medical Mycology
Session 2 (Week 2)	- Definitions and Fungal Terminology - Definition of mycology, fungi, and mycosis fungi
	- History and Epidemiology of medical mycology.
	Medical importance, classification, morphology and general characteristics of fungi, reproduction of pathogenic fungi.
	- Historical Overview and Chytridiomycota,
Session 3 (Week 3)	- Zygomycota Ascomycota, Basidiomycota
Session 4 (Week 4)	- Structure and growth of fungi, mould, yeast-like fungi and dimorphic fungi
	Reproduction of fungi - Sexual and Asexual
Session 5 (Week 5)	Types of infection and immunity against fungal infections
Session 6 (Week 6)	-Fungi Imperfecti, Conidia and Other Spores
Session 7 (Week 7)	-General Aspects of Fungal Immunology and Pathology
	-Antifungal Therapeutic Agents
Session 8 (Week 8)	-The Superficial Mycoses
	-Dermatophytosis and the dermatophytes
	Tinea types and Dematiaceuos (black fungi).
Session 9 (Week 9)	-Introduction to Subcutaneous Mycoses, with emphasis on those caused by dematiaceous (black) fungi
Session 10 (Week 10)	Chromoblastomycosis
	-Phaeohyphomycosis, Mycetoma, Other Diseases Caused by Black Fungi
Session 11 (Week 11)	-Sporotrichosis
Session 12 (Week 12)	Introduction to the Pathogenic Yeasts & Candidiasis
Session 13 (Week 13)	-Cryptococcosis
Session 14 (Week 14)	Midterm Exam
Session 15 (Week 15)	Histoplasmosis
Session 16 (Week 16)	-Blastomycosis
Session 17 (Week 17)	-Coccidiodomycosis
Session 18 (Week 18)	- Aspergillosis

Session 19 (Week 19)	-Fungal Allergies, Mushrooms		
Session 20 (Week 20)	-Mushroom Poisonings & Mycotoxins		
Session 21 (Week 21)	Opportunistic fungal infections		
Session 22 (Week 22)	Mucor and Penicillosis.		
Session 23 (Week 23)	Antibiotics produced by fungi		
Session 24 (Week 24)	Antifungal agents		
Session 25 (Week 25)	Mycotoxins		
Session 26 (Week 26)			
Session 27 (Week 27) Final Exam			
Session 28 (Week 28)			
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	-Fungal culture - Culture Media used for fungusTypes of Mycosis that infected human -Superficial Mycosis (types of Tinea infection) -Cutaneous Mycosis -Sub-cutaneous Mycosis -Systemic Mycosis Biochemical testes to diagnosis fungal		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

# **Clinical Hematology and Blood Bank**

1	Course name	Clinical Hematology and Blood Bank	
2	Course Code	ML304	
3	Course type: /general/specialty/optional	Specialty	
4	Accredited units	6 units	
5	5 Educational hours 6 hours		
6	6 Pre-requisite requirements		
7	Program offered the course	Medical Laboratory	
8	8 Instruction Language English		
9	Date of course approval	2022	

Brief Description:	The course provides knowledge about hematology, formation physiological and pathological basis, and function of blood cells which building on blood diseases. In addition to, the Medical Lab student will understand the basis and clinical hematology in orde to gain skills in the clinical work.		
	To learn the basic tests and the principal of these tests used for the diagnosis of hematological diseases To learn a basic information related to blood components, blood cells, to know the main principles of the tests and the critical points when working those tests		
Textbooks and References:	<ol> <li>John P. Greer, John Foerster, John N. Lukens: Wintrobe's Clinical Hematology, 11th edition Lippincott Williams &amp; Wilkins, 2003</li> <li>Ronald Hoffman. Edward J. Benz Jr. Sanford J. Shattil: Hoffman: Hematology: Basic principles and practice; 3rd edition, Churchill</li> </ol>		
	Livingstone New York 2000		
	3- Henry's Clinical Diagnosi and Management 23. baskı 2017 Elsevier		
	Genetics and blood Haemoglobinopathies and clotting disorders Reprinted from Australian Family Physician Vol. 36, No. 10, October 2007		
	4- Red Blood Cell Indices: Implications for Practice Newborn and Infant Nursing Reviews, Vol 4, No 4 (December), 2004: pp 231–239		
Course Duration	56 hours		
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.		
	activities, active participation, Laboratory experiments.		
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:		
Course Objectives:	Upon completion of this course, the student will have reliably		
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:  1. Understand the different types of blood elements include erythrocytes, leukocytes, and platelets. Although detailed morphologic descriptions and functional characteristics of blood		
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:  1. Understand the different types of blood elements include erythrocytes, leukocytes, and platelets. Although detailed morphologic descriptions and functional characteristics of blood cells.  2. Understand the origin and development of blood cells and the		
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:  1. Understand the different types of blood elements include erythrocytes, leukocytes, and platelets. Although detailed morphologic descriptions and functional characteristics of blood cells.  2. Understand the origin and development of blood cells and the pathogenesis of hematological diseases and disorder.  3. Understand the biosynthesis, function and metabolism of		
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:  1. Understand the different types of blood elements include erythrocytes, leukocytes, and platelets. Although detailed morphologic descriptions and functional characteristics of blood cells.  2. Understand the origin and development of blood cells and the pathogenesis of hematological diseases and disorder.  3. Understand the biosynthesis, function and metabolism of hemoglobin.  4. Understand the instruction of laboratory practice focus on routine manual procedures in hematology such as complete blood		
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:  1. Understand the different types of blood elements include erythrocytes, leukocytes, and platelets. Although detailed morphologic descriptions and functional characteristics of blood cells.  2. Understand the origin and development of blood cells and the pathogenesis of hematological diseases and disorder.  3. Understand the biosynthesis, function and metabolism of hemoglobin.  4. Understand the instruction of laboratory practice focus on routine manual procedures in hematology such as complete blood count, and differential count.		
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:  1. Understand the different types of blood elements include erythrocytes, leukocytes, and platelets. Although detailed morphologic descriptions and functional characteristics of blood cells.  2. Understand the origin and development of blood cells and the pathogenesis of hematological diseases and disorder.  3. Understand the biosynthesis, function and metabolism of hemoglobin.  4. Understand the instruction of laboratory practice focus on routine manual procedures in hematology such as complete blood count, and differential count.  Hematopoiesis, Hemoglobin synthesis and disorders		
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:  1. Understand the different types of blood elements include erythrocytes, leukocytes, and platelets. Although detailed morphologic descriptions and functional characteristics of blood cells.  2. Understand the origin and development of blood cells and the pathogenesis of hematological diseases and disorder.  3. Understand the biosynthesis, function and metabolism of hemoglobin.  4. Understand the instruction of laboratory practice focus on routine manual procedures in hematology such as complete blood count, and differential count.  Hematopoiesis, Hemoglobin synthesis and disorders  Red and white blood cells disorders		

	Knowledge and practice of laboratory working principles and safety.
	to know his/her responsibilities within the laboratory
Course Assessments	Assignment 1: 10.%
	Assignment 2: 30%
	Final Exam: 60% Daily Assessments: 10%
	60 % is required for a pass in this course.
Content Breakdown	Topical Coverage
Session 1 (Week 1)	Introduction of hematology (Definition of blood, importance)
	- Physical properties of blood.
	- The general functions of the blood.
	- The formation of blood cells.
Session 2 (Week 2)	Hemopoiesis
	Definition of blood and its formed elements
	Hematopoietic organs
Session 3 (Week 3)	Erythropoiesis , morphology of RBCs, cell membrane of RBCs, metabolism of RBCs, and destruction
	Red cell production.
	Factors affecting erythrocyte coagulation
	baptized red cells
	The fate of red cells
Session 4 (Week 4) Session 5 (Week 5)	Hemoglobin ( structure, synthesis and levels in blood and in erythrocytes)
	Function of Hemoglobin, Normal and abnormal types of hemoglobin
	Hemoglobin breakdown & clinical significant (hemoglobin pigments)
	- Laboratory analysis of hemoglobin, and hematocrit assay (manual & automated)
	Hemoglobin concentration measurement
Session 6 (Week 6)	Study the shape of red ball
	coloration level
	Hematocrit measurement.
	Measure and calculate absolute MCHC values. MCH. MCV Erythrocyte sedimentation rate (ESR):
	Definition, factor affecting ESR, and the clinical significant
Session 7 (Week 7)	Erythrocyte abnormalities (Anemia):
	- Definition, causes and classification of anemia
	- MICROCYTIC ANEMIA
Session 8 (Week 8)	Iron deficiency anemia:
	- Metabolism of iron, iron intake (dietary), absorption, transport, &
	body storage

	- Iron pathway disorders
	Iron deficiency anemia, causes, symptom
	- Laboratory findings in iron deficiency
Session 9 (Week 9)	The hereditary anemias: ( hemolytic anemia):
	- Classification and causes of hemolytic anemia
	- Hereditary hemolytic anemias due to enzyme disorders, G6PDH and its measurements
	- Hereditary spherocytosis and other anemias due to abnormalities of the red cell membrane
	- Autoimmune hemolytic anemias
	- Laboratory features and diagnosis for each type
Session 10 (Week 10)	- Sickle cell anemia and other sickling syndromes
	- Hemoglobin S: clinical features (trait and disease)
	- Sickling test and morphologic abnormalities in sickling disorder
Session 11 (Week 11)	- The thalassemia: Classification of thalassemia: diagnosis and lab finding
Session 12 (Week 12)	-MACROCYTIC ANEMIA:
	- Megaloblastic anemia (B12 deficiency:
	- Definition, causes of megaloblastic anemia and diagnosis) and
	pernicious anemia
	Folate-deficiency (causes, diagnosis).
	- Metabolism of vitamin B12 and/or folic acid vitamins
Session 13 (Week 13)	Aplastic anemia
Session 14 (Week 14)	Midterm exam
Session 15 (Week 15)	Polycythemia
Session 16 (Week 16)	Leukopoiesis:
	White blood cells( classification and general functions of each one)
	- Origin and development of myeloid, lymphoid, and monocytes
	series
	- Control mechanism of leukopoiesis production
Session 17 (Week 17)	- Control mechanism of leukopoiesis production - Leukocyte disorders:
Session 17 (Week 17)	
Session 17 (Week 17)	- Leukocyte disorders:
Session 17 (Week 17)	- Leukocyte disorders: - Leukocytosis & leuckopenia Definitions & causes of the following:
Session 17 (Week 17)	- Leukocyte disorders:  - Leukocytosis & leuckopenia.  - Definitions & causes of the following:  - Neutrophilia, Neutropenia, Lymphocytosis, eosinophilia, and
Session 17 (Week 17)	- Leukocyte disorders:  - Leukocytosis & leuckopenia.  - Definitions & causes of the following:  - Neutrophilia, Neutropenia, Lymphocytosis, eosinophilia, and basophilia
Session 17 (Week 17)  Session 18 (Week 18)	- Leukocyte disorders:  - Leukocytosis & leuckopenia.  - Definitions & causes of the following:  - Neutrophilia, Neutropenia, Lymphocytosis, eosinophilia, basophilia  - Morphologic abnormalities in leukocytes
	<ul> <li>Leukocyte disorders:</li> <li>Leukocytosis &amp; leuckopenia.</li> <li>Definitions &amp; causes of the following:</li> <li>Neutrophilia, Neutropenia, Lymphocytosis, eosinophilia, and basophilia</li> <li>Morphologic abnormalities in leukocytes</li> <li>Disorders of lymphocytes</li> </ul>
Session 18 (Week 18)	- Leukocyte disorders: - Leukocytosis & leuckopenia Definitions & causes of the following: - Neutrophilia, Neutropenia, Lymphocytosis, eosinophilia, and basophilia - Morphologic abnormalities in leukocytes Disorders of lymphocytes - Malignant diseases of WBCs

	Classification and differentiation of the acute leukemia	
	- Morphologic abnormalities in acute leukemia	
	Diagnosis	
Session 20 (Week 20)	-Chronic leukemia (chronic lymphocytic leukemia , chronic myeloic leukemia)	
	Classification and differentiation of the chronic leukemia	
	- Morphologic abnormalities in chronic leukemia	
	Diagnosis	
Session 21 (Week 21)	Lymphoma (Hodgkin's lymphoma, causes, lab. Findings)	
	Non-Hodgkin's lymphoma, causes and lab.findings	
Session 22 (Week 22)	Thrombocytopoiesis	
	Platelets (morphology and general functions)	
	- Origin, development and control of thrombocytes	
	- The role of thrombocytes in hemostasis	
	Platelets, structural and functional anatomy	
Session 23 (Week 23)	- Normal hemostasis & congenital abnormalities	
Session 24 (Week 24)	- Vascular (Non-thrombocytopenic Purpura)	
Session 25 (Week 25)	- Thrombocytosis & thrombocytopenia, types and causes	
Session 26 (Week 26)	- Hemophilia (definition, causes, classification and symptoms)	
Session 27 (Week 27)	Final Exam	
Session 28 (Week 28)		
Attendance Expectations	Students are expected to attend every session of class, arriving or time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills  The faculty is committed to ensuring that students have range of knowledge and skills required for full participal aspects of their lives, including skills enabling them to be learners. To ensure graduates have this preparation, such skills as literacy and numeric, computer, intercommunications, and critical thinking skills will be embed courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

### Immunology

IIIII	inology		
1	Course name		Immunology
2	Course Code  Course type: /general/specialty/optional		ML305 General
3			
4	Accredited units		4 units
5	Educational hou	rs	4 hours
6	Pre-requisite req	uirements	General Microbiology
7	Program offered	the course	Medical Laboratory
8	Instruction Lange	uage	English
9	Date of course a	pproval	2022
Brie	f Description:	This course aims	to introduce up to date, basic immunology concepts
Dile	r bescription.		for students with little prior exposure to immunology
Text	books and	nature of innate antibody reactio responses, and infection, maligi protecting the bo	and laboratory emphasize detection, identification immunity, antigens and antibodies, and the antigens in encountered, quantities cells involved in immune quantities blood proteins produced in response to hancy or tissue damage or which play a role in ody against these changes.  & Andrew H Lichtman. Basic immunology: 2nd edition
Refe	erences:	Sauders publishers: 2004  Daniel C, Thomas B. Manual of allergy and immunology: Diagnosis and therapy: 4th edition: Lippincott William & Wilkins Publishers; 2002  - Gabriel Virella, Medical Immunology, 2001.	
		- Parslow, Tristram G.; Stites, Daniel P.; Terr, Abba I.; Imboden, John B., 10th edition, Medical Immunology, 2001.	
Cou	rse Duration	28 weeks	
Deli	ivery Lecture-based,		Group interaction and discussion, self-directed participation, Laboratory experiments.
Cou	rse Objectives:	Upon completio demonstrated th	on of this course, the student will have reliably e ability to:
		The same of the sa	he definition and basis of immunology in order to mmune response to different infections.
		2- Explain the bo	dy mechanisms and immune response
50		3- Understand th	e different cells, tissues and organs of immune system
ية الو	188	4- Define antigen	
* 1	11 = 11	5- Know the imm	unological techniques and serological methods used in ctious diseases. learning outcomes
المير	3)11		of animals and analysis of immune response using ues as precipitation, agglutination, ELISA

	A		
Course Assessments	Assignment 1: 10.%		
	Assignment 2: 30%		
	Final Exam: 60%		
	A 60 % is required for a pass in this course.		
Content Breakdown	Topical Coverage		
Session 1 (Week 1)	Introduction to Immunology, the immune system		
Session 2 (Week 2)	Cells of the immune system and lymphoid system		
	organs- primary and secondary		
Session 3 (Week 3)	Types of immunity		
	Natural immunity		
	Acquired immunity		
Session 4 (Week 4)	Antigen, Haptens and Adjuvants		
Session 5 (Week 5)	Cellular immunity & humoral immunity		
Session 6 (Week 6)	Cell-mediated immune responses		
	Effector mechanisms of cell-mediated immunity		
Session 7 (Week 7)	Humoral immune responses and effector mechanisms		
Session 8 (Week 8)	Complement system		
Session 9 (Week 9)	Cytokines		
Session 10 (Week 10)	Immune responses against infectious diseases		
Session 11 (Week 11)	Tumor immunology		
Session 12 (Week 12)	Immune responses against tumours and transplants		
Session 13 (Week 13)	Immunological tolerance and autoimmunity		
Session 14 (Week 14)	Midterm Exam		
Session 15 (Week 15)	Congenital and acquired immunodeficiencies		
Session 16 (Week 16)	Hypersensitivity (allergic)		
Session 17 (Week 17)	Transplantation & MHC structure and functions		
Session 18 (Week 18)	Vaccinology : Principles and practice		
Session 19 (Week 19)	Disorders of the immune system.		
Session 20 (Week 20)	- Serology; introduction and importance.		
Session 21 (Week 21)	- Antigen, antibody and basis of antigen antibody reactions. Zone phenomenon.		
Session 23 (Week 23)	- Agglutination; slide agglutination and anti-globulin agglutination.		
	<ul> <li>Latex agglutination (immunologic pregnancy test, rheumatoid factor later test and CRP). Coagglutination, virus haenagglutination and heterophiliantibodies agglutination tests.</li> </ul>		
Session 24 (Week 24)	- Precipitation; tube precipitation, agar gel diffusion.		
	- Precipitation in agar with an electric field; immunoelecrophoresis and Western Blot test.		
Session 25 (Week 25)	- Complement fixation, toxin antitoxin neutralization and virus neutralization.		
and the second	- Immunoflurescence (direct, indirect) and ELISA.		
Solia Sala Sala Sala Sala Sala Sala Sala S	and the control of th		

Session 26 (Week 26)	<ul> <li>Assessment of the immune competence; assessment of B cell competence, assessment of T cell competence, assessment of phagocytic functions and assessment of complement.</li> <li>Type one hypersensitivity mechanism and diagnosis.</li> <li>Automated Procedures - Instrumentation.</li> </ul>
Session 27 (Week 27)	Final Exam
Session 28 (Week 28)	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.

### Research Methodology

1	Course name		Research Methodology
2	Course type: /general/specialty/optional  Accredited units  Educational hours  Pre-requisite requirements  Program offered the course  Instruction Language		ML307 General
3			
4			4 units
5			4 hours
6			-
7			Medical Laboratory  English  2022
8			
9			
of basic statistics		of basic statistic	ses on the framework of the research process and to the use in the health field and the interpretation of results for levels of care an evaluation of action taken
Textbooks and - Fundamental o		- Fundamental of	Research Methodology and Statistics - ods-in-Education-sixth-edition
Cou	rse Duration	28 weeks	
Deli	very		Group interaction and discussion, self-directed activities on, Laboratory experimentsetc.
Course Objectives:		Upon completion the ability to: a. Utilize the step	of this course, the students will have reliably demonstrated os of the research process. importance of statistical analysis in their field of work
			rive statistics to analyze data from Medical Science project.

	Learning outcomes Knowledge and understanding:
	- Develop awareness on the importance of research in building nursing
	knowledge and guiding practice.
	- Discuss the research process and each of its steps.
	- Describe the characteristics of a researchable problem.
	- Recognize how to state research aim, questions and hypotheses.
	- Recognize the different types of research design.
	- Identify different methods of data collection.
	- Recognize sampling technique.
	Cognitive skills (thinking and analysis).
Course Assessments	Assignment 1: 10.%
	Assignment 2: 30%
	Final Exam: 60%
	60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	introduction:
	- Definition of scientific research
	- Types of research
Session 2 (Week 2)	Research Methodology:
	-Definition and identification of the problem.
	Ethical issues in research
	- Formulation of the hypothesis
Session 3 (Week 3)	- Sample & Sampling
Session 4 (Week 4)	Collection of information
	- Presentation of the results
	- Interpretation of the results
	- Conclusion and recommendations
Session 5 (Week 5)	Research Methods:
	- Scientific observation.
	- Questionnaire.
	- Interview.
Session 6 (Week 6)	A. The empirical phase
	1. Measurement and the assessment of quantitative data
	a. Definition of measurement
	b. Levels of measurement
	c. Advantages of measurement
Session 7 (Week 7)	2. Reliability
	a. Three important aspects of reliability (stability, internal
	consistency and equivalence)
Session 8 (Week 8)	3. Validity
	a. Three important aspects of validity (content validity,
	criterion- related validity & construct )
	b. Sensitivity and specificity
	B. The Analytical phase
Session 9 (Week 9)	1. Analyzing the quantitative and qualitative data
Session 10 (Week 10)	a. Descriptive data analysis
(11001120)	b. Inferential data analysis
	c. Classification of statistics
	d. Criteria for selecting statistical tool
Session 11 (Week 11)	D. Writing the final research report (handout on research report)
	S. T. Issue the infarrescarci report (flandout off fesedicti report)

Session 12 (Week 12)	E. Critiquing of research reports
Session 13 (Week 13)	a. Guidelines for use in critiquing reports
Session 14 (Week 14)	Midterm Exam
Session 15(Week 15)	Writing the thesis report:
	Title
Session 16 (Week 16)	Acknowledgement
	Table of content
Session 17 (Week 17)	Summary
Session 18 (Week 18)	
Session 19 (Week 19)	Introduction
Session 20 (Week 20)	Aim of the study
Session 21 (Week 21)	Material and Methods
Session 23 (Week 23)	Results and Discussion
Session 24(Week 24	Conclusion
	Recommendations
Session 25 (Week 25)	Appendices
Session 26 (Week 26)	References
Session 27 (Week 27)	Final Exam
Session 28 (Week 28)	
Attendance	Students are expected to attend every session of class, arriving on time,
Expectations	returning from breaks promptly and remaining until class is dismissed.
	Absences are permitted only for medical reasons and must be supported with
	a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of
	knowledge and skills required for full participation in all aspects of their lives,
	including skills enabling them to be life-long learners. To ensure graduates
	have this preparation, such generic skills as literacy and numeric, computer,
	interpersonal communications, and critical thinking skills will be embedded
Course Change	in all courses.  Information contained in this course outline is correct at the time of
Course Change	
	publication. Content of the courses is revised on an ongoing basis to ensure
	relevance to changing educational employment and marketing needs. The
	instructor will endeavor to provide notice of changes to students as soon as
	possible. Timetable may also be revised.

# **Pathology**

1	Course name	Pathology
2	Course Code	ML308
3	Course type: /general/specialty/optional	General
4	Accredited units	4 units
5	Educational hours	4 hours
6	Pre-requisite requirements	Histology
7	Program offered the course	Medical Laboratory

8	Instruction Langu	age	English
9	Date of course ap	proval	2022
Text	books and rences:	Pathophysiology. That will be the general pathologic procesystem review of the common causes, clinical manifestation.  Required textbook & Study Common Comm	. L. (2004). Understanding Pathophysiology
Cour	rse Duration	4 hours per week	
Deli		Lecture-based, Group int activities, active participation	eraction and discussion, self-directed n, Laboratory experimentsetc. course, the student will have reliably
		disease and the associated a 2 - To develop skills of ob- needed to analyze human di lesions, and the laboratory	nding of the causes and mechanisms of lterations of structure and function. servation, interpretation, and integration sease. When provided with the anatomical data of a patient, to determine the most the pathogenesis of the disease.
Cour	se Assessments	Assignment 1: 10.% Assignment 2: 30% Final Exam: 60% 60 % is required for a pass in	n this course.
Cor	ntent Breakdown	To	opical Coverage
Sess	ion 1 (Week 1)	Introduction to Pathology	njury, degeneration, necrosis, apoptosis
Sess	ion 2 (Week 2)	Atrophy     Metaplasia	
Sess	ion 3 (Week 3)	Cell Injury and Cell Death	
Sess	Session 4 (Week 4)  Intracellular Accumulations  • Lipids  • Proteins		Security of the second of the
Sess	ion 5 (Week 5)	Glycogen	

	Pigments		
Session 6 (Week 6)	Tissue Regeneration and Repair		
	Regeneration		
	Repair: scar formation		
Session 7 (Week 7)	• Fibrosis		
Session 8 (Week 8)	Healing in Specialized Tissue e.g. healing of fracture		
Session 9 (Week 9)	Haemodynamic Disorders, Thrombosis and Shock		
	• Edema		
Session 10 (Week 10)	Hyperaemia and Congestion		
Session 11 (Week 11)	hemorrhage		
	Haemostasis and Thrombosis		
	Embolism • Infarction		
	• Shock		
Session 12 (Week 12)	Endocrine Function		
Session 13 (Week 13)	Hypopituitarism		
	Hypopituitarism		
	Diabetes Mellitus		
	• Goiter		
	Hypothyroidism		
	Hypothyroidism		
	Hypothyroidism     Hyperthyroidism		
Session 14 (Week 14)			
	Hyperthyroidism		
Session 15 (Week 15)	Hyperthyroidism     Midterm Exam		
Session 15 (Week 15)	Hyperthyroidism     Midterm Exam     Neoplasia		
Session 14 (Week 14) Session 15 (Week 15) Session 16 (Week 16)	Midterm Exam  Neoplasia  Nomenclature		
Session 15 (Week 15)	Midterm Exam  Neoplasia  Nomenclature O Benign tumors		
Session 15 (Week 15)	Midterm Exam  Neoplasia     Nomenclature     Denign tumors     O Malignant tumors		
Session 15 (Week 15) Session 16 (Week 16)	Midterm Exam  Neoplasia  Nomenclature  Benign tumors  Malignant tumors  Characteristics of benign and malignant tumors		
Session 15 (Week 15) Session 16 (Week 16)	Midterm Exam  Neoplasia     Nomenclature     Benign tumors     Malignant tumors     Characteristics of benign and malignant tumors     Differentiation o Local Invasion		
Session 15 (Week 15) Session 16 (Week 16)	Midterm Exam  Neoplasia  Nomenclature  Benign tumors  Malignant tumors  Characteristics of benign and malignant tumors  Differentiation o Local Invasion  Metastasis		
Session 15 (Week 15) Session 16 (Week 16) Session 17 (Week 17)	Midterm Exam  Neoplasia  Nomenclature  Benign tumors  Malignant tumors  Characteristics of benign and malignant tumors  Differentiation o Local Invasion  Metastasis  Epidemiology o Cancer Incidence		
Session 15 (Week 15) Session 16 (Week 16) Session 17 (Week 17)	Midterm Exam  Neoplasia Nomenclature Benign tumors Malignant tumors Characteristics of benign and malignant tumors Differentiation o Local Invasion Metastasis Epidemiology o Cancer Incidence Geographic and Environmental Factors		
Session 15 (Week 15) Session 16 (Week 16) Session 17 (Week 17) Session 18 (Week 18)	Midterm Exam  Neoplasia  Nomenclature  Benign tumors  Malignant tumors  Characteristics of benign and malignant tumors  Differentiation o Local Invasion  Metastasis  Epidemiology o Cancer Incidence  Geographic and Environmental Factors  Carcinogenic Agents o Age		
Session 15 (Week 15) Session 16 (Week 16)  Session 17 (Week 17)  Session 18 (Week 18)	Midterm Exam  Neoplasia Nomenclature Benign tumors Malignant tumors Characteristics of benign and malignant tumors Differentiation o Local Invasion Metastasis Epidemiology o Cancer Incidence Geographic and Environmental Factors Carcinogenic Agents o Age Genetic predisposition		
	• Hyperthyroidism  Midterm Exam  Neoplasia • Nomenclature o Benign tumors o Malignant tumors • Characteristics of benign and malignant tumors o Differentiation o Local Invasion  o Metastasis • Epidemiology o Cancer Incidence o Geographic and Environmental Factors o Carcinogenic Agents o Age o Genetic predisposition o Acquired predisposing conditions		
Session 15 (Week 15) Session 16 (Week 16)  Session 17 (Week 17)  Session 18 (Week 18)	Midterm Exam  Neoplasia  Nomenclature Benign tumors Malignant tumors Characteristics of benign and malignant tumors Differentiation o Local Invasion Metastasis Epidemiology o Cancer Incidence Geographic and Environmental Factors Carcinogenic Agents o Age Genetic predisposition Acquired predisposing conditions Clinical Aspects of Neoplasia		
Session 15 (Week 15) Session 16 (Week 16)  Session 17 (Week 17)  Session 18 (Week 18)  Session 19 (Week 19)	Midterm Exam  Neoplasia Nomenclature Benign tumors Malignant tumors Characteristics of benign and malignant tumors Differentiation o Local Invasion Metastasis Epidemiology o Cancer Incidence Geographic and Environmental Factors Carcinogenic Agents o Age Genetic predisposition  Acquired predisposing conditions Clinical Aspects of Neoplasia Local and Hormonal Effects		
Session 15 (Week 15) Session 16 (Week 16)  Session 17 (Week 17)  Session 18 (Week 18)  Session 19 (Week 19)	Midterm Exam  Neoplasia Nomenclature Benign tumors Malignant tumors Characteristics of benign and malignant tumors Differentiation o Local Invasion Metastasis Epidemiology o Cancer Incidence Geographic and Environmental Factors Carcinogenic Agents o Age Genetic predisposition Acquired predisposing conditions Clinical Aspects of Neoplasia Local and Hormonal Effects Cancer Cachexia		

	Autoimmune Diseases	
Session 22 (Week 22)	o Systemic lupus erythematosus	
	o Sjogren syndrome	
Session 23 (Week 23)	o Systemic sclerosis (scleroderma)	
	Immunodeficiency Syndromes	
Session 24 (Week 24)	o Acquired immunodeficiency syndrome	
	Amyloidosis	
	Environmental and Nutritional Diseases	
	•Industrial and Agricultural Exposures	
	Effects of Tobacco	
	Effects of Alcohol	
Session 25 (Week 25)	Adverse Drug Reactions	
Session 26 (Week 26)	Drug Abuse • Poisoning	
	Radiation Injury	
	Nutritional Deficiencies: Vitamins, Minerals	
	•Obesity	
	Infectious Diseases	
	• Viruses	
	Bacteria	
	• Fungi	
	• Protozoa	
	Helminths	
Session 27 (Week 27)	Final Exam	
Session 28 (Week 28)		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills  The faculty is committed to ensuring that students have the of knowledge and skills required for full participation in all their lives, including skills enabling them to be life-long leading ensure graduates have this preparation, such generic skills and numeric, computer, interpersonal communications, thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

# Diagnostic Microbiology

-		0,		
1	Course name		Diagnostic Microbiology	
2	Course Code  Course type: /general/specialty/optional		ML400 Specialty	
3				
4	Accredited units		6 units	
5	Educational hou	rs	6 hours	
6	Pre-requisite rec	uirements	General Microbiology	
7	Program offered	the course	Medical laboratory	
8	Instruction Lang	uage	English	
9	Date of course a	pproval	2022	
Brie	f Description:	Diagnostic microbiology: This course is mainly practical. It deals with the laboratory diagnosis of infections of several human anatomical sites and /or fluids.		
Textbooks and References:		(Bailey & Scott's) Textbook of diag	iagnostic Microbiology, 13e (Diagnostic Microbiology gnostic microbiology 4th edition.	
		- Monica part 2		
-	rse Duration	56 hours		
Deli	very	100 mm 10	Group interaction and discussion, self-directed participation, Laboratory experimentsetc.	
Cou	rse Objectives:	Upon completion demonstrated the	n of this course, the student will have reliably e ability to:	
			netiologies, epidemiology and basic mechanisms of infectious diseases.	
			asic principles of diagnosis, antimicrobial treatment, control of infectious diseases in the hospital and	
		Describe the host immune system and explain the host response to infection		
		4. Understand and interpret basic laboratory tests for the diagnosis of infectious diseases.		
		5. Apply the principles of molecular and immunological techniques for the diagnosis of infectious diseases.		
	6. Analyze and solve case studies involving bacterial and fungal		lve case studies involving bacterial and fungal agents	
Cour	rse Assessments	Assignment 1: 109	76	

60 % is required for a pass in this course.			
Content Breakdown	Topical Coverage		
Session 1 (Week 1) - Diagnostic Microbiology: purpose and philosophy			
Session 2 (Week 2) - Introduction to Clinical Microbiology			
	- Terms and definitions		
	General safety considerations		
	Biohazards and practices specific to microbiology in general		
	(Biological safety cabinet –Protective clothing Decontamination - Personal practice		
	Classification of biological agents on the basis of hazard		
	Special precautions for specific areas of clinical microbiology		
Session 3 (Week 3)	Isolation and identification of pathogens		
	Rapid detection of infectious agents (Visual test		
	-Agglutination methods-Automation- ELISA-RIA-HPLC-PCR -Other strategies		
Session 4 (Week 4)	- Clinical Specimens Used for the Diagnosis of Infectious Diseases		
Session 5 (Week 5)	Proper Selection, collection, and transport of clinical specimens for microbiological examination		
Session 6 (Week 6)	General Clinical Microbiology Laboratory Methods		
Session 7 (Week 7)	Examination of fresh material		
	Optical methods for laboratory diagnosis and microorganisms identification(Preparation of a smear		
	-Gram stain		
	-Acid-fast stain		
	-Differential stains for parasites		
	-Differential stains for blood smear and tissue sections		
	-Fungal stains		
	-Acridine orange		
	-Rhodamine-auramine		
Session 8 (Week 8)	Culture media		
Preparation and characteristics of certain frequently used med			
(Simple, complex, Rich, enriched, selective and differential)			
Session 9 (Week 9)	Microorganisms encountered in blood		
Session 10 (Week 10)	Microorganisms encountered in cerebrospinal fluid		
Session 11 (Week 11)			
Session 12 (Week 12)	Microorganisms encountered in the Gastrointestinal tract		
Session 13 (Week 13)	Microorganisms encountered in urinary tract		
Session 14 (Week 14)	Midterm Exam		
Session 15 (Week 15)	ek 15) - Genital and sexually transmitted pathogens		

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Session 16 (Week 16)	- Microorganisms encountered in wounds, abscesses, skin, and soft tissues		
Session 17 (Week 17)	- Anaerobic pathogens		
Session 18 (Week 18)	- Microorganisms encountered in bone marrow, and related fluids		
THE RESERVE AND ALL SHEET			
Session 19 (Week 19)	Normal sterile body fluids, bone and bone marrow and solid tissue		
Session 20 (Week 20)	Specimens from sterile body sites		
Caralan 24 (Marala 24)	-Laboratory diagnosis		
Session 21 (Week 21)	-Laboratory methods in basic mycology		
Session 22 (Week 22)	Fungal Infections (Introduction to Medical Mycology-		
	Laboratory Diagnosis of Selected Fungal Infections		
	Collection, and transport of clinical specimens		
	-Direct microscopic examination		
	-Culture		
Session 23 (Week 23)	-Laboratory methods diagnosis parasitic infections		
	Parasitic Infections (Introduction to Medical Parasitology - Laboratory Diagnosis of Selected Protozoal and Helminth Infections		
Session 24 (Week 24)	Specimen collection and transport		
	-Specimen processing		
	-Microscopic examination		
Session 25 (Week 25)	- Laboratory methods in basic virology		
	Viral Infections (Introduction to Medical Virology - Laboratory Diagnosis of Selected Viral Infections)		
	Specimen selection and collection		
	-Specimen transport and storage		
	-Specimen processing		
	Virus detection methods		
	Cytology and histology		
	-Electron microscopy Immunodiagnosis (antigen detection)		
Session 26 (Week 26)	-Molecular detection		
	-Cell culture		
	-Serology (antibody detection)		
Session 27 (Week 27)	Final Exam		
Session 28 (Week 28)	Tillar Exam		
Attendance	Students are expected to attend every session of class, arriving on time,		
Expectations	returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills  The faculty is committed to ensuring that students have the of knowledge and skills required for full participation in all a their lives, including skills enabling them to be life-long lead ensure graduates have this preparation, such generic skills a			

	and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

## **Medical Virology**

1	Course name		Medical Virology	
2	Course Code  Course type: /general/specialty/optional		ML303 Specialty	
3				
4	Accredited units		4 units	
5	<b>Educational hours</b>		4 hours	
6	Pre-requisite requi	rements	General Microbiology	
7	Program offered th	ne course	Medical Laboratory	
8	Instruction Langua	ge	English	
9	Date of course app	roval	2022	
Brie	f Description:		designed to help the student's knowledge about the e classification, and medical significance of viruses.	
Text	tbooks and	GJ Tortora, BR	Funke, CL Case, 2010, Microbiology, an	
Refe	erences:	introduction. N	ction. Ninth edition by. Pearson Education, Inc.	
		- RA Harvey, PL	Harvey, PL Champe, BD Fisher L, 2007, Lippincot's	
		Illustrated Revi	views: Microbiology. 2nd Edition by.	
		Lippincott's Wi	lliams and Wilkins	
Cou	rse Duration	56 hours		
Deli	very	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experimentsetc.		
		Upon complet demonstrated	ion of this course, the student will have reliably the ability to:	
2. To un		To know the definition and basis classification of viruses		
		2. To understand the medical significance of viruses		
		3. To know the	different methods for laboratory diagnosis of viruses	
		4. Carry out rap	oid serological test to detect antigens and titer of viral	
-	ourse Assessments Assignment 1: 1		10 %	

	Assignment 2: 30%		
	Final Exam: 60%		
	A 60 % is required for a pass in this course.		
Content Breakdown	Topical Coverage		
Session 1 (Week 1)	Introduction to Virology		
Session 2 (Week 2)	<ul> <li>Definition</li> <li>General properties, Morphology and Structure</li> <li>Classification</li> <li>Host cell reactions</li> <li>Pathogenesis, How viruses cause disease</li> <li>Prevention</li> <li>Chemotherapy</li> <li>Laboratory diagnosis</li> </ul>		
Session 3 (Week 3)	DNA viruses:  - Viruses with single stranded DNA genomes		
	- Viruses with double stranded DNA genomes		
Session 4 (Week 4)	- Papillomaviruses.		
Session 5 (Week 5)	- Polyomaviruses		
Session 6 (Week 6)	- Adenoviruses		
Session 7 (Week 7)	- Herpesviruses		
Session 8 (Week 8)	- Poxviruses		
Session 9 (Week 9)	- Hepadnaviruses: Hepatitis B Virus and Hepatitis D Virus		
Session 10 (Week 10)	RNA Viruses Viruses with Single-Stranded RNA Genomes		
Session 11 (Week 11)	- Picornaviruses  Astrovirus and Calicivirus; Hepatitis E. Astroviruses.		
Session 12 (Week 12) Session 13 (Week 13)			
Session 14 (Week 14)	Midterm Exam		
Session 15 (Week 15) Session 16 (Week 16)	- Togaviruses - Flaviviruses		
Session 17(Week 17 Session 18 (Week 18)	- Coronaviruses - Retroviruses		
Session 19 (Week 19)	- Human Immune Deficiency Virus (HIV)		
Session 20 (Week 20)	Viruses with Double-Stranded RNA Genomes. Reoviruses		
Session 21 (Week 21)	Viruses with Single-Stranded RNA Genomes, - Orthomyxoviruses		
Session 23 (Week 23)	- Bunyaviruses Arenaviruses		
Session 23 (Week 23)	- Paramyxoviruses - Rhabdoviruses		
Session 24 (Week 24)	- Filoviruses (Marburg and Ebola Viruses)		

Session 25 (Week 25)	- Viruses and cancer
Session 26 (Week 26)	Antiviral chemotherapy and Control of viral disease by immunization
Session 27 (Week 27) Final Exam Session 29 (Week 28)	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills  The faculty is committed to ensuring that students have the of knowledge and skills required for full participation in all their lives, including skills enabling them to be life-long leading to the ensure graduates have this preparation, such generic skills and numeric, computer, interpersonal communications, thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

# Techniques of diseased cells and tissues

1	Course name		Techniques of diseased cells and tissues
2	Course Code		ML402
3	Course type: /general/special	ty/optional	Specialty
4	Accredited units		6 units
5	Educational hou	rs	6 hours
6	Pre-requisite red	quirements	Histology + Pathology
7	Program offered	the course	Medical Laboratory
8	Instruction Lang	uage	English
9	Date of course a	pproval	2022
Brie	f Description:	division, tissue	vledge of pathology such as cell structure, tissue types, cell e repairing, inflammation, infection are given in the sons. The steps of histopathological analysis should be given sons.
	books and erences:	edition	f Medical Laboratory Technology by Paraful B. Godkar-3rd oratory Technology by Ochei and A. Kolhatkar-2nd edition

	3. https://www.pdfdrive.com/introduction-to-histology-and-basic-histological techniques-e34466492.html 4. https://www.pdfdrive.com/kuby-immunology-7th-edition-2013 e44842271.html 5.https://www.pdfdrive.com/harsh-mohan-textbook-of-pathology-e52206258.html
Course Duration	28 weeks
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experimentsetc.
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:  1. Understand histological principles and the equipments used in laboratory  2. Describe the basic principles of histotechnology and perform histotechnological techniques in the laboratory.  3. Describe and define laboratory techniques for preparing cell, tissue specimens and their components for microscope analysis  4. Describe and recognise cells of specific histologic tissues and organ systems
Course Assessments	Assignment 1: 30% Assignment 2:10 % Final Exam: 60% A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to histotechnology, cell constituents
Session 2 (Week 2)	Inflammation, Repair&Degeneration Acute Inflammation Chronic Inflammation Repair, healing&Regeneration Rettrograde, changes, Degeneration Atropphy Necrosis, cloudy swelling Gangrene
Session 3 (Week 3)	Criteria usedforcytopathological diagnosis of cancer Changes in the cytoplasma in malignancy Changes in the nucleus in malignancy Changes in cell as ageneral in malignancy Numenclature of tumors Classification of tumors
Session 4 (Week 4)	- Care and maintenance of laboratory equipment used in histotechnology  . Safety measures in a histopathology laboratory

	. Basic concepts about routine methods of examination of tissues
Session 5 (Week 5)	Collection and transportation of specimens for histological examination
Session 6 (Week 6)	Tissue processting  Fixation, dehydration ,clearing ,embdding 1- Fixation&Fixatives Basic concepts of fixation Theoretical aspects of Fixation Various types of fixatives used in a routine histopathology laboratory Most common fixatives in common use i. Simple fixatives ii. Compound fixatives iii. Special fixatives for demonstration of various tissue elements Fixation for special substances Specializes Techniques forindividual tissue &fixation
Session 7 (Week 7)	Decalcification  a. Criteria of a good decalcification agent  b. Technique of decalcification followed with selection of tissue, fixation, decalcification, neutralization of acid and thorough washing.  c. Various types of decalcifying fluids: Organic & Inorganic Acid, chelating agents, Use of lon-exchange resigns and Electrophoretic decalcification and treatment of hard tissues which are not calcified.
Session 8 (Week 8)	Tissue processting  Fixation, dehydration ,clearing ,embdding  Factors influencing rate of impregnation  Agitation, heat, viscosity, ultrasonies, vacuum
Session 9 (Week 9)	Processing of various tissues for histological examination  a. Embedding  i. Definition  ii. Various types of embedding media  iii. Procedure followed by Dehydration, Clearing, Infiltration and routine timing schedule for manual or automatic tissue processing.  iv. Components & principles of various types of automatic tissue processors
Session 10 (Week 10)	Section Cutting a. Introduction regarding equipment used for sectioning b. Microtome Knives, Sharpening of Microtome Knives, Honing, Stropping, various types of microtome and their applications c. Freezing Microtome and various types of Cryostats. d. Faults in paraffin section cutting with reason and remedy, spreading the sections and attachment or mounting of sections to glass slides.
Session 11 (Week 11)	Microtomy and paraffin section
Session 12 (Week 12)	Staining of tissuesections
Session 12 (Week 12) Session 13 (Week 13)	Staining of tissuesections Impregnation and Mountants

	h Stains and Duos and their uses
	b. Stains and Dyes and their uses,
	c. Types of Stains, Chemical Staining Action, Mordants and Accentuators, Metachromasy.
	d. Use of Controls in Staining Procedures,
	e. Preparation of Stains, solvents, aniline water and buffers etc.,
	f. Commonly used mountants in histotechnology lab.
Session 14 (Week 14)	Midterm Exam
Session 15 (Week 15)	g. General Staining Procedures for Paraffin Infiltrated and Embedded
	tissue.
	h. Nuclear Stains and Cytoplasmic stains
	i. Equipment and Procedure for manual Staining and Automatic Staining Technique.
	j. Mounting of Cover Slips, Labeling and Cataloguing the Slides.
Session 16 (Week 16)	Staining of tissuesections
	Routine Staining Procedures
	a. Haematoxylin and Eosin Staining, various types of Haematoxylins
Session 17 (Week 17)	b. Mallory's Phosphotungstic Acid Haematoxylin (PTAH)
Session 18 (Week 18)	Staining of tissuesections
Session 19 (Week 19)	connective tissue, stains
	Special stains for proteine, carbohydrates, lipid, mucosubstance, pigments
	minerals, apud cell and microorganisms
Session 20 (Week 20)	Preparationof bone sections
	Demonstration of cytoplasmic granules organells and secial tissue
Session 21 (Week 21)	Neuropatholgical techniques
	Enzyme histochemistry and aplicaton
Session 22 (Week 22)	Immunohistochemistry and application
Session 23 (Week 23)	Resin embedding media
Session 24 (Week 24)	Electron microscopy –techniques–Diagnosic uses
	Histometry and diagnostic uses
Session 25 (Week 25)	Immunofluoresence Techniques
Session 26 (Week 26)	Museum and other demonstration techniques
Session 27 (Week 27)	Final Exam
Session 28 (Week 28)	
Attendance	Students are expected to attend every session of class, arriving on time,
Expectations	returning from breaks promptly and remaining until class is dismissed.
	Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of
13/37 15/8	knowledge and skills required for full participation in all aspects of their
16/3/	

	lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

1	Course name		Body fluids
2	Course Code		ML403
3	Course type: /general/specialty/option	onal	Specialty
4	Accredited units		2 units
5	Educational hours		2 hours
6	Pre-requisite requireme	ents	•
7	Program offered the co	urse	Medical laboratory
8	Instruction Language		English
9	Date of course approval		2022
العالى ال	of Description:	body fluid body fluid microscop in the hun respective The anato normal an expanded, cerebrospi peritoneal body fluid	e provides the students with a broad knowledge about. The course includes study of normal and abnormal d, their different types, formation, composition, ic characteristics, locations, distribution and functions han body and of the different organ system and their roles and function in the organization of the body omy and physiology of the urinary system and the d abnormal composition of urine will be reviewed and. In addition, the normal and abnormal composition of inal, synovial, pericardial, plural, seminal, and fluids fluid will be reviewed. Laboratory testing of its for normal and abnormal constituents, sources of clinical correlation with various disease states will be
Text	tbooks and References:		ds Morphology Bench Guide
		111211111111111111111111111111111111111	peed, Inc 1967-1969 F-Body – Fluid
	rse Duration	56 hours	
Deli	very	Lecture-ba	ased, Group interaction and discussion, self-directed

Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:
	1.Use an understanding of the normal and abnormal constituents of body fluids and their correlation with appropriate pathologic conditions to make appropriate and effective on-the-job professional decisions.
	<ol> <li>Apply appropriate laboratory techniques, methodologies, instruments and equipment; and accurately calculate, record, and tabulate data to improve patient care.</li> </ol>
	3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to affect resolution in a professional and timely manner.
Course Assessments	Assignment 1: 30%
	Assignment 2: 10%
	Final Exam: 60%
	A 60 % is required for a pass in this course.
Content Breakdown	Topical Coverage
Session 1 (Week 1)	Safety in clinical laboratory.
Session 2 (Week 2)	2. Structure and function of the urinary system - Urine
Session 3 (Week 3)	formation and composition of urine,
	Normal composition of urine,
	Organic components - Urea, uric acid, creatine, creatinine, amino acids, hippuric acid
Session 4 (Week 4)	Inorganic components - Cations — Na+, K+, Ca+, Mg+ and NH4+-Anions- Cl-, SO4-, and HPO4-
Session 5 (Week 5)	Abnormal composition of urine
Secretary Control of the Control of	Describe the definition, causes and clinical applications of the
18/8/	following:
المناهدة المناهدة	following: Protein (proteinuria), Sugar (glucosuria), ketone bodies,
المنابعة العنديا	following: Protein (proteinuria), Sugar (glucosuria), ketone bodies,
Session 6 (Week 6)	following:  Protein (proteinuria), Sugar (glucosuria), ketone bodies, acetone (ketouria), bile acids, bilirubin, urobilinogen, and nitrite Renal stones: formation, composition and analysis  Routine examination of urine  Physical examination (normal & abnormal)
Session 7 (Week 7)	following:  Protein (proteinuria), Sugar (glucosuria), ketone bodies, acetone (ketouria), bile acids, bilirubin, urobilinogen, and nitrite Renal stones: formation, composition and analysis  Routine examination of urine  Physical examination (normal & abnormal)  Urine volume, color, pH, appearance, specific gravity and odor  Chemical examination  Urine albumin, Bence-jones protein,
	following:  Protein (proteinuria), Sugar (glucosuria), ketone bodies, acetone (ketouria), bile acids, bilirubin, urobilinogen, and nitrite Renal stones: formation, composition and analysis  Routine examination of urine Physical examination (normal & abnormal) Urine volume, color, pH, appearance, specific gravity and odor Chemical examination Urine albumin, Bence-jones protein, glucose, acetone, bilirubin, urobilinogen and nitrite Microscopic examination White & red blood cells, epithelial cells, casts, crystals
Session 7 (Week 7)	following:  Protein (proteinuria), Sugar (glucosuria), ketone bodies, acetone (ketouria), bile acids, bilirubin, urobilinogen, and nitrite Renal stones: formation, composition and analysis  Routine examination of urine Physical examination (normal & abnormal) Urine volume, color, pH, appearance, specific gravity and odor Chemical examination Urine albumin, Bence-jones protein, glucose, acetone, bilirubin, urobilinogen and nitrite Microscopic examination

	Descrition, function & normal composition of CSF
	CSF color and appearance (normal & abnormal)
Session 11 (Week 11)	Microscopic examination: total cell count, RBCs and WBCs and differential cell count
Session 12 (Week 12)	Biochemical components: glucose, LDH, protein and serological tests
Session 13 (Week 13)	Effects of different meningitis on biochemical components of CSF
	Normal CSF reference rang and differences from child hood and adult value
Session 14 (Week 14)	Midterm Exam
Session 15 (Week 15)	Ascetic, pleural and peritoneal:
Session 16 (Week 16)	<ul> <li>Description: exudates and transudate effusions</li> <li>Normal and abnormal composition</li> </ul>
Session 17 (Week 17)	Physical and biochemical studies: protein content, glucose, amylase and LDH level
Session 18 (Week 18)	Microscopically examination: cell content and differential
Session 19 (Week 19)	Seminal fluids:
Session 20 (Week 20)	Definition, formation of semen, hormonal effects on semen formation
	Sample collection
Session 22 (Week 21)	analysis of semen –
	physical, microscopical and chemical examination (fructosamine)
Session 22 (Week 22)	chemical examination (fructosamine)
Session 23 (Week 23)	synovial fluid
Session 24 (Week 24)	sputum
Session 25 (Week 25)	stool
Session 26 (Week 26)	Other fluids
Session 27 (Week 27) Session 28 (Week 28)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining unticlass is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.

Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment
	and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

### **Project Graduation**

1	Course name		Project Graduation
2	Course Code		ML405
3	Course type: /general/specialt	ty/optional	Specialty
4	Accredited units		4 units
5	Educational hour	s	4 hours
6	Pre-requisite req	uirements	Research Methodology
7	Program offered	the course	Medical Laboratory
8	Instruction Langu	iage	English
9	Date of course ap	proval	2022
Refe	books and erences:	methodology of information reso	a Thesis: A Working Guide R (Chandra) Chandrasekhar
Cou	rse Objectives:	demonstrated t  1. Define the P  2. Describe pri  3. Identify suit  4. Undertake in  5. Critical revie  6. Design resea  7. Perform me  8. Write the re	Principles of research planning and design nciples of basics of experimental design and analysis. able research topics. Independent research. Ew and analysis of related literature.
55	With the state of	10. Present clea meeting.	arly and effectively scientific topic in a tutorial or a staff

Course Assessments	PPT Slides -End of semester after presentation
Content Breakdown	Topical Coverage
Session 1 (Week 1)	Development of a research protocol
Session 26 (Week 26)	Fieldwork and data analysis
	<ul> <li>The research project course involves the generation of new scientific information and a review and understanding of the scientific literature.</li> <li>The research may be conducted in a laboratory, hospital, community laboratories, different company, etc., depending on the project and the supervisor.</li> <li>Students are divided into groups and each group is working together.</li> <li>Students are expected to work approximately 56 hours. This will include working in the laboratory, etc., reading or searching literature, and writing up the research project.</li> <li>Fields of study available may include:</li> <li>Biomedical genetics</li> </ul>
	Immunogenic
	Cancer genetics
	Biochemistry
	Genetics Diagnosis
	Embryology
Session 27 (Week 27)	Final Exam
Session 28 (Week 28)	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



# 3-قسم التغذية العلاجية



### Inherited Metabolic Disorder and Nutritional genomic

2 Course Code  3 Course type  5 Specialty  4 Accredited units  4 Fre-requisited requirements  7 Program offered the course  8 Instruction Language  9 Date of course approval  This course aims to introduce the concepts, principles of the studenderstands the nature of metabolic disorders and what types of for
4 Accredited units  5 Educational hours  6 Pre-requisited requirements  7 Program offered the course  8 Instruction Language  9 Date of course approval  This course aims to introduce the concepts, principles of the students of the student
5 Educational hours 4  6 Pre-requisited requirements None  7 Program offered the course Therapeutic Nutrition  8 Instruction Language English  9 Date of course approval 2022  Brief Description: This course aims to introduce the concepts, principles of the study
6 Pre-requisited requirements None 7 Program offered the course 8 Instruction Language English 9 Date of course approval 2022  Brief Description: This course aims to introduce the concepts, principles of the study
7 Program offered the course Therapeutic Nutrition  8 Instruction Language English  9 Date of course approval 2022  Brief Description: This course aims to introduce the concepts, principles of the study
8 Instruction Language English 9 Date of course approval 2022  Brief Description: This course aims to introduce the concepts, principles of the students.
9 Date of course approval 2022  Brief Description: This course aims to introduce the concepts, principles of the students.
Brief Description: This course aims to introduce the concepts, principles of the students.
appropriate for each disease. He knows the symptoms and clinical signs hereditary metabolic disorder and how to treat it nutritionally. Knows metabolic diseases at any age, from childhood to the end of life. This coustudy of how foods affect our genes and how individual genetic different affect the way we respond to nutrients (and other naturally of compounds) in the foods we eat. Nutrigenomics has received much at recently because of its potential for preventing, mitigating, or treating disease, and certain cancers, through small but highly informative changes. The conceptual basis for this new branch of genomic research of the summarized by the following five tenets of nutrigenomics: Under circumstances and in some individuals, diet can be a serious risk fact number of diseases. Common dietary chemicals can act on the human geither directly or indirectly, to alter gene expression or structure. The dewhich diet influences the balance between healthy and disease stated depend on an individual's genetic makeup. Some diet-regulated genetheir normal, common variants) are likely to play a role in the onset, incorprogression, and/or severity of chronic diseases.
For this Course:  Shirley W. Ekvall, 2005. Pediatric Nutrition in Chronic Diseases and Developmental Disorders.  Jean-Marie Saudubray, 2012. Inborn Metabolic Diseases.  Wiley-VCH, 2006, Nutritional Genomics: Impact on Health and Disease, Weinheim.  Wayne,R, Bidlack, Raymond,L Rodriguez, 2012. Nutritional genomics: the impact of dietary.
Course Duration 56 hours

Delivery Classroom Lectures. Case study.				
Course Objectives:	<ol> <li>Case study.</li> <li>Upon completion of this course, the student will have reliably demonstrated the ability to:</li> <li>Advancement in understanding the relationship between inherited metabolic disorders and dietary requirements.</li> <li>Be aware that symptoms that persist and remain unexplained after the initial treatment and after the usual investigations for more common disorders have been performed may be due to an inborn metabolic error.</li> <li>Initially consider inborn errors that are amenable to treatment, particularly in patients who are acutely unwell.</li> <li>Be aware about almost genetic metabolic errors are hereditary and transmitted, to member that an IEM can present at any age, from fetal life to old age.</li> <li>To provide students with an understanding of the relationship between genetic variations and diet-related diseases.</li> <li>To develop an understanding of genomics and gene regulation with respect to diet.</li> </ol>			
Course Assessments	To demonstrate how to improvement in health through dietary modification, novel food, and nutraceuticals.  Assignment 1: 30%			
	Assignment 2: 10%  Final Exam: 60%  A 60 % is required for a pass in this course.			
Content Breakdown	Topical Coverage			
Session 1 (Week 1)	Topics to be covered in the session (week)  Course outline and Introduction			
Session 2 (Week 2)	General nutrition education in IMD			
Session 3 (Week 3)	Introduction to inborn errors of metabolism			
Session 4 – session 8 (Week 4 - 8)	Amino-acidopathy:  - Nutrition management in phenylketonuria - Nutrition management in maple syrup urine disease - Nutrition management of homocystinuria - Nutrition management in tyrosinemia  • Nutrition management in urea cycle defect			
Session 9 – session 10	ession 10 Organic academia:  - Nutrition management in methylmalonic and propionic academia.			
(Week 9-10)	<ul> <li>Nutrition management in methylmalonic and propionic academia.</li> <li>Nutrition management in glutaric academia.</li> </ul>			

Session 12-session13 (Week 11-13)	Disorders of carbohydrates metabolism:			
(week 11-13)	<ul> <li>Nutrition management of glycogen storage disease.</li> </ul>			
	Nutrition management of galactosemia.			
	Emergency management of inborn			
Session 14 (Week 14)	Management of inborn errors metabolism during pregnancy.			
Session 15 (Week 15)	Nutritional genomic: concept and tools			
Session 16 (Week 16)	Transforming Dietary Signals into Gene expression			
Session 17 (Week 17)	Transcriptional Regulation of Hepatic Genes by Insulin and Glucose.			
Session 18 (Week 18)	Nuclear Receptors and the Control of Gene Expression by Fatty Acids			
Session 19 (Week 19)	Nutrigenomic Implications for Nuclear Receptor Coactivators			
Session 20 (Week 20)	Nutrient and genes interaction			
Session 21 (Week 21)	Epigenetic and relationship between SNPs and diseases			
Session 22 (Week 22)	Gene-Linked networks: intestinal Microbiome Linked Gene expression			
Session 23 (Week 23)	Gene-Linked networks: Gene-Linked chronic Disease			
Session 24 (Week 24)	Nutrigenomics and chronic diseases			
Session 25 (Week 25)	Regulation of Lipogenic Genes in Obesity			
Session 26 (Week 26)	Cellular Adaptation to Amino Acid Availability: Mechanisms Involved in the Regulation of Gene Expression			
Session 27 (Week 27)	Food needs to Meet nutrigenomic Health needs			
Session 28 (Week 28)	Presentation and case study.			
Session 29 (Week 29)	Final Exam			
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.			
Generic Skills	<ul> <li>The student acquires the ability to analyze information and solve problems.</li> <li>The student gains the spirit of teamwork.</li> <li>The student gains the ability to apply the acquired concepts and skills.</li> <li>The student acquires the language of dialogue and criticism.</li> </ul>			
Course Change	information contained in this course outline is correct at the time of publication content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will			

endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

### Clinical placement in nutrition

1	Course name		Clinical placement in nutrition	
2	Course Code		TN402	
3	Course type		Specialty	
4	Accredited units		4	
5	Educational hours		4	
6	Pre-requisited require	ments	Clinical nutrition, Nutrition assessment	
7	Program offered the co	ourse	Therapeutic Nutrition	
8	Instruction Language		English	
9	Date of course approv	al	2022	
		in various p have an opp experience incorporate	niliar with providing a specialized nutritional management atient populations and disease states. Moreover, they will portunity to attain a highest level of practice and in clinical nutrition. They will also learn how to their clinical knowledge into their daily practice, and th independently and as a member of a healthcare team.	
	books required for Course:		clinical nutrition, 2013, Merson, compress group. in clinical practices, 2008, Katz David – London.	
Cour	rse Duration	28 weeks		
Deliv	very	Practical, ca	se study, tutorial and training	
Cour	rse Objectives:	1) Under market interest in the second interest in the second interest in the second i	derstand the theoretical concepts of medical nutritional nagement of surgical and critical care, pediatrics, and ernal medicine diseases.  derstand the nutritional requirements of critically ill ients and the means available to provide nutritional sport.  ess drug nutrients interactions (e.g., effect of drugs on ds, and effect of foods on drug).	

Course Assessments	Assignment 1: 30%
	Assignment 2: 10%
	Final Exam: 60%
	60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Content breakdown	Topics Coverage
Session 1 (Week 1)	Topics to be covered in the session (week)
	Orientation to course/ Nutritional management of specific conditions
	Endocrinology
	Diabetes mellitus , hypertension
Cassian 2 (Mark 2)	Hypoglycemia and hyperinsulinemia  Tanica to be accurated in the accuracy (week)
Session 2 (Week 2)	Topics to be covered in the session (week)  Hyperthyroidism and hypothyroidism
	Pulmonary diseases
	Cardiac diseases
Session 3 (Week 3)	Nutritional managements of renal diseases:
	Nephrotic syndromes
	End-stage renal disease pre- and post-dialysis
	Kidney transplantation
Session 4 (Week 4)	Oncology/hematology for immune-suppressed patients
	antitumor therapy
	<ul> <li>(chemotherapy, radiation therapy, bone marrow transplant)</li> </ul>
Session 5 (Week 5)	Topics to be covered in the session (week)
	Hematopoietic stem cell transplant
	<ul> <li>Nutritional managements for developmental</li> </ul>
	Disabilities
Session 6 (Week 6)	Topics to be covered in the session (week)
	<ul> <li>nutritional support for internal medicine</li> </ul>
	Upper & Lower gastrointestinal tract
Session 7 (Week 7)	Topics to be covered in the session (week)
	Hepatobiliary and Pancreatic Disorders
	Diseases of the liver
	Medical nutrition therapy for diabetes
2 1 204 12	Mellitus
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Topics to be covered in the session (week)
	Medical nutrition therapy for Renal disorders
	Medical nutrition therapy for Cancer prevention, Treatment and
	recovery
	Nutrition in Aging
	Case discussion : assessment, diagnosis and intervention of different
	cases of internal medicine.
Session 10-14 (Week 10-	PEDIATRIC NUTRITION
14)	Introduction to normal pediatric nutrition
2/7/ ( * \ \)	Nutritional management of specific pediatric
118 3111 * 11	conditions

	Pediatric nutritional support in critical care	
	nutrition support in a neonatal ICU	
	Case discussion : assessment, diagnosis and	
	intervention of different pediatric case	
	scenarios	
Session 15-16 (Week 15-16)	Nutritional support of heart diseases	
Session 17 (Week 17)	Nnutrition support of pre and post-surgical procedures	
Session 18 (Week 18)	Medical nutrition therapy during pregnancy and lactation	
Session 19 (Week 19)	Recognize the importance of the cooperative role of the nutritionist	
	with the health care team in the management	
	Nutritional care of patients.	
Session 20 (Week 20)	Familiarity with hospital nutrition units and services.	
Session 21 (Week 21)	Understanding the working methods of the various departments and	
	treatment units in the hospital such as Intensive care unit, dialysis	
	units, binocular detection unit.	
Session 22 (Week 22)	Understand how food preparation units, waste materials	
	management, and tools work, sewage and cleaning services in	
	hospital.	
Session 23 (Week 23)	knowledgeable about communication too is for the use of nutrition	
	information's and nutritional education and represent.	
Session 24 (Week 24)	How to prepare solid meals and semi-solid meals and liquid as well as	
	the preparing Enteral and Parenteral meals.	
Session 25 (Week 25)	Collecting personal, medical and food data from the records of	
	reports and interviews of some cases in the hospital.	
Session 26 (Week 26)	Participate with the nursing staff to learn how to manage their	
	nutritional care for patients in different departments.	
Session 27 (Week 27)	Counseling and guidance for patients.	
Session 28 (Week 28)	Final Exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on	
	time, returning from breaks promptly and remaining until class is	
	dismissed. Absences are permitted only for medical reasons and must	
	be supported with a doctor's note.	
Generic Skills	Reflect on ethical issues related to nutrition.	
	Understand the basic principles of nutrition.	
Course Change	Information contained in this course outline is correct at the time of	
	publication. Content of the courses is revised on an ongoing basis to	
	ensure relevance to changing educational employment and marketing	
	ensure relevance to changing educational employment and marketing	
	needs. The instructor will endeavor to provide notice of changes to	

### **Enteral and Parenteral Nutrition**

1 Course name		Enteral and parenteral nutrition	
2	Course Code	TN404	

3	Course type	Specialty			
4	Accredited units		4		
5	Educational hours		4		
6	Pre-requisited re	auirements	Dietary requirement, Clinical r	outrition nutrition	
	Pre-requisited requirements		assessment		
7	Program offered	the course	Therapeutic Nutrition		
8	Instruction Language		English		
9	Date of course approval		2022		
ı	Brief Description:	This course aimed	to learn students how understand of	enteral and parentera	
			out evaluate the nutrition requireme		
			ent of inpatients for enteral nutrition		
		formulate and prepare the solutions used in parenteral nutrition and to			
		determine the ene	ergy needs for non-intestinal feeding	g.	
Te	xtbooks required	Enteral Nutrition S	Support -USA.	Tion	
	for this Course:	Enteral and Tube	Feeding – Sydney .		
			Support in Clinical Practice- UK.		
	<b>Course Duration</b>	56 hours			
	Delivery		cussion group, lab. practical.		
C	ourse Objectives:	Upon completion of this course, the student will have reliably demonstrate			
		the ability to:			
		Introducing the student to enteral nutrition, non-enteric			
		(intravenous) and tube feeding, knowing the most important types.			
		2. Introducing the student to the most important problems and			
			ns associated with parenteral and tube feeding, and		
		avoiding negative effects.			
		3. Introducing the student to the concepts of non-enteral			
		(intravenous) feeding and its role in therapeutic nutrition, and			
		knowing the type of patients who need parenteral nutrition			
		4. Introducing the student to the nutrients and the natural			
		properties of the whole meal in the case of tube feeding.			
		5. Introducing the student to how to formulate and prepare the			
		solutions used in parenteral nutrition and to determine the energy needs for non-intestinal feeding			
Course Assessments					
		Assignment 1: 30% Assignment 2: 10%			
		Final Exam: 60%			
		60 % is required for a pass in this course.			
Con	tent Breakdown Topical Coverage				
Sess	sion 1 (Week 1)		red in the session (week) nutrition support dietitian.		
Sess	sion 2 (Week 2)		in the hospitals	1000000	
_	sion 3 (Week 3)	Nutrition care		310 DE 12 88	
JE 33		- Nutrition care		100	
_	sion 4 (Week 4)	<ul> <li>Indications for</li> </ul>	or Enteral nutrition	130 30	

Session 5 (Week 5)	contridication of enteral nutrition			
Session 6 (Week 6)	Enteral nutrition protocol     Complications for Enteral nutrition			
Session 7 (Week 7)	Complications for Enteral nutrition			
Session 8 (Week 8)	Formula preparation and selection			
Session 9 (Week 9)	<ul> <li>Determine and calculate calories requirements according to type of diseases.</li> </ul>			
Session 10 (Week 10)	<ul> <li>Determine and calculate protein requirements according to type of diseases.</li> </ul>			
Session 11 (Week 11)	<ul> <li>Determine and calculate fat requirements according to type of diseases.</li> </ul>			
Session 12 (Week12)	Fluids needs of tube fed patients			
Session 13 (Week13)	Assessment of EN			
Session 14 (Week14)	Monitoring and evaluations of EN			
Session 15 (Week 15)	Total parenteral nutrition for hospitalized patients			
Session 16 (Week 16)	Types of TPN			
Session 17 (Week 17)	procedures of PPN			
Session 18 (Week 18)	Protocol of pareneteral nutrition			
Session 19 (Week 19)	The Total Parenteral Nutrition Formulations			
Session 20 (Week 20)	Complications of TPN			
Session 21(Week 21)	Modular Products			
Session 22(Week 22)	Calcuation of Energy requirements			
Session 23(Week 23)	Calcuations of amino acid requirements			
Session 24(Week 24)	Type of formula			
Session 25(Week 25)	Rehydration and fluid compensation of hospitalized patients			
Session 26(Week 26)	Monitering and evaluations			
Session 27(Week 27)	Cases study			
Session 28 (Week 28)	Final Exam			
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.			
Generic Skills	<ul> <li>The student should be able to work with a group within a team and form successful positive relationships with others.</li> <li>The student should be able to communicate with the learners linguistically, physically and from a distance.</li> <li>The student should be able to use modern educational means of communication.</li> </ul>			
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.			

### International Health and Nutrition

ntei	national neart	n and Nutrition	
1	Course name		International Health and Nutrition
2	Course Code Course type		TN405
3			Specialty
4	Accredited units		4
5	Educational hou	rs	4
6	Pre-requisited re	equirements	Malnutrtion diseases
7	Program offered		Therapeutic Nutrition
			CCC / (See Address And Common
8	Instruction Lang	uage	English
9	Date of course a	pproval	2022
		population-based alleviation of diet environmental ar status and health problems that inf populations in de	nutrition. The course covers the distinction between and individual-based approaches to prevention and related conditions, how to cope with the social, economic, and institutional barriers in order to improve the nutritional of different population groups. Presents major nutritional fluence the health, survival, and developmental capacity of eveloping societies. Covers approaches implemented at the munity, national, and international levels to improve
	for this Course:  Lenore A  Mark Lav		J. G., Barrie MM, John MK, 2004. Public Health Nutrition ed., rab Publisher: Wiley Blackwell. vrence and Tony Worsley, 2007. Public Health Nutrition ed. nwinPublisher: Australian Pub.
Cour	rse Duration 56 hours		
Deliv	very	<ul> <li>Classroom Lectures.</li> <li>Case study.</li> <li>Tutorials.</li> </ul>	
the ability to:  Describe the nutricauses of Identify to and nutrical different of the student problems to the ability to:  The student problems to the ability to the		Describe the nutric causes of ldentify t and nutridifferent     The study problems limitation	the relationship between the nutrition and health. Identify ents needs among the different population groups and the PEM.  The principal biological, behavioral, cultural, socioeconomic, itional determinants of diet-related disease risk among population groups.  The will be able to evaluate the determinants of nutrition in low income settings as well as discuss strengths and its of strategies to prevent and treat nutrition related global callenges.

	<ul> <li>Show the bad effect of some nutrients deficiency on the health and the methods of nutritional intervention that could be used.</li> </ul>		
Course Assessments	Assignment 1: 30%		
	Assignment 2: 10%		
	Final Exam: 60%		
	60 % is required for a pass in this course.		
Content Breakdown	Topical Coverage		
Session 1 (Week 1)	Topics to be covered in the session (week)		
	Course Introduction and Overview		
Session 2 (Week 2)	Undernutrition and causes of PEM in developing countries.		
Session 3 (Week 3)	Prevalence and statistic of malnutrition in world regions		
Session 4 (Week 4)	International conference of nutrition and malnutrition issues		
Session 5 (Week 5)	Prevalence of IDD in world regions		
Session 6 (Week 6)	Protection and Treatment approaches of IDD		
Session 7 (Week 7)	Vitamin A deficiency disorders in developing countries.		
Session 8 (Week 8)	Treatment protocol during pregnancy and growth		
Session 9(Week 9)	Prevalence of Iron Deficiency Anemia among communities.		
Session 10 (Week 10)	Treatment protocol of Anemia		
Session 11 (Week 11)	National Responses to Control Malnutrition: Food Aid		
Session 12 (Week 12)	Household Responses to Food		
Session 13 (Week 13)	Community Based Nutrition Interventions.		
Session 14 (Week 14)	Breast Feeding and Complementary Feeding.		
Session 15 (Week 15)	Transition feeding		
Session 16 (Week 16)	Bottle feeding and food hygiene		
Session 17 (Week 17)	Nutrition and Reproductive Health		
Session 18 (Week 18)	Nutrition problems associated with gestation		
Session 19 (Week 19)	Food supplements and labour complications		
Session 20 (Week 20)	HIV & Micronutrient Nutrition		
Session 21 (Week 21)	Obesity & the Nutrition Transition		
Session 22 (Week 22)	Zinc Deficiency		
Session 23 (Week 23)	Chronic diseases of imbalance and overabundance		

Session 24 (Week 24)	Infection and infectious morbidity.		
Session 25 (Week 25)	Famine and Malnutrition		
Session 26-27 (Week 26-27)	Poverity and food security		
Session 28 (Week 28)			
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	<ul> <li>The student gains the ability to search the database.</li> <li>That the student acquires teamwork.</li> <li>The student gains the ability to debate and scientific dialogue</li> <li>The ability to be self-reliant in self-education.</li> </ul>		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

### **Research Methods**

1	Course name Course Code		Research methods TN306
2			
3	Course type		General 4 4
4	Accredited units		
5	Educational hours		
6	Pre-requisited requ	uirements	No
7	Program offered the course Instruction Language Date of course approval		- English
8			
9			2022
Brie	f Description:	experimental of designed esper medical science experimental managemental management	design, data analysis, and interpretation. This course is cially for post graduate students of master of applied ces. The course is aimed to introduce students to nethods and designs for conducting meaningful inquiry and will gain an overview of research intent and design, and technique, format and presentation, and data

	management and analysis informed by commonly used statistical methods in applied medical sciences.		
Textbooks required for this Course:	<ul> <li>Dr Catherine Dawson, 2009, Introduction to research methods, UK.</li> <li>M ICHAEL P. MARDER. 2011. Research Methods for science, (1<sup>st</sup> Edition). USA.</li> </ul>		
Course Duration	56 hours		
Delivery	<ul> <li>Classroom Lectures.</li> <li>Discussion groups.</li> <li>software computer program.</li> </ul>		
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:  1) Knowledge about about concepts and principles of research		
	methods and experimental designs.  2) write successful research proposal and scientific research.  3) Use different methods and materials, that applicable to proposed research and experiments.  4) Design experiments to reduce systematic and random errors and use statistics to interpret the results.		
Course Assessments	Assignment 1: 30%		
	Assignment 2: 10%		
	Final Exam: 60%		
	60 % is required for a pass in this course.		
Content Breakdown	Topics Coverage		
Session 1 (Week 1)	Principles and concepts of Scientific research		
Session 2 (Week 2)	Types of scientific research		
Session 3 (Week 3)	Research Hypothesis		
Session 4 (Week 4)	Research designs		
Session 5 (Week 5)	Sampling designs     Sampling procedures		
Session 6 (Week 6)	Data collection methods		
Session 7-10 (Week 7-	How to Conduct Interviews:		
10)	- Methods of recording		
	-The interview schedules		
	- Establishing rapport		
	-Asking questions and probing for information		
Session 11-13 (Week	How to Conduct Focus Groups?		
11-13)	- The role of the moderator		
18 3 4 18	- Recording equipment		

	- Choosing a venue		
	Recruiting your participants		
Session 14-16 (Week	How to Construct Questionnaires		
14-16)	* Deciding which questionnaire to use		
	* Wording and structure of questions		
	* Length and ordering of questions		
	* Piloting the questionnaire		
	* Obtaining a high response		
Session 17 (Week 17)	Carry Out Participant Observation		
Session 18 (Week 18)	Collecting and analyzing information		
Session 19-22 (Week	Analyze research Data:		
19-22)	- Qualitative data analysis		
	- Quantitative data analysis		
	Comparison between means		
Session 23-25 (Week	Experimental dwsigns:		
23-25)	CRD, BRD, Factorial, splite		
Session 26 (Week 26)	Report research Findings		
Session 27 (Week 27)	How to be an Ethical Researcher		
Session 28 (Week 28)	Final Exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.		
The student acquires the ability to analyze information are problems.     The student gains the spirit of teamwork.     The student gains the ability to apply the acquired conceptskills.     The student acquires the language of dialogue and criticises.			
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		



### **Nutrition Economics**

vutr	tion Economic	S	
1	Course name		Nutrition Economics TN400
2	Course Code Course type		
3			Specialty
4	Accredited units		4
5	Educational hou	rs	No Therapeutic Nutrition
6	Pre-requisited re	equirements	
7	Program offered	the course	
8	Instruction Lang	uage	English
9	Date of course a	pproval	2022
Brief	Description:	analysis, applying policy problems of sources and analy production and to welfare consequents analyze changes	the methods of economics to the major food and nutrition of the world. Students will gain familiarity with the data rtical methods needed to explain and predict consumption, rade in agriculture and food markets; evaluate the social ences of market failure and government policies; and in poverty and inequality including both fluctuations and s, employment and economic development.
	books required his Course:		Babu, 2017, Nutrition Economics.  Davis and Elena L. Serrano, 2016, Food and Nutrition
		Economic	S.
	se Duration	56 hours	4 8
Deliv	ery	G-School Color	Lectures.
Cour	se Objectives:	the ability to:  Suggest a research.  Define the discipline.  Identify the specific recomme.  Known to resources aesthetic.	of this course, the student will have reliably demonstrated basic setting for nutrition economics and health outcomes he new merging of health economics and nutrition is to assess the impact of diet on health and disease. The characterizations of the health and economic aspects of changes in nutritional behavior and nutrition indations.  The inter-relationships between diet, health, family, is and home, and man's physical, economic, social and
Cour	se Assessments	Assignment 1: 30%	
		Assignment 2: 1 Final Exam: 60%	5/28/2012/00

	60 % is required for a pass in this course.		
Content Breakdown	Topics Coverage		
Session 1-2 (Week 1-2)	The Role of Nutrition in Social and Economic Development		
Session 3-4 (Week 3-4)	Household Food and Nutrition Security		
Session 5-6 (Week 5-6)	Factors for assessing and designing nutrition projects		
Session 7-8 (Week 7-8)	Nutrition surveillance and intervention programme		
Session 9-10 (Week 9- 10)	Poverty Alleviation systems		
Session 11=12 (Week 11-12)	Nutrition Education Systems		
Session 13-14 (Week 13-14)	Economic benefits of investing in nutrition		
Session 15-16 (Week	Determining the cost of malnutrition:		
15-16)	Nutrition goals of the World Summit for Children		
	Nutrition goals of the Fourth United Nations		
Session 17-18 (Week 17-18)	The link between poverty and nutrition		
Session 19-22 (Week 19-22)	<ul> <li>Assessment of sectoral policies with impact on nutrition: Agricultural policies, Health policies, Policies on access to safe water and sanitation Policies on education</li> </ul>		
Session 23-24 (Week 23-24)	Potential impact of development policies and Program on nutrition.		
Session 25-26 (Week 25-26)	Food security assessment.		
Session 27 (Week 27)	Food Banks and Community food security indicators.		
Session 28 (Week 28)	The Role of Nutrition in Social and Economic Development		
Session 29 (Week 29)	Final Exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time returning from breaks promptly and remaining until class is dismissed Absences are permitted only for medical reasons and must be supported with a doctor's note.		
The student acquires the ability to analyze information problems.     The student gains the spirit of teamwork.     The student gains the ability to apply the acquired concept The student acquires the language of dialogue and criticis.			
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		



## Sports and fitness Nutrition

1	Course name		Sports and fitness Nutrition
2	Course Code Course type		TN401
3			Specialty
4	Accredited units		4
5	Educational hour	5	4
6	Pre-requisited rec	quirements	Dietary requirements  Therapeutic Nutrition
7	Program offered	the course	
8	Instruction Langu	age	English
9	Date of course ap	proval	2022
Brie	f Description:	basic nutritional endurance exerce the pre- and post the special need information for	sents the scientific basis for sports nutrition emphasizing I concepts, energy expenditure during resistance and ise, the diet during training, the timing and composition of t-competition meals, the use of nutrients supplements and s of various athletic groups. The course provides practica the competitive athlete and people of all ages wishing to ition into an active, healthy, lifestyle.
for this Course: Washing  Whitney		Washing Whitney	aker, 2005. Nutrition for Sports, Argo publishing co., ton, USA.  E., Rolfes S., R. (2013). Understanding Nutrition, 13 <sup>th</sup> Wadsworth, Cengage Learning, USA.
Cou	rse Duration	56 hours	, 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Delivery Classroom Le		Classroom Lectur	res, Discussion group, presentation.
	rse Objectives:	Determine Apply the persons.     Describe athletes.     Describe athletes.     Analyze physical     Understate optimum	ne energy needs for specific types of physical activity. e knowledge to improve the performance of sports  physiological issues related to eating disorders in elite the principle methods used for nutritional counseling of fluid intake required for various levels and types of activity. and the relationships between diet and training for a performance.
			and the special nutritional requirements for physical related to sports & exercise.

Course Assessments	Assignment 1: 30%	
	Assignment 2: 10%	
	Final Exam: 60%	
	60 % is required for a pass in this course.	
Content Breakdown	Topics Coverage	
Session 1 (Week 1)	Introduction to sports nutrition	
Session 2 (Week 2)	Nutrient bioenergetics in exercise	
Session 3 (Week 3)	Macronutrient metabolism in exercise and training	
Session 4 (Week 4)	Measurement of energy during exercise	
Session 5 (Week 5)	Pre-exercise nutrition	
Session 6 (Week 6)	Physical activity pyramid	
Session 7 (Week 7)	During exercise nutrition	
Session 8 (Week 8)	Post-exercise nutrition	
Session 9 (Week 9)	Compensation loss of sweat, minerals and vitamins	
Session 10 (Week 10)	Important of antioxidants and hydration for athlete	
Session 11 (Week 11)	Daily calories needs	
Session 12 (Week 12)	Various sources of calories for different exercises.	
Session 13 (Week 13)	Protein needs for exercises	
Session1 4 (Week1 4)	Dietary fats for exercise	
Session1 5 (Week1 5)	Nutrition recommendation for physical activity	
Session1 6 (Week 16)	Nutrition consideration for intensive training	
Session 17 (Week17)	Wise choice in nutrition marketplace	
Session 18 (Week 18)	Thermoregulation and fluid balance during heat stress	
Session19-20	pharmacologic and chemical ergogenic aids	
(Week19-20)	nutrition ergogenic aid evaluated	
	Purported ergolytic aid	
Session 21 (Week 21)	body composition assessment and sport specific observations	
Session 22 (Week 22)	energy balance exercise and weight control	
Session 23 (Week23)	Eating disorder for active persons	
Session 24 (Week24)	body composition characteristic for athletes at different sports	
Session2 5 (Week 25)	Alcohol, sport drinks and sport energy drink.	
	11045	

Session26 (Week26)	Energy expenditure in household, recreational and physical activities		
Session 27 (Week 27)	Cases study and Presentation.  Final Exam  Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Session 28 (Week 28)			
Attendance Expectations			
Generic Skills	<ul> <li>The student acquires the ability to analyze information and solve problems.</li> <li>The student gains the spirit of teamwork.</li> <li>The student gains the ability to apply the acquired concepts and skills.</li> <li>The student acquires the language of dialogue and criticism.</li> </ul>		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

# Food Quality Control in Hospitals

		e-statistical contra	
1	Course name		Food Quality control in the hospitals
2	Course Code		TN403 Specialty 6
3	Course type		
4	Accredited units		
5	Educational hours		6
6	7 Program offered the course 8 Instruction Language		Microbiology, food science  Therapeutic Nutrition  English  2022
7			
8			
9			
	Brief Description:	environmental contamination	this course explore the fundamentals of food safety and sanitation. Students identify the origins of food and recognize proper food safety practices used to keep food flow of food in the hospital.
this Course: W		Whitney E., Ro	mission, 2002, Food And Nutritional Care In Hospitals olfes S., R. (2013). Understanding Nutrition, (13 <sup>th</sup> Edition).
	Course Duration	56 H	
Deli	very	Classroom Lect	ures, Discussion groups, presentation.

Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:
	<ul> <li>Introduced the management of food services to the institution and</li> </ul>
	theories related to it.
	8. Introducing the student to the role of a nutritionist and staff working in
	the management and services of nutrition in hospitals.
	9. Know the procedures and tools used in hospital regarding nutrition
	services.
	<ol> <li>Introduce the student how to gain the ability to guide individuals and manage the hospital's nutrition unit.</li> </ol>
	11. Learn how to establish a nutrition unit in different institutions.
Course Assessments	Assignment 1: 30%
	Assignment 2: 10%
	Final Exam: 60%
	60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul> <li>Orientation lecture</li> <li>Definition and Role of Dietetics Staff</li> </ul>
Session 2 (Week 2)	Role of Dietitians in Hospital
2033011 2 (WCCK 2)	framework of food services in the hospitals
Session 3 (Week 3)	Management of the Food Service Departments
Session 4 (Week 4)	Definitions of food safety and hygiene
Session 5 (Week 5)	Food legislations and regulations
Session 6 (Week 6)	Characterization of food hazards
Session 7 (Week 7)	Biological contaminations of food
Session 8 (Week 8)	Chemical contaminations of food
Session 9 (Week 9)	Physical contaminations of food
Session 10 (Week 10)	Food borne illnesses and infectious agents
Session 11 (Week 11)	Food microbial pathogens
Session 12 (Week 12)	Natural toxin and mycotoxin
Session 13 (Week 13)	Food poisoning
Session 14 (Week 14)	Radiation pollution of food
Session 15 (Week 15)	Types of spoilage food
Session 16 (Week 16)	Hospitals Catering:
	Introduction
	Specifications of dietetic unit
Section 17 (Mesh 17)	Specification of Food
Session 17 (Week 17) Session 18 (Week 18)	The types of storage  Food production area
Session 19 (Week 19)	Food production area  1. Typesof dietetics services:
Session 13 (AASSK 13)	2.Centralized Delivery-service System
Session 20 (Week 20)	.3Decentralized Delivery-Service System
Session 21 (Week 21)	Disadvantage of decentralized Delivery service
Session 22 (Week 22)	Operation of the Food Service Department
Session 23 (Week 23)	Food Safety and Hygiene procedure:
Session 23 (Meek 23)	
3ession 23 (Week 23)	1.Environment hygiene

Session 24 (Week 24)	<ul> <li>National Policies of Federal Ministry of HealthStandards Measures of in- patients in Hospitals:</li> </ul>
Session 25 (Week 25)	Safety procedure
Session 26 (Week 26)	Good safety and manufacture practices
Session 27 (Week 27)	Hazard analysis Critical Control Points (HACCP)
Session 28 (Week 28)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	<ul> <li>The student acquires the ability to analyze information and solve problems.</li> <li>The student gains the spirit of teamwork.</li> <li>The student gains the ability to apply the acquired concepts and skills.</li> <li>The student acquires the language of dialogue and criticism.</li> </ul>
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

# **Environmental Pollution and Food Toxicology**

1	Course name		Food Toxicology	
2	Course Code		TN204	
3	Course type		Specialty 6	
4	Accredited units			
5	Educational hours		6	
6	Pre-requisited req	uirements	General chemistry	
7	Program offered to	ne course	Therapeutic Nutrition	
8	Instruction Language		English	
9	Date of course app	ourse approval 2022		
Brie	f Description:	with emphasi absorption, m	vers basic principles of food and nutritional toxicology is on food components and food toxins including etabolism and excretion of xenobiotics, allergenic and ents, role of diet and nutrients in mutagenesis and is.	
Textbooks required for this Course:		Francis Inc.	nokute, Principles of toxicolology. 1 <sup>st</sup> edition. Taylor & J.A., Mechanistic Toxicology. 2003, 1 <sup>st</sup> edition	
Cou	rse Duration	56 H	Jane, Weenanistic Toxicology, 2003, 1 Editori	
Delivery • CI		Contract Con		

	Discussion group.
Course Objectives:	Upon completion of this course, the student will have reliably
	demonstrated the ability to:
	1. Describe the fundamental principles of environmental pollution and
	food toxicology.
	2. Describe basic toxicological phenomena in the light of normal cellular
	and biochemical conditions
	3. Explain the central principles regarding environmental pollution.
	4. Identify and discuss strengths and limitations of different methods to
	study food toxicological effects, and their areas of application, analyze
	and critically review scientific articles in the field of toxicology.
Course Assessments	Assignment 1: 30%
	Assignment 2: 10%
	Final Exam: 60%
	60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1-4 (Week 1-4)	CHEMICAL POLLUTION
	WATER Pollution
	Basic Hydrology - Water Quantity
	Water needs/use: differences among developed and developing countries
	- Water Sources - Water supply - Water Conflicts - Water Quality
	Microbiology - Chemicals - Water treatment - Waste water treatment.
	AIR Pollution
	Structure of the Atmosphere - History of Air Pollution - Urban Air Pollution
	- Photochemical smog - Ground level ozone Particles - Indoor Air Pollution
	- Radon Carbon Monoxide Particles
	<ul> <li>Health Effects of Air Pollutants - Human Health Welfare - Global Issues</li> </ul>
	<ul> <li>Global Warming Trans-continental Transport of Pollutants</li> </ul>
Session 5-8 (Week 5-8)	RADIATION POLLUTION
	Radiation Pollution: Types, Sources, Effects, Control of Radiation Pollution
	Non-ionising Radiation
	Sources of Radiation Pollution
	The natural sources of radiation
	1. Radioactive minerals
	2. Cosmic rays
	3. Radio nuclides.
	The various sources of manmade radiation pollutions  1. Nuclear power plants;
	2. Radio-active wastes;
	3. Nuclear explosions; and
	4. Radio-isotopes.
	5.Old CRT Television Set
	Radiation Dose limits
	Effect of Radiation Pollution
	Control of Radiation Pollution
Session 9-12 (Week 9-	CHEMICAL POLLUTION
12)	WATER Pollution
	Basic Hydrology - Water Quantity
	Water needs/use: differences among developed and developing countries

	Microbiology - Chemicals - Water treatment – Waste water treatment.  AIR Pollution  Structure of the Atmosphere - History of Air Pollution - Urban Air Pollution  - Photochemical smog - Ground level ozone Particles - Indoor Air Pollution  - Radon Carbon Monoxide Particles  Health Effects of Air Pollutants - Human Health Welfare - Global Issues - Global Warming Trans-continental Transport of Pollutants
Session 13 (Week 13)	Introduction to Toxicology
Session 14 (Week 14)	The Field of Toxicology
Session 15 (Week 15)	Classification of Toxic Agents
Session 16 (Week 16)	Routes of exposure
Session 17 (Week 17)	Factors Affecting Toxicity
Session 18 (Week 18)	ADME: Absorption, Distribution, Metabolism, and Excretion
Session 19 (Week 19)	Clinical Toxicology
Session 20 (Week 20)	Food Poisoning
Session 21 (Week 21)	Toxicological Information Sources
Session 22 (Week 22)	Poisoning and Overdose
Session 23-26(Week 23-26)	Homework: Drug poisoning Environmental toxicology in general Pesticides toxicology
Session 27 (Week 17)	Presentations and discussion.
Session 28 (Week 28)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	<ul> <li>Retrieval of toxicology information from public health impact databases, and interpretation and use of the information</li> <li>Provide information about environmental health issues to the community.</li> <li>Presenting scientific articles related to toxicology orally and in writing and using the appropriate linguistic structure and style for a scientific article.</li> <li>Communicate continuously and effectively with colleagues, supervisors and laboratory technicians.</li> </ul>
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

## **Nutritional Pharmcology**

1	Course name	Nutritional Pharmcology
2	Course Code	TN304
3	Course type	Specialty 5/3/10

4	Accredited units	4
5	Educational hours	4
6	Pre-requisited requi	rements Chemistry
7	Program offered the	course Therapeutic Nutrition
8	Instruction Languag	English English
9	Date of course appr	2022
Bri	ef Description:	This course provides students with sufficient knowledge about principle of pharmacology and drug-nutrient interaction, it is the effect of a medication food or a nutrient in food. Medications interact with foods and nutries in several ways. Medications can decrease appetite or change the way a nutrient is absorbed, metabolized, or excreted.  A food-drug interaction is the effect of food or a nutrient in food on a medication. Dietary nutrients can affect medications by altering their absorption or metabolism. The food you eat could make the medications you take work faster, slower, or even prevent them from working at all.
this Course:		Whitney, E.N. & Rolfes, S.R. (2015). Understanding Nutrition, 14th ed., Wadsworth, Cengage Learning, Belmont, CA. Bernstein, M., & Munoz, N. (2016). Nutrition for the Older Adult, 2nd ed., Jones and Bartlett Publishers, Sudbury, MA.
Co	urse Duration	56 hours
Del	livery	Classroom Lecture, Discussion group.
Cou	urse Objectives:	<ul> <li>Upon completion of this course, the student will have reliably demonstrated the ability to:         <ul> <li>provide the basic knowledge about pharmacology and Nutrition science.</li> <li>Explain the importance of understanding pharmaceutics dosage forms.</li> <li>Understanding Bioavailability and metabolism</li> <li>To provide the basic knowledge about define drug interactions.</li> <li>Explain the importance of drug interactions on Bioavailability and metabolism.</li> <li>Drug interaction awareness.</li> </ul> </li> </ul>
Cou	urse Assessments	Assignment 1: 30% Assignment 2: 10% Final Exam: 60% 60 % is required for a pass in this course.
Cor	ntent Breakdown	Topics Coverage
Ses	sion 1-4 (Week 1-4)	Introduction.  Drug dosage forms.

	Types of drug dosage forms.
	Routes of administration.
Session 4-6 (Week 4-6)	Pharmacology basics.
	Pharmacokinetics.
	Pharmacodynamics.
Session 7-10 (Week 3)	Bioavailability and first pass effect.
	Factors affecting the Bioavailability.
	Factors of selecting drug dosage forms.
Session 11-12 (Week	Drug interaction basic.
11-12)	Drug-drug interaction.
	Nutrient drug interactions.
Session 13-17 (Week	Introduction to nutrient-drug interaction
13-17)	Routes of drug administration and drug dosage forms and their effect on
	the bioavailability.
	Stages of medicines taken by mouth
	How foods can interfere with the stages of drug action
Session 18-20 (Week1	Importance of drug interactions on Bioavailability, metabolism and how
8-20)	does this occur?
	Useful and harmful drug interaction
Session 21-23 (Week	Drug metabolizing enzymes
21-23)	Enzyme inducer
	Enzyme inhibitor
	Defining Prodrugs
	Metabolism and Bioavailability of prodrugs
Session 24-25 (Week	Classification of drugs
12-13)	Antihistamines
	Lipid lowering drugs
	Anti-inflammatory
CALL AND THE	Diuretic and blood lowering drugs
Session 26 (Week 26)	Define the term and describe classes of drug nutrition interactions
	Common food and drugs combination to avoid.
Session 27 (Week 27)	Gastrointestinal Agents.
	Peptic ulcer diseases.
	Constipation. Diarrhea.
	Vomiting.
	Inflammatory bowel diseases
Session 28 (Week 28)	Cardiovascular Disease.
	Hypertension and Blood Pressure Management.
	Hypotension
Session 29 (Week 29)	Final Exam
Attendance	Students are expected to attend every session of class, arriving on time,
Expectations	returning from breaks promptly and remaining until class is dismissed.
	distributed and remaining until class is distributed.

	Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The student acquires the ability to analyze information and solve problems.
	The student gains the spirit of teamwork.  The student gains the spirit of teamwork.
	<ul> <li>The student gains the ability to apply the acquired concepts and skills.</li> <li>The student acquires the language of dialogue and criticism.</li> </ul>
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

# **Nutritional Epidemiology and Immunity**

1	Course name		Nutritional Epidemiology and Immunity
2	Course Code		TN303
3	Course type  Accredited units  Educational hours		Specialty  4  4
4			
5			
6	Pre-requisited rec	quirements	Microbiology
7	Program offered	the course	Public health
8	Instruction Langu	age	English
9	Date of course ap	proval	2022
Brie	f Description:	useful in the sur is designed for v professionals wh	ers basic epidemiology principles, concepts, and procedures veillance and investigation of health-related states or events. It who to be public health professionals and private sector health no are responsible for disease surveillance or investigation. A ding of the practices of public health and biostatistics is
for this Course:		Charge a Anglust	Deleviales of exidencials and edition To be 0.5
fort		Edition. Mausner and Kra	te, Principles of epidemiology. 1st edition. Taylor & Francis Inc.  amer. Epidemiology , an introductory text. 1st edition.  I Immunology, 3rd edition, by H. H. Fundenberg D.P. sti, J.L.
		Edition. Mausner and Kra Basic and clinical	amer. Epidemiology , an introductory text. 1 <sup>st</sup> edition. I Immunology, 3 <sup>rd</sup> edition, by H. H. Fundenberg D.P. sti, J.L.

Course Objectives:	Upon completion of this course, the student will have reliably demonstrated
	the ability to:
	1-Develop knowledge and understanding of fundamental of epidemiological
	and immunity concepts and principles.
	2-Understand the distribution of health and disease in the community.
	3-List the key features and uses of different epidemiological studies.  4-Calculate and interpret the basic statistical measures (ratios, proportions,
	morbidity and mortality).
	5-Understand the basic principle of communicable disease epidemiology and
	control.
Course Assessments	Assignment 1: 30%
	Assignment 2: 10%
	Final Exam: 60%
	60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
(Week 1)	Introduction to epidemiology definition and background
(Week 2)	Uses and applications and scope of epidemiology
(Week 3)	Epidemiologic orientation to health and disease
(Week 4)	<ul> <li>Levels of prevention, changing pattern of morbidity and mortality</li> </ul>
(Week 5)	<ul> <li>Epidemiology concepts triad, agent, host and environment</li> </ul>
(Week 6)	Epidemic versus endemic disease and classification of disease
(Week 7)	Measurement of morbidity and mortality, sources of data
(Week 8)	Morbidity frequency rates and mortality frequent rates
(Week 9)	Descriptive epidemiological studies ( person, place, time) and analytic
	epidemiological studies ( case control and cohort studies)
(Week 10)	Experimental studies principles, types and ethical issues
(Week 11)	Epidemiologic aspects of infectious disease (communicable disease)
(Week 12)	Mechanisms of transmission of infections
(Week 13)	Screening in the detection of disease
(Week 14)	Introduction in immunology
(Week 15)	Immuno system
(Week 16)	Antigen and antibodies
(Week 17)	Complement system and cytokines
(Week 18)	Hypersensitivity (allergic)
(Week 19)	Allergic of food
(Week 20)	Allergic of milk ( lactose tolerance)
(Week 21)	Allergic of peanut
(Week 22)	Allergic of fish
(Week 23)	Allergic of flour (glutin)
(Week 24)	Allergic of Eggs
(Week 25)	Allergic of drugs
(Week 26)	allergic disease ( asthma, urtecaria)
NAME OF TAXABLE PARTY.	

(Week 28)	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Attendance Expectations			
Generic Skills	<ul> <li>Acquire the skill of collecting data from health departments</li> <li>Gain the skill of working in one team and discover the epidemic disease</li> <li>Gain the skill of self-reliance and surfing the Internet</li> <li>Gain the skill of how to combat this epidemic.</li> </ul>		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

# **Nutritional biochemistry**

1	Course name		Nutritional biochemistry
2	Course Code		TN202
3	Course type		Specialty
4	Accredited units		4
5	Educational hours		
6	Pre-requisited requ	uirements	Chemistry
7	Program offered th	ne course	Therapeutic Nutrition
8	Instruction Langua	ge	English
9	Date of course app	roval	2022
scientific meani daily requireme		scientific meani daily requireme	rovides students with sufficient knowledge to describe the ing of the term macro and micronutrients and how it is estimated ents and reference values. Explain the metabolic functions of the mechanism of their implementation within the human body.
this Course: Taylor & Francis Adugna, S., Aler		Taylor & Franci Adugna, S., Ale	ER, 2004, introduction to nutrition and metabolism. 3 <sup>th</sup> edition. s Inc. Edition. mu, L. A. M., Kelemu, T., Tekola, H., Kibret, .B., & Genet, S, I Biochemistry, USA.
Cou	rse Duration	28 weeks	
Deli	very	Classroom Lect	ure, Discussion group, Lab experiments.
Cou	Course Objectives: Upon completion the ability to:		on of this course, the student will have reliably demonstrated

	<ul> <li>Describe and explain the way in which macro and micronutrient requirements are determined and how reference intakes are calculated.</li> <li>Understand the basic concepts of biochemistry of nutients.</li> <li>Describe and explain metabolic functions of the amino acid, fatty acid, vitamins and the main minerals.</li> <li>Describe and explain the deficiency signs associated with each of the vitamins and the main minerals.</li> </ul>
Course Assessments	Assignment 1: 30%
	Assignment 2: 10%
	Final Exam: 60%
	60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to class, Review of syllabus/expectation, Water: Essential Molecule for Life, Distribution, Recommended, dehydration and overhydrating.
Session 2 (Week 2)	Dietary proteins and amino acids Classification, 3-D Structure of Proteins, Denaturing of protein, Functions of protein, Recommended dietary intakes. digestation and metabolism of protein.
Session 3 (Week 3)	Functions of Carbohydrates Hormonal control of blood glucose, Carbohydrates as energy storage
Session 4 (Week 4)	Energy balance and Regulation of glycolysis, Fate of pyruvate, Transfer of NADH from glycolysis into the mitochondria Significance of Glycolysis Cori Cycle
Session 5 (Week 5)	Electron Transport system and Oxidative Phosphorylation, Gluconeogenesis, Glycogen synthesis and utilization.
Session 6 (Week 6)	Lactose intolerance Disorders of carbohydrate metabolism Overview of diabetes mellitus
Session 7 (Week 7)	Enzymes, Catalytic Efficiency Nomenclature and Classification, Enzymes Cofactors
Session 8 (Week 8)	Digestion and absorption of triacylglycerol, The metabolism of fats, The role of Carnitine, $\beta$ -oxidation of fatty acids.
Session 9 (Week 9)	Fat intake, The type of fat in the diet Hormonal control in the fed and fasting states
Session 10 (Week 10)	Hormonal control of adipose tissue metabolism, Control of lipid metabolism in the liver.
Session 11 (Week 11)	Muscle fuel utilization in the fed and fasting states, Disorders of Lipid Metabolism Classification of lipoproteins.
Session 12 (Week 12)	The exogenous pathway of lipoprotein metabolism, The endogenous pathway of lipoprotein metabolism.
Session 13 (Week 13)	Abnormalities in lipid metabolism Disorders of Exogenous Lipoprotein Metabolism

Session 14 (Week 14)	Free radicals and antioxidant nutrients, Tissue damage by oxygen radicals		
Session 15 (Week 15)	Introduction to class. Review of syllabus/expectations The determination of		
	requirements and reference intakes.		
	The vitamins, Vitamin A: international units, Metabolism, Metabolic functions.		
Session 16 (Week 16)	Vitamin A in vision, Retinoic acid and the regulation of gene expression.		
	Vitamin A deficiency Requirements, Assessment, Toxicity of vitamin A.		
	Vitamin D: Vitamers, absorption, metabolism, Metabolic functions, deficiency,		
	requirements, and toxicity.		
Session 17 (Week 17)	Vitamin E: Vitamers, absorption, metabolism, Metabolic functions,		
	deficiency, requirements, and Indices of vitamin E status.		
	Vitamin K: Vitamers, absorption, metabolism, Metabolic functions,		
	deficiency, requirements, and toxicity.		
Session 18 (Week 18)	Vitamin B1 (thiamin): Absorption, metabolism, and metabolic functions.		
	Thiamin deficiency, requirements, 2 2 Assessment of thiamin status.		
Session 19 (Week 19)	Vitamin B 2 (riboflavin): Absorption, and metabolism		
Session 20 (Week 20)	metabolic functions of riboflavin, riboflavin deficiency and requirements		
	Assessment of riboflavin status		
Session 21 (Week 21)	Niacin: Metabolism, The synthesis of nicotinamide nucleotides from		
50551011 ZZ (110011 ZZ)	tryptophan Metabolic functions of niacin		
Session 22 (Week 22)	Tryptophan and niacin deficiency, Requirements, Assessment, and		
50551011 22 (1700K 22)	toxicity.		
Session 23 (Week 23)	Vitamin B6 :Absorption, metabolism, and metabolic functions.		
Session 24 (Week 24)	Vitamin B12 :Absorption, metabolism, and metabolic functions.		
36331011 24 (WEEK 24)	Requirements, and Assessment.		
Session 25 (Week 25)			
36551011 23 (WEEK 23)	<ul> <li>Biotin: Absorption, metabolism, and metabolic functions Deficiency and Requirements.</li> </ul>		
Session 26 (Week 26)			
Session 20 (Week 20)	Vitamin C (ascorbic acid): Absorption, metabolism, and metabolic functions		
Sanian 37 (Mark 37)	functions.		
Session 27 (Week 27)	Minerals: 1 Calcium: Minerals which function as prosthetic groups in		
Socian 30 (Mark 30)	enzymes.		
Session 28 (Week 28)	Minerals that have a regulatory role as enzyme ,(in neurotransmission		
Session 20 (Mest 20)	activators or in hormones).		
Session 29 (Week 29) Attendance	Final Exam  Students are expected to ettend exercises of place against a particular.		
Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.		
	Absences are permitted only for medical reasons and must be supported with		
	a doctor's note.		
Generic Skills	The student acquires the ability to analyze information and solve		
	problems.		
	The student gains the spirit of teamwork.		
	<ul> <li>The student gains the ability to apply the acquired concepts and skills.</li> </ul>		
6000000	The student acquires the language of dialogue and criticism.		
Course Change	Information contained in this course outline is correct at the time of publication		
12/3/( * 1	Content of the courses is revised on an ongoing basis to ensure relevance t		
X   X   X   X   X   X   X   X   X   X	changing educational employment and marketing needs. The instructor wi		

endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

### Clinical nutrition

	al nutrition			
1	Course name		Clinical nu	itrition
2	Course Code		TN30	01
3	Course type		Specialty	
4	Accredited units		6	
5	<b>Educational hours</b>		6	
6	Pre-requisited requ	uirements	Basics of Nutrition	
7	Program offered th	ne course	Therapeutic Nutrit	ion Department
8	Instruction Langua	ge	Englis	sh
9	Date of course app	roval	2022	2
Course is covers the pathophysiology, treatment and manage nutrition-related diseases and conditions as well as recommended for their clinical nutrition intervention. This course will cover the interventions regarding diseases of the the nutritional interventions regarding therapeutic diet, Diseases of the Endocrine, diabetic thyroid, obesity, cardiovascular disease and hypertension, gastruct and osteoporosis, kidney, liver, pregnancy and lactation allergy.  Textbooks required for this Course:  L. Kathleen Mahan Sylvia Escott- Stump. Krause's Food & Nutrition 13 <sup>th</sup> edition. Taylor & Francis Inc. Edition.  Sharon Rady., Ellie Whitney. Understanding Normal and Clinical Nature 10 <sup>th</sup> edition.		as recommended guidelines rse will cover the nutritional interventions and ocrine, diabetic mellitus, pertension, gastrointestinal cy and lactation and food s Food & Nutrition Therapy.		
	se Duration	28 weeks		
Deliv			es, Discussion group and case s	
Course Objectives:  Upon completion of this course, the student demonstrated the ability to:  1. Utilize nutritional principles and standar provide an optimal medical nutrition to the standard provide and individual assignment of the nutritional management of the nutrition of the nutritional management of the nutrition of the nutrition of the nutrition of the nutritional management of the nutrition of the nutriti		e ability to: nal principles and standards of optimal medical nutrition theraperoup and individual assignments on the nutritional management care	care and protocols, to by, Manage daily activities ts, exams, and discussions to patients	
Cours	se Assessments	Assignment 1: 30 Assignment 2: 10 Final Exam: 60%	%	See
1000	ntent Breakdown	7		

Session 1 (Week 1)	Role of Dietitian and Therapeutic Feeding
	Definition-dietitian, professional ethics
	•
	Nutritional assessment of hospitalized patient
Session 2-4 (Week 2-4)	Team approach to nutritional care – effect of illness on food acceptance
	and utilization - inter - relationship with the patient. Psychology of feeding
	the patient
Session 5-7 (Week 5-7)	Diet Therapy Determination (Indications) and Identification.
	Types of General Diet
	Regular/Full Diet
	High Fiber Diet Vegetarian Diet .
	Types of Therapeutic Diet (Diet Modified According to Consistency and
	Composition and Restricted Diets)
	a. Clear Liquid
	b. Full Liquid c. Blenderized Liquid
	d. Soft Diet
	e. Low-Residue Diet
	f. Low-Sodium Diet (Specific Patient) and High- Sodium Diet
	g. DASH Diet
	h. Low-Fat Diet (CAD Prevention)
	i. Renal Diet
	j. Diabetic Diet
	k. Non-Allergic Diet
	L. Immunosuppressed Diet
Session 8(Week 8)	Diseases of the Endocrine: Thyroid-Hypo and Hyper Thyroidism and
	Pancreas - Diabetes Mellitus
	Clinical features, metabolic features, nutritional requirements and
	treatment for hypo and hyper thyroidism
Session 9-12 (Week 9-	Classification, pathophysiology, symptoms, diagnosis, risk factors and
12)	complications. Management of diabetes mellitus - Insulin therapy and ora
	hypoglycemic agents.
	Dietary care and nutritional therapy, meal plan with and without insulin
	Glycemic index of food, #special diabetic foods and lifestyle management#.
	Gestational diabetes – causes, complications and dietary management.
Session 13 (Week 13)	Nutrition therapy for hypertension
	Hypertention-types, pathophysiology, etiology and nutritional care.
Session 14-16	Diseases of the Cardiovascular Diseases Hyperlipidemias - classification of
(Week 14-16)	hyperlipidemias. Clinical and nutritional aspects of hyperlipidemia Dietary
	regimen
	Atherosclerosis- pathophysiology, role of fat in the development of
	atherosclerosis, clinical effects, risk factors and dietary modification.
	Ischemic heart disease – #angina pectoris, myocardial infarction-clinical
	effects# and dietary management. Congestive heart disease-
- Constant	pathophysiology, etiology, symptoms and dietary management.
Session 17-18	Energy modifications and nutritional care for weight management
(Week 17-18)	Identification of overweight and obese etiological factors contributing to
(0) (a) (1)	

	obesity and prevention Treatment – Low Energy diets, behavioral modification. Complications of obesity. Underweight – aetiology and assessment. Treatment - high energy diets. Complications - Anorexia Nervosa, Bulimia
Session 19-20 (Week 19-20)	Understanding the working methods of the various departments and treatment units in the hospital such as Intensive care unit, dialysis units, binocular detection unit.
Session 21-22 (Week 10)	Understand how food preparation units, waste materials management, and tools work, sewage and cleaning services in hospital
Session 23-24 (Week 23-24)	Febrile diseases- acute and chronic fever, influenza, tuberculosis, poliomyeletis, typhoid, malaria
Session 25-26 (Week 25-26)	Gastrointestinal disorder-etiology symptoms and treatment of gastritis, peptic ulcer, diarrhea, constipation, dumping syndrome, malabsorption syndrome, steatorrhoea irritable bowel syndrome, ulcerative colitis, diverticulosis, crohn's disease etc
Session 27 (Week 27)	Nutritional management in liver diseases:     Liver diseases-Infective hepatitis. cirrhosis, cholecystis, chole lithiasis, hepatic encephalopathy and liver transplant
Session 28 (Week 28)	<ul> <li>Diet in Allergy-Definition. Classification. Food allergens, test for allergy, dietary treatment.</li> </ul>
Session 29(Week 29)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	<ul> <li>Acquire the skill to use techniques that a nutrition can effectively educate different types of patients about nutritional requirements</li> <li>Do web search and share relevant and reliable information regarding trends and updates on nutritional management.</li> </ul>
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

### **Nutrition Assessment and Surveillance**

1 Cours	e name	Nutrition Assessment and Surveillance
2 Cours	e Code	TN300
3 Cours	e type	Specialty
4 Accre	dited units	4
5 Educa	ational hours	4

6	Pre-requisited re	quirements	Basics of nutrition
7			Therapeutic Nutrition
8			English
9	Date of course ap	proval	2022
assessment as a f problems and ch formulated. Dieta methods, especi		assessment as a sproblems and characteristics formulated. Diet methods, especimportant part of	is course is to obtain a deeper understanding of dieta a field of study. The goal is also to develop the ability to ident choose methods based on purpose and how the problem etary assessment methodology includes reviews of researcially methods aiming at measuring dietary intake. of the course deals with measurement errors, validity a ems.
	tbooks required	09	Principles of Nutritional Assessment. 2 <sup>nd</sup> edition. oxford
for	this Course:	university press. Fridman Gregg.,	(2014). Review of national nutrition surveillance, USA.
	rse Duration	28 weeks	
Deli	very	Classroom Lecture experiments.	res, Discussion group, case study, field trip and lab
Course Objectives:		the ability to:  1) Understand used for ass interpretation  2) Choose approximation individual's and various approximate assessment.  5) Develop skill individual are assessment.  5) Describe dies intake, inclusion de data and community the data and and and community the data and and community an	etary methods are used for assessing an individual nutrient ding prospective and retrospective methods.  The the surveillance strategies to determine an individual's nity nutritional status and make recommendations based on alysis and assessment.  Influence of cultural and behaviour habits on nutrition
Cou	rse Assessments	Assignment 1: 3	( Secretary
	- Toolson in the	Assignment 1.	12/3/

	Assignment 2: 10%			
	Final Exam: 60%			
	60 % is required for a pass in this course.			
Content Breakdown	Topics Coverage			
Session 1 (Week 1)	The Purposes of nutritional assessment and survey			
Session 2 (Week 2)	The factors are effecting on nutritional status of individual and community			
Session 3 (Week 3)	The direct methods of nutrition assessment			
Session 4 (Week 4)	Classify anthropometric methods			
Session 5 (Week 5)	Anthropometry measurements for children and teenagers (Weight,			
	Length, Height, MUAC, HC, CC, BMI for age, WFA, HFA, WFH)			
Session 6 (Week 6)	Measurements for adults (BMI, IBW, WC, HC, WHR, SFT, MUAC)			
Session 7 (Week 7)	Anthropometry Nutritional Indices in Adults			
Session 8 (Week 8)	International standards of anthropometric Measurements			
Session 9 (Week 9)	The percentile of median of growth chart (WHM, WHM, HAM)			
Session 10 (Week 10)	Z-scores (WHZ, WAZ, HAZ)			
Session 11 (Week 11)	Advantages and disadvantages of anthropometry			
Session 12 (Week 12)	Clinical assessment methods			
Session 13 (Week 13)	Biochemical and Laboratories tests, Advantages and limitations of			
	Biochemical Methods			
Session 14 (Week 14)	Initial Laboratory Assessment and Specific Lab Tests			
Session 15 (Week 15)	General Dietary Measurements:			
	Local level			
	Regional and international level			
Session 16 (Week 16)	National survey methods			
Session 17 (Week 17)	Dietary records method			
Session 18 (Week 18)	24 hours dietary recall method			
	Score method			
Session 19 (Week 19)	Food Frequency Questionnaire			
	duplicate and mobile phone methods			
Session 20 (Week 20)	Dietary history and Food diary			
Session 21 (Week 21)	Qualitative and quantative data analysis			
Session 22(Week 22)	Nutrition Intake Assessment			
	<ul> <li>Advantages and disadvantages of dietary assessment</li> </ul>			
Session 23(Week 23)	Nutritional surveillance systems			
Session 24 (Week 24)	Assessing and monitoring nutritional problems			
	Nutrition assessments and screening systems			
	nutrition assessment tools.			
Session 25 (Week 25)	Socioeconomic aspects and cultural habits			
	Anti-nutritional factors			
Session 26 (Week 26)	Food production systems, demand and supply			
	<ul> <li>community and field assessment practices.</li> </ul>			

Session 28 (Week 28)	Case studies     Final Exam		
Session 29 (Week 29)			
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	<ul> <li>The student acquires the ability to analyze information and solve problems.</li> <li>The student gains the spirit of teamwork.</li> <li>The student gains the ability to apply the acquired concepts and skills.</li> <li>The student acquires the language of dialogue and criticism.</li> </ul>		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

#### **Community Nutrition and Counseling**

1	Course name		Community Nutrition and Counseling
2	Course Code		TN302
3	Course type		Specialty  4
4	Accredited units		
5	Educational hours		
6	Pre-requisited requ	uirements	Basics of Nutrition, dietary requirements
7	Program offered th	ne course	Therapeutic Nutrition
8	Instruction Langua	ge	English
9	Date of course app	roval	2022
to focused theo nutrition and p intervention sk education prog schools and un		to focused theo nutrition and pa intervention ski education prog schools and uni	vides students with sufficient knowledge and skills necessary pretical and practical training in the field of community atients counseling and education. Develop programme and ills related to nutrition. Design and implement nutrition rams in health instituations, government organizations, iversities. Use all the steps of select models and theories and tence in nutrition program development.
this Course:  Proc Boy An E Mici		Process. Boyle, Marie. A An Entrepreneu Michener, J. Lio networking guid	2009), Nutrition Counseling Skills for the Nutrition Care  and Holben, David. H., 2006, Community Nutrition in Action arial Approach.4 <sup>th</sup> edition.  byd and Fowler, Stanley, (2007). Community nutrition de: Building community networking for healthy weight in the dsworth, Cengage Learning, USA.

Course Duration	28 weeks		
Delivery	Classroom Lectures.		
	Discussion group.		
	Prepare leaflet and brochures.		
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated		
	the ability to:		
	Introduce the concepts of nutrition education and its methods.		
	<ol><li>Use the communication skill in planning and implementing nutritional education programs and disseminating cultural programs in nutrition.</li></ol>		
	Introducing students to the methods of providing nutritional guidelines		
	for patients' health, planning patients' meals, and the importance of		
	nutritional education in improving the nutritional behavior of individuals.		
	4. Knowing how to prepare modern educational means that suit the different		
	groups in order to correct the wrong habits.		
	1. 200/		
Course Assessments	Assignment 1: 30% Assignment 2: 10%		
	Final Exam: 60%		
	60 % is required for a pass in this course.		
Content Breakdown	Topical Coverage		
Session 1 (Week 1)	Introduction to community nutrition		
Session 2 (Week 2)	The roles of nutritionist and dietitians in community		
Session 3 (Week 3)	Public health nutrition problems		
Session 4 (Week 4)	The main causatives of malnutrition		
Session 5 (Week 5)	Community nutrition programs and policies.		
Session 6 (Week 6)	Eating behaviors and chronic diseases relationship.		
Session 7 (Week 7)	Eating behaviors and chronic diseases relationship.		
Session 8 (Week 8)	Preparation of nutrition programs among different community levels.		
Session 9 (Week 9)	Preparation of nutrition programs among different community levels.		
Session 10 (Week 10)	Nutrition information sources.		
Session 11 (Week 11)	Evaluation of community nutrition status.		
Session 12 (Week 12)	Organizations, corps, agencies and institution's related to nutritional		
	programs.		
Session 13 (Week 13)	Food security assessment, Food Banks and community food security		
	indicators.		
Session 14 (Week 14)	Concepts of Nutrition education and its importance		
Session 15 (Week 15)	- Nutrition education actions		
Session 16 (Week 16)	- Methods of nutrition education and its means		
Session 17 (Week 17)	- Planning of cultural programs in nutrition		
Session 18 (Week 18) Session 19 (Week 19)	- A global approach to nutrition education		
Session 20 (Week 20)	Methods of guidance in therapeutic meals for patients     Methods of guidance in therapeutic meals for patients		
Session 21 (Week 21)	<ul> <li>Methods of guidance in therapeutic meals for patients</li> <li>Planning an intervention in social communication in nutrition</li> </ul>		
Session 22 (Week 22)	Nutrition education on fast food and its harmful impact		
Session 23 (Week 23)	- Behavior change theories/models		
Session 24 (Week 24)	Principles of communication and Factors affecting Communication		
Session 25 (Week 25)	- Principles of communication in nutrition.		
	Timespies of communication in nutrition.		

Session 26 (Week 26)	- Nutrition education for different groups		
Session 27 (Week 27)	- Arts of nutrition education of patients		
Session 28 (Week 28)	- case study		
Session 29 (Week 29)	o Final Exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	<ul> <li>The student acquires the ability to analyze information and solve problems.</li> <li>The student gains the spirit of teamwork.</li> <li>The student gains the ability to apply the acquired concepts and skills.</li> <li>The student acquires the language of dialogue and criticism.</li> </ul>		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

# Nutrition Throughout the life Cycle

1	Course Code Course type		Nutrition Throughout the life Cycle  TN207  Specialty
2			
3			
4	Accredited units		4
5	Pre-requisited requirements  Program offered the course  Instruction Language		None Therapeutic Nutrition English
6			
7			
8			
9	Date of course approval		2022
Brie	f Description:	human developm functions in the dietary allowand physiological cha all the nutrients development red functions in the recommended d elders, the physi	to introduce to undergraduates the role of good nutrition in ment and growth. This course covers studying nutrients body during every stage of human growth, the recommended es (RDA) of the nutrients in every stage, the physical and anges in every stage and the good food pattern that provides in adequate quantity and proportion to meet the growth and quirements. This course also will covers study nutrients body during adolescent, maturity stages and late of life. The ietary allowances (RDA) of the nutrients in adolescent and call and physiological changes during adolescent, maturity the good food pattern that provides all the nutrients in

	adequate quantity and proportion to meet teenagers and late of life requirements.		
Textbooks required for this Course:	Thompson Janice, Manore Melanda, Voughan Linda (2011). Nutrition Sciences (2 <sup>nd</sup> Edition). Pearson, <i>USA</i> . Whitney E., Rolfes S., R. (2013). Understanding Nutrition, (13 <sup>th</sup> Edition). Wadsworth, Cengage Learning, USA.		
Course Duration	28 week		
Delivery	Classroom Lectures. Discussion group. Presentation case study		
Course Objectives:	<ul> <li>Upon completion of this course, the student will have reliably demonstrated the ability to:</li> <li>Define the various stages of human growth in his/her life time.</li> <li>Identify the nutritional requirements of the women before and during pregnancy and lactating Women.</li> <li>Recognize and explain the characteristics of the childhood stages (toddler and preschoolers) and the nutritional needs for those stages.</li> <li>Recognize the adolescence stage and the physical and emotional changes for both the boys and the girls and the nutritional problems that they face.</li> <li>Identify the nutritional requirements of the adolescents, elder adults and geriatrics in addition to Nutrition related concerns for adolescents and later of life ages.</li> <li>Describe the importance of dietary requirements to teenagers, adolescents, young adult, older adult and geriatrics.</li> <li>Determine Characteristic of Physiologic Changes Accompany Aging and theories of aging.</li> <li>Recognize and explain the Age-Related Changes in Body Composition and Age-Related Changes in Organ Function for those stages.</li> </ul>		
Course Assessments	Assignment 1: 30% Assignment 2: 10% Final Exam: 60% 60 % is required for a pass in this course.		
Content Breakdown	Topical Coverage		
Session 1 (Week 1)	Introduction to nutrition throughout the life cycle		
Session 2-4 (Week 2-4)	1. Food and nutrition of Pregnant women  i. Nutrition needs prepregnancy and during pregnancy  ii. Weight gain during pregnancy  iii. Diet for pregnancy with diabetes  iv. Adolescence pregnancy  v. dietary requirements during pregnancy		
Session 5-7 (Week 3)	nutrients deficiency during pregnancy     pregnancy complication related to nutrition     nutrition concerns during pregnancy		
Session 8-9 (Week 8- 9)	2. Feeding of Lactating mothers  i. Energy requirements and intakes in lactation  ii. Milk production and types of breast milk  iii. nutrition concerns during lactation		

	iv. advantage and stages of breastfeeding
Session 10-11 (Week	3. Diet during infancy
10-11)	i. Infant birthweight
	ii. Breastfeeding
	iii. bottle-feeding or feeding breastmilk substitutes
	iv. Properties and value of breastmilk
	v. Supplementry foods
	vi. Special consideration for infant with altered nutrition needs.
Session 12 (Week 12)	Feeding of young children
Session 13 (Week 13)	Feeding of old children
Session 14 (Week 14)	Feeding during school age
Session 15 (Week 15)	Nutritional requirements for teenagers
Session 16 (Week 16)	Dietary recommendations for macronutrients and micronutrients
Session 17 (Week 17)	Energy balance and physical activity
Session 18 (Week 18)	Diet and cognitive ability
Session 19 (Week 19)	Nutrition related concerns for adolescents: Bone Density, Cigarette
	smoking, Use of alcohol and illegal drugs.
Session 20 (Week 20)	Eating Disorders and behaviour of adolescents
Session 21 (Week 21)	Adolescent Acne and Diet
Session 22 (Week 22)	Theories of Aging (errors and Programmes theories)
Session 23 (Week 23)	Age-Related Changes: Age-Related Changes in Gastrointestinal Function,     Age-Related Changes: Age-Related Changes in Gastrointestinal Function,
	Age-Related Changes in Body Composition, Age-Related Changes in
Session 24 (Week 24)	Organ Function
Session 25 (Week 25)	Lifestyle Factors Accelerate Aging     Nutrients Needs for Older Adult's
Session 26 (Week 26)	Nutritional Concerns Threaten the Health of Older Adult
Session 27 (Week 27)	Social Concerns Affect the Nutrition of Older Adults
Session 28 (Week 28)	case study and presentations.
Session 29 (Week 29)	Final Exam
Attendance	Students are expected to attend every session of class, arriving on time,
Expectations	returning from breaks promptly and remaining until class is dismissed.
	Absences are permitted only for medical reasons and must be supported with
	a doctor's note.
Generic Skills	The student acquires the skill of browsing the Internet.
	The student earns teamwork.
	The student gains the ability to debate and scientific dialogue
	<ul> <li>The student gains the ability to be self-reliant in self-education.</li> </ul>
Course Change	Information contained in this course outline is correct at the time of
	publication. Content of the courses is revised on an ongoing basis to ensure
	relevance to changing educational employment and marketing needs. The
	instructor will endeavor to provide notice of changes to students as soon as
	possible. Timetable may also be revised.

# **Dietary Requirements**

1	Course name	Dietary requirements	
2	Course Code	TN208	

3 Course type		Specialty
4 Accredited unit	s	4
5 Educational ho	urs	4
6 Pre-requisited	requirements	None
7 Program offere	d the course	Therapeutic Nutrition
8 Instruction Lan	guage	English
9 Date of course	approval	2022
requirements of could able to capatients and he standards, dieta		oduce student to knowledge about energy and nutrients optimum nutrition for individual and community. student alculate the energy and protein requirements for different ealth individuals. In addition, this course will study dietary ary guidelines, and use main food systems (pyramide exchange system and food groups) for planning healthy
International, Bierut, Lebanon.  • Whitney E., Rolfes S., R. (2013). Understanding Nutrition,		engage Learning , USA. and Shaheen F. (2005). Food and Nutrition. Academia
Course Duration	28 weeks	
Delivery Classroom Lectures.		
Course Objectives:	Discussion group.  Upon completion of this course, the student will have reliably demonstrate the ability to:  Define the calorie and other units and the caloric content of differ foods.  Know the food guides (Food pyramids) and use it in planning balar meals.  Encourage an awareness of the relationship between diet and healt everyday life.  Know the dietary requirement of macro and micronutrients individuals in different life cycle.  Define different methods used for determination of calculation of enrequirement.  Use food exchange list in planning balanced diets of individual different age group.  Develop skills necessary to provide well-balanced meals for all mem of the family considering age, health, occupation etc.	
Course Assessments	Assignment 1:	

	Assignment 2: 10%		
	Final Exam: 60%		
	60 % is required for a pass in this course.		
Content Breakdown	Topics Coverage		
Session 1-2 (Week 1-2)	Orientation to course.		
Session 3-4	Body composition and diet requirements at different stages of humans.		
(Week 3-4)	- body composition and diet requirements at different stages of numans.		
Session 5-6 (Week 5-6)	Dietary Reference Values and Measurements		
Session 7-8 (Week 7-8)	Dietary constituents and the functions of food		
Session 9-10 (Week 9- 10)	Simple classification of dietary constituents		
Session 11-14 (Week	Optimal Requirements of Energy:		
11-14)	Basal metabolic rate (BMR)		
	2. Active Metabolic Rate (AMR).		
	The factors effecting on energy requirements by human		
	4. Estimated Energy Requirement calculation.		
Session 15-18 (Week	Protein requirements (PER, NPU, BNB, P-Digestability)		
15-18)	prepare potein diets		
Session 19-22 (Week	Meal planning and the main food systems		
19-22)	1. Food groups		
	Food Pyramide Guide System     Exchange Units system		
Session 23-25 (Week	Food labels		
23-25)	preparing of diet for differents hospitalized patients		
	calculation of energy for truma and surgary		
Session 26-28 (Week			
26-28)	US nutritional guidlelines		
	Britain nutritional guidlelines     Other international nuritional guillelines		
Session 29 (Week 29)	Final Exam		
Attendance	Students are expected to attend every session of class, arriving on time,		
Expectations	returning from breaks promptly and remaining until class is dismissed.		
	Absences are permitted only for medical reasons and must be supported with		
	a doctor's note.		
Generic Skills	The student acquires the skill of browsing the loternet.		
	The student earns teamwork.		

	<ul> <li>The student gains the ability to debate and scientific dialogue</li> <li>The student gains the ability to be self-reliant in self-education.</li> </ul>
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

### Malnutrition diseases

-	nutrition diseas	<b>C</b> 3	
1	Course name		Malnutrition diseases
2	Course Code		TN305
3	Course type		Specialty
4	Accredited units		4
5	Educational hours		4
6	Pre-requisited req	uirements	Nutrition biochemistry
7	Program offered the course		Therapeutic Nutrition
8	Instruction Language		English
9	Date of course approval		2022
Text	books required for	malnutrition. To vitamin D defici anemia, iodine diseases of B-vit	lition to provide student with causes and who at rish for opics covered include protein energy malnutrition (PEM), ency, calcium deficiency, iron deficiency anemia, pernicious deficiency, zinc deficiency, vitamin A deficiency and some tamins deficiencies.  I others (2010). Clinical Nutrition in practice,
this Course: (1 <sup>st</sup> Ed. ). B WHO (2004).		(1 <sup>st</sup> Ed. ). B WHO (2004). \	lackwell Publishing, USA.  Vitamins and Minerals requirements in human nutrition,  VHO Publication, Switzerland
-	se Duration	28 weeks	
Deliv	Delivery Classroom Lecture Discussion group		
demonstrated the Define the co		<ul><li>Define the c</li><li>Identify the</li></ul>	on of this course, the student will have reliably the ability to: rausatives of nutrition deficiency and excess diseases.  types of malnutrition and the predisposing factors for their
111	Define the os		steoporosis, osteomalacia, rickets and goiter diseases.

	Determine the different types of anemia which is linked to	
	micronutrients deficiency.	
	Recognize the treatment and prevention of protein energy	
	malnutrition (PEM) diseases.	
	Describe the mechanism of vitamin D synthesis in the body and its	
	importance in maintaining bone health.	
	Recognize and explain the bad effect of vitamins and minerals	
	deficiency on human health and how to treat and prevent them.	
	Define the obesity and overweight due to over intake of energy for	
	prolong period.	
Course Assessments	Assignment 1: 30%	
	Assignment 2: 10%	
	Final Exam: 60%	
	60 % is required for a pass in this course.	
Content Breakdown	Topics Coverage	
Session 1 (Week 1)	Definition, causes and categories of people at high risk and susceptible to	
	malnutrition	
Session 2-3 (Week 2-3)	Definitions of protein energy malnutrition	
	Classifications of PEM	
	Etiologies of Protein Energy Malnutrition (PEM)	
Session 4 (Week 4)	Kwashiorkor: etiologies, manifestations and treatment	
Session 5 (Week 5)	Nutritional marasmus: etiology, manifestations and treatment	
Session 6-7 (Week 6-7)	PEM in adults, complications, causes, accompany diseases, treatments	
Session 8-9 (Week 8-9)	Prevalence of PEM among children	
	Clinical manifestation	
	Laboratory investigation	
	Treatment and prevention	
Session 10-11(Week	The different types of formula used by pediatric	
10-11)	F 75	
	F100	
	Ready to use diet for malnutrition	
Session 12-13 (Week	Types of anemia	
12-13)	Iron deficiency and other nutritional anaemias	
200000	Classification of anemia	
15/07	Treatment approaches	
	6. (4)	

Session 14-15 (Week	Vitamin A deficiency	
14-15)	Complications	
	Causes and prevalence	
	Clinical manifestations	
	Physiological changes	
	Treatments methods	
Session 16-18 (Week	lodine Deficiency Disorders (IDD)	
16-18)	IDD complications	
	Goiter classification	
	Prevalence and identifications	
	Clinical manifestations	
	Treatment approaches	
	Prevention programmes	
Session 19 (Week 19)	Vitamin D synthesis and deficiency.	
Session 20-21 (Week	Calcium imbalance and osteoporosis,	
20-21)	Osteomalacia and rickets diseases	
Session 22-23 (Week	Beriberi and thiamine deficiency	
22-23)	Classifications	
	Clinical manifestations	
	Treatments methods	
Session 24-25 (Week	Pellagra diseases	
24-25)	Causes and symptoms	
	Treatments	
Session 26 (Week 26)	Vitamin C deficiency and scurvy	
	Clinical symptoms	
Session 27 (Week 27)	Dental caries	
	fluorosis and oral health	
Session 28 (Week 28)	Obesity and overweight	
	Classification	
	Commorbidites	
	Treatment and prevention	
Session 29 (Week 29)	Final Exam	
Attendance	Students are expected to attend every session of class, arriving on time,	
Expectations	returning from breaks promptly and remaining until class is dismissed.	
	Absences are permitted only for medical reasons and must be supported	
	with a doctor's note.	
Generic Skills	The student acquires the skill of browsing the Internet.  The student acquires the skill of browsing the Internet.  The student acquires the skill of browsing the Internet.	
	The student earns teamwork.  The student gains the ability to debate and acceptifical interest.	
	The student gains the ability to debate and scientific dialogue     The student gains the ability to be self-reliant in self-education.	
Course Change	The student gains the ability to be self-reliant in self-education.  Information contained in this course outline is correct at the time of	
12000	publication. Content of the courses is revised on an ongoing basis to ensure	
18/99	relevance to changing educational employment and marketing needs. The	
8/14/	o o	

instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

### **General Microbiology**

Jene	eral Microbiolog	У	
1	Course Code Course type:		General Microbiology  TN201  General
2			
3			
	/general/specialty/	optional	
4	Accredited units		6 units
5	Educational hours		6 hours  General biology
6	Pre-requisited requ	irements	
7	Program offered th	e course	Therapeutic nutrition
8	Instruction Language	ge	English
9	Date of course appr	roval	2022
Brief Description:  General Microbiology is an upper division course on Microbial consisting of both lecture and laboratory. The course covers bereave identification of the microbial wards (by viruses, fungi and protozoa), classification and morphologic microorganisms (size, shape, staining reaction and structure), phy (reproduction, growth, nutrition, cultivation, metabolism, affecting growth, control of microbial growth especially in vivo i.e. of microbial therapy), mode of action, host parasite relativirulence factors, disease development and host response to minvasion or mechanisms of resistance. Relevant grown invasion or mechanisms of resistance.		ooth lecture and laboratory.  vers bereave identification of the microbial wards (bacteria, i and protozoa) , classification and morphology of its (size, shape, staining reaction and structure), physiology , growth, nutrition, cultivation, metabolism, factors of the control of microbial growth especially in vivo i.e aspects therapy), mode of action, host parasite relationship, ors, disease development and host response to microbial mechanisms of resistance. Relevant groups of its i.e. bacteria, fungi, viruses and parasites are considered. The elyng Black microbiology—  ples and Explorations—Gerard juraBerdellR.FunkechristineeL.case Microbiology and luction . Klinik Biyokimya Analiz Metodlari, Bahattin Adam semin Ardiçoğlu, Atlas Kitapçılık, 2002, ISO 15189.  Tr., Medical Microbiology © 2005 Thieme.	
	rse Duration	28 weeks	
Deli	very		l, Group interaction and discussion, self-directed activities, pation, Laboratory experimentsetc.
Upon complete demonstrated - Be familiar w - Know the m world.		Upon comple demonstrated - Be familiar w - Know the m world. - Have a back	etion of this course, the student will have reliably if the ability to: with the microbial world and its relation to human lives. The thods and equipment used to investigate the microbial ground about structure, metabolic pathways, and genetics

	- Understand the growth requirements of bacteria and how to control
	their growth.
	- Understand physical and chemical factors which affect microorganisms
	principles of chemotherapy, microbial genetics, pathogenicity and
	microbial disease and mechanisms of resistance.
	- Know the basic principles of bacterial culture techniques and genera
	biochemical tests.
	- Describe the morphological features of bacteria microscopically and on
	culture.
	- Describe different laboratory diagnostic test used
Course Assessments	Assignment 1: 10%
	Assignment 2: 30%
	Final Exam: 60%
	60 % is required for a pass in this course.
Content Breakdown	Topical Coverage
Session 1 (Week 1)	Introduction to microbiology
	The Microbial World
	Introduction and brief history of Microbiology.
	Classification of microorganisms.
Session 2 (Week 2)	General characters and classification of Bacteria.
	Bacterial Anatomy.
	Size, shape, and arrangement of bacterial cells,
	Structures external to the cell wall (glcocalyx, flagella, axial filaments, and
	Pilli).
Session 3 (Week 3)	The cell wall, Structures internal to the cell wall (cytoplasm, nuclear
Session S (Week S)	area, ribosomes, inclusions, and endospores).
	Capsule, Flagella, Inclusion, Granule, Spore
Session 4 (Week 4)	Microbial Growth
36331011 4 (WEEK 4)	Growth and nutrition of Microbes
	- Bacterial growth requirements.
	Bacterial division, Batch Culture, Continuous culture, bacterial growth
	total count, viable count, bacterial nutrition, oxygen requirement, CO2
	requirement, temperature, pH, light.
Session 5 (Week 5)	- Culturing of bacteria and media types
	- Preserving bacterial cultures and growth
Session 6 (Week 6)	Control of Microbial Growth
	Sterilization and Disinfection
	Physical agents- Sunlight, Temperature less than 1000C, Temperature at
	1000C, steam at atmospheric pressure and steam under pressure
	irradiation, filtration.
Session 7 (Week 7)	Chemical Agents- Alcohol, aldehyde, Dyes, Halogens, Phenols, Ethylene
	oxide.
Session 8 (Week 8)	Bacterial Genetics
	Genetic material
	Structure and function of the genetic material.
	Plasmids, replication.
	- Mutation: change in the genetic material.
	- Genetic transfer (transformation, conjugation, transduction, and
22228	recombination).
Session 9 (Week 9)	Microbial virulence factors and pathogenesis of bacterial infection.
Session 10 (Week 10)	Antibacterial antibiotics and their mode of action.

Session 11 (Week 11)	-Epidemiological aspects: Transmission, (sources and mode of infection), -Chemotherapy and antibiotic resistance Vaccination.	
Session 12 (Week 12) Session 13 (Week 13)	PARTICIPATION OF THE CONTROL OF THE	
Session 14(Week 14)	Midterm exam	
Session 15(Week 15)	Parasitology Morphology and life cycle	
Session 16 (Week 16)	Laboratory diagnosis of following parasites E. histolytica and Plasmodium	
Session 17 (Week 17)	Tape worms and Intestinal nematodes	
Session 18 (Week 18) Session 19 (Week 19)	Mycology Morphology, diseases and causes	
Session 20 (Week 20)	Mycology Lab diagnosis of Fungi	
Session 21 (Week 21) Session 22 (Week 22)	Virology General properties of viruses, diseases caused,	
Session 22 (Week 22) Session 24 (Week 24)	Virology, lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV, Rabies and Poliomyelitis.	
Session 25 (Week 25) Session 26 (Week 26)	Virology, Rabies and Poliomyelitis.	
Session 27 (Week 27) Session 28 (Week 28)	Final Exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

### Anatomy and physiology:

1	Course name	Anatomy and physiology
2	Course Code	TN203
3	Course type: /general/specialty/optional	General
4	Accredited units	4
5	Educational hours	8/3/

6	Pre-requisited requir	ements	None
7	Program offered the	course	Therapeutic nutrition
8			English
9			2022
Brie	f Description:	structure of anatomy ar neurons, ca systems. The	uction to anatomy course will study the shape and the human body and its parts. Content includes: basic and structure of various organ systems of the body, ardio-vascular, respiratory, digestive and uro-genital e practical part will be devoted to tutorials and studying cal models of different body organs in each system that d above
	tbooks and erences:		Physiology Coloring Workbook: A Complete Study Guide  a) by Elaine N. Marieb (Author).
Cou	rse Duration	28 weeks	
Deli	very	activities, ac	ed, Group interaction and discussion, self-directed ctive participation, Laboratory experimentsetc.
Delivery  Course Objectives:		demonstrat 5. Explain organ for 6. Describe 7. Explain of home 8. Identify Upon the con 1. Cognitive a. Define And b. Explain the c. Compare abnormal. 2. Affective a. Participat b. Develop for the body. c. Develop for d. Use the don 3. Psychomory a. Express the b. Develop experiment c. Draw and	natomy and Histology. The importance of understanding Anatomy and Histology. The normal macroscopic and microscopic structures with the normal macroscopic and microscopic structures with the in learning process of different principles. The health consciousness to avoid homeostatic imbalance of the caring attitude towards the human body.  In liferent principles of human anatomy in their practice. The interpretation of the lesson by concept mapping. The basic science and laboratory skills by observing, ling, dissecting, recording etc.
Cou	rse Assessments	Assignment Final Exam:	
		60% is requ	ired for a pass in this course.
Con	tent Breakdown		Topical Coverage
Sess	sion 1 (Week 1)		150/2-07/ 61 10/1

	Anatomical positions	
	Body regions and cavities	
	Terms used in Describing Body Structure	
	Body planes and sections	
	Directional terms	
Session 2 (Week 2)	Cell Cycle	
	2. Epithelial Tissues	
	a. Forms and characteristics of epithelial cells	
	b. Specialization of the cell surface	
	c. Types of epithelia	
Session 3 (Week 3)	3. Connective Tissue	
	a. Cells, fibers and ground substance	
	b. Types of Connective tissues	
	c. Adipose tissue	
	d. Cartilage	
	e. Bone tissue	
Session 4 (Week 4)	4. Nerve Tissue	
	a. Neurons and parts	
	b. Glial cells and neuronal activity	
	c. Synaptic communications	
Session 5 (Week 5)	5. Blood Cells	
Jessien S (treems)	a. Composition of Plasma	
	b. Red Blood Cells/Erythrocytes	
	c. White Blood Cells/Leukocytes	
	d. Hematopoiesis	
	III. Integumentary System	
	1. Structure of the Skin	
	a. Epidermis	
	b. Dermis	
	2. Appendages of Skin	
	a. Hair	
	b. Nails	
	C. Skin Glands	
Session 6 (Week 6)	Body regions	
session o (week o)	Upper limb	
	Lower limb	
	Thorax	
	Abdomen	
	Pelvis	
	Head and neck	
Session 7 (Week 7)	Body Systems	
Session / (Week /)	Musculoskeletal system: Bones, joints and muscles	
	Musculoskeletal system: Bones, joints and muscles -Function of	
	urinary organs.	
Session 9 (Mesh 9)	-Fluid & electrolytes balances.	
Session 8 (Week 8)	Digestive system	
	Function of digestive organs.	
	-Movements of alimentary canal	
Caralan O (tar at a)	-Role of enzymes in digestive process	
Session 9 (Week 9)	Digestive system II: Accessories and glands	
Session 10 (Week 10)	Cardiovascular system: heart and blood vessels	

Session 11 (Week 11)	-Function of heart		
	-Cardiac cycle (blood circulation)		
Session 12 (Week 12)	-Blood pressure and its regulation		
Session 13 (Week 13)	-ECG: methods of recording, normal record and common		
	abnormalities.		
Session 14(Week 14)	Midterm Exam		
Session 15 (Week 15)	Lymphatic system		
Session 16 (Week 16)	Respiratory system		
Session 17 (Week 17)	Physiology of respiration.		
	-Control of respiration		
	-Hypoxia, cyanosis and dyspnea		
	-Pulmonary function tests		
Session 18 (Week 18)	Nervous system I: Central nervous system: brain and spinal cord		
Session 19 (Week 19)	Nervous system II: Peripheral nervous system and cranial nerves		
Session 20 (Week 20)	Nervous system III: Autonomic nervous system		
	Special senses		
Session 21 (Week 21)	Special senses		
Session 22 (Week 22)	Endocrine system		
Session 23 (Week 23)	Urinary system		
Session 24 (Week 24)	Reproductive system		
Session 25 (Week 25)	Gynecology, pregnancy, and childbirth		
Session 26 (Week 26)	Embryology		
Session 27 (Week 27)	Final Exam		
Session 28 (Week 28)			
Attendance Expectations	Students are expected to attend every session of class, arriving on		
	time, returning from breaks promptly and remaining until class is		
	dismissed. Absences are permitted only for medical reasons and		
	must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full		
	range of knowledge and skills required for full participation in all		
	aspects of their lives, including skills enabling them to be life-long		
	learners. To ensure graduates have this preparation, such generic		
	skills as literacy and numeric, computer, interpersonal		
	communications, and critical thinking skills will be embedded in all		
	courses.		
Course Change	Information contained in this course outline is correct at the time of		
	publication. Content of the courses is revised on an ongoing basis to		
	ensure relevance to changing educational employment and		
	marketing needs. The instructor will endeavor to provide notice of		
	changes to students as soon as possible. Timetable may also be		
	revised.		
	180/13/10		

## Medical Ethics and healthcare communication skills

1	Course name	Medical ethics and Healthcare Communication Skills
2	Course Code	TN206
3	Course type: /general/specialty/optional	General

4	Accredited units	4		
5	Educational hours		4	
6	Pre-requisited requirements		None	
7	Program offered	the course	Therapeutic nutrition	
8	Instruction Langu	age	English	
9	Date of course ap	proval	2022	
Brief	Description	The course tead	chs students the medical ethics and the healthcare	
Textbooks and References:  -The Ethical Slut: A Practical Guide to Polyamory, Open Relationsl Other Adventures Mar 10, 2009 by Dossie Easton and Janet W. Ha 1.Principles of Ethics for The Health Profession 2nd Edition. Timb Black, Evolve  2. Bioethics, 1st edition, Letty Kwan, C and E Publishing  3. Tom L. Beauchamp (Author), James F. Childress (Author). Princip Biomedical Ethics. 4th Edition. Oxford University Press. 1994. 10:019508537X		es Mar 10, 2009 by Dossie Easton and Janet W. Hardy thics for The Health Profession 2nd Edition. Timby, and edition, Letty Kwan, C and E Publishing namp (Author), James F. Childress (Author). Principles of		
		Control of the Contro		
		Black, Evolve	thics for the Health Profession 2nd Edition. Tim by, and	
Cour	rse Duration	28 weeks	edition, Letty Kwan, C and E Publishing	
Deliv	very	Lecture; Question Answer; Problem Solving; Discussion; Case Study; Role Play. Brainstorming; Six Hats Thinking; Opinion Pool; Debate; Workshop Project Based Learning; Problem Based Learning; Storyline; Scenario Based Learning; Brain Based Learning; Case Based Learning		
Cour	rse Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to:  1. Discuss ethical cases using ethical principles 2. Ensure a sound ethical dimension to all cases in health care; acknowledging that each case has its ethical component. 3. Understand and impart a proper informed consent process 4. Understand negligence and malpractice 5. Understand the principle of invoking double effect 6. Distinguish between utilitarian approaches to health care, and, deontological approaches. 7. Understand what we mean by respecting the autonomy of patients.		
Cour	se Assessments	Assignment 1: 40	0%	
		Final Exam: 60%	1 - J. W.	
		60% is required f	for a pass in this course.	
Cont	ent Breakdown		Topical Coverage	

Session 1 (Week 1)	Orientation to course/Overview of medical ethics		
	Rights & duties of doctors, patients, family and community		
Session 2 (Week 2)	Inter professional relationships		
Session 3 (Week 3)	Accountability & misconduct of profession		
Session 4 (Week 4)	Rules & regulations of the medical profession		
Session 5 (Week 5)	Islamic principles & jurisdiction related to disease and practice of		
	profession		
Session 6 (Week 6)	Ethical aspects of newer medical issues,		
Session 7 (Week 7)	Ethical aspects of medical research		
Session 8 (Week 8)	Patient's secrets, file and reassurance & other topics		
Session 9 (Week 9)	The role of the laboratory in the health service -		
Session 10 (Week 10)	Laboratory customers		
Session 11 (Week 11)	Laws atterned		
Session 12 (Week 12)	The organization of the hospital and the laboratory		
	The organization of the hospital and the laboratory		
Session 13 (Week 13)			
Session 14 (Week 14)	Midterm Exam		
Session 15 (Week 15)	Introduction to the Course		
Session 16 (Week 16)	Why is Health Communication Important?		
	<ul> <li>Sociohistorical Considerations</li> <li>Public &amp; Political Considerations</li> </ul>		
	Social Considerations		
	Cultural Considerations		
Session 17 (Week 17)	Stigma & Mental Health		
Session 18 (Week 18)	Guest speaker: Elizabeth Flood Reading TBA		
Session 19 (Week 19)	Interview Paper due Interpersonally & Narratively Making Sense of		
30331011 25 (Week 25)	Health		
Session 20 (Week 20)	Patient Caregiver Communication		
Session 21 (Week 21)	Narrative Medicine, PerspectiveTaking, Patient Perspectives		
Session 22 (Week 22)	Communication in the Cancer Clinic		
	Narratives of Illness		
Session 23 (Week 23)	Health Caregiver Perspectives		
	Family Caregiver Perspectives		
	Family caregivers: Social support & Silence		
Session 24 (Week 24)	<ul> <li>Family caregivers: Social support &amp; Silence</li> <li>Death &amp; Dying: Palliative Care</li> </ul>		
	<ul> <li>Family caregivers: Social support &amp; Silence</li> <li>Death &amp; Dying: Palliative Care</li> <li>Death &amp; Dying: Final Conversations</li> </ul>		
	<ul> <li>Family caregivers: Social support &amp; Silence</li> <li>Death &amp; Dying: Palliative Care</li> <li>Death &amp; Dying: Final Conversations</li> <li>Community based Participatory Research</li> </ul>		
	<ul> <li>Family caregivers: Social support &amp; Silence</li> <li>Death &amp; Dying: Palliative Care</li> <li>Death &amp; Dying: Final Conversations</li> <li>Community based Participatory Research</li> <li>Education Wittenberg</li> </ul>		
Session 25 (Week 25)	<ul> <li>Family caregivers: Social support &amp; Silence</li> <li>Death &amp; Dying: Palliative Care</li> <li>Death &amp; Dying: Final Conversations</li> <li>Community based Participatory Research</li> <li>Education Wittenberg</li> <li>Health Campaigns.</li> </ul>		
Session 25 (Week 25) Session 26 (Week 26)	Family caregivers: Social support & Silence     Death & Dying: Palliative Care     Death & Dying: Final Conversations     Community based Participatory Research     Education Wittenberg     Health Campaigns.  Communication Matters Campaign		
Session 24 (Week 24) Session 25 (Week 25) Session 26 (Week 26) Session 27 (Week 27) Session 28 (Week 28)	<ul> <li>Family caregivers: Social support &amp; Silence</li> <li>Death &amp; Dying: Palliative Care</li> <li>Death &amp; Dying: Final Conversations</li> <li>Community based Participatory Research</li> <li>Education Wittenberg</li> <li>Health Campaigns.</li> </ul>		

Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

### **Basic Healthy Nutrition**

1	Course name  Course Code  Course type: /general/specialty/optional  Accredited units  Educational hours  Pre-requisite requirements  Program offered the course  Instruction Language		Basic Healthy Nutrition  TN200  Specialty  4	
2				
3				
4				
5				
6			Biochemistry	
7			Therapeutic nutrition  English	
8				
9	Date of course a	approval	2022	
includes practice nutrients and nu digestion, absor nutritional infor		includes practical and nutrients and nutrients digestion, absorpt nutritional informations.	duces general nutritional concepts in health and disease and I applications of that knowledge. Special emphasis is given to tritional processes including functions, food sources, ption, and metabolism. Food safety, availability, and mation including food labels, advertising, and nationally belines are addressed.	
Textbooks required for this Course:		Edition, Publishing 2. Krause's Food & ,13th Edition, Saur 3. Understanding Pinna Ellie Whitne	community- A textbook, Sharma S, Wadhwa, 2003 2 <sup>nd</sup> g House Pvt. Ltd, India a Nutrition Therapy, L. Kathleen Mahan Sylvia Escott- Stump Inders, Washington  Normal and Clinical Nutrition, Sharon Rady Rolfes Kathryn y, 9 <sup>th</sup> Edition, Brooks ole USA In and Dietetics, J. S. Garrow W. P. T. James A. Ralph, 10 <sup>th</sup> Livingstone USA	

Course Duration	28 weeks		
Delivery	Lecture-based, Group interaction and discussion		
Course Objectives:	This course fulfills the Life and Physical Sciences foundational component		
	area of the core and addresses the following required objectives		
	Apply nutritional knowledge to analyze personal dietary intakes, to plan nutritious meals using nationally established criteria to meet recommended goals, and to evaluate food labels and the validity of nutritional claims.      Trace the pathways and processes that occur in the body to handle		
	nutrients and alcohol through consumption, digestion, absorption, transport,		
	metabolism, storage and waste excretion.		
	3. Discuss functions, sources, deficiencies, and toxicities of macro- and		
	micronutrients, including carbohydrates, lipids, proteins, water, vitamins,		
	and minerals.		
	4. Apply the concept of energy balance and its influences at the physical,		
	emotional, societal, and cellular level to evaluate advantages and		
	disadvantages of various methods used to correct energy imbalances.		
	5. Understand the harmful effects of unhealthy and inappropriate eating		
	and compare the roles of different macronutrients in the diet.		
	6. Understand the relationship between nutrition and human health.		
	7. The role of nutrition in maintaining the health of the body and how the		
	body deals with nutrition in a balanced manner to maintain health		
Course Assessments	Assignment : 40%		
	Final Exam: 60%		
	60 % is required for a pass in this course.		
Content Breakdown	Topical Coverage		
Session 1 (Week 1)	Introduction of Nutrition (vitamins and minerals, water),		
Session 2 (Week 2)	•food pyramid and importance and of nutrition factors		
Session 3 (Week 3)	•chemical structure, classification, functions, sources,		
Session 4 (Week 4)			
	Recommended daily intake values, overdose and toxicities. Food Pyramid		
Coccion F (Master)	Basic concepts in food and nutrition		
Session 5 (Week 5)			
Session 6 (Week 6)	Basic terms used in study of food and nutrition		
Session 6 (Week 6)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health		
Session 6 (Week 6)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social		
Session 6 (Week 6)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health		
Session 6 (Week 6) Session 7 (Week 7) Session 8 (Week 8)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social		
Session 6 (Week 6) Session 7 (Week 7) Session 8 (Week 8)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,		
Session 6 (Week 6) Session 7 (Week 7) Session 8 (Week 8) Session 9 (Week 9)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam food sources, digestion, absorption, and metabolism		
Session 6 (Week 6) Session 7 (Week 7) Session 8 (Week 8) Session 9 (Week 9)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/		
Session 6 (Week 6) Session 7 (Week 7) Session 8 (Week 8) Session 9 (Week 9)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/excess of the		
Session 6 (Week 6) Session 7 (Week 7) Session 8 (Week 8) Session 9 (Week 9)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam  food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/excess of the following nutrients		
Session 6 (Week 6)  Session 7 (Week 7)  Session 8 (Week 8)  Session 9 (Week 9)  Session 10 (Week 10)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/excess of the following nutrients Carbohydrates, lipids and proteins		
Session 6 (Week 6)  Session 7 (Week 7)  Session 8 (Week 8)  Session 9 (Week 9)  Session 10 (Week 10)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/excess of the following nutrients Carbohydrates, lipids and proteins Fat soluble vitamins-A, D, E and K		
Session 6 (Week 6)  Session 7 (Week 7)  Session 8 (Week 8)  Session 9 (Week 9)  Session 10 (Week 10)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam  food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/excess of the following nutrients Carbohydrates, lipids and proteins  Fat soluble vitamins-A, D, E and K  •Water soluble vitamins – thiamin, riboflavin, niacin, pyridoxine, folate,		
Session 6 (Week 6)  Session 7 (Week 7)  Session 8 (Week 8)  Session 9 (Week 9)  Session 10 (Week 10)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam  food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/excess of the following nutrients Carbohydrates, lipids and proteins  Fat soluble vitamins-A, D, E and K  •Water soluble vitamins – thiamin, riboflavin, niacin, pyridoxine, folate, vitamin B12 and vitamin C		
Session 6 (Week 6)  Session 7 (Week 7)  Session 8 (Week 8)  Session 9 (Week 9)  Session 10 (Week 10)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam  food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/excess of the following nutrients Carbohydrates, lipids and proteins  Fat soluble vitamins-A, D, E and K  •Water soluble vitamins – thiamin, riboflavin, niacin, pyridoxine, folate,		
Session 6 (Week 6)  Session 7 (Week 7)  Session 8 (Week 8)  Session 9 (Week 9)  Session 10 (Week 10)  Session 11 (Week 11)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam  food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/excess of the following nutrients Carbohydrates, lipids and proteins  Fat soluble vitamins-A, D, E and K  •Water soluble vitamins – thiamin, riboflavin, niacin, pyridoxine, folate, vitamin B12 and vitamin C		
Session 6 (Week 6)  Session 7 (Week 7)  Session 8 (Week 8)  Session 9 (Week 9)  Session 10 (Week 10)  Session 11 (Week 11)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam  food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/excess of the following nutrients Carbohydrates, lipids and proteins  Fat soluble vitamins-A, D, E and K  •Water soluble vitamins – thiamin, riboflavin, niacin, pyridoxine, folate, vitamin B12 and vitamin C  •Minerals – calcium, iron and iodine  Nutrition during Lifecycle		
Session 6 (Week 6)  Session 7 (Week 7)  Session 8 (Week 8)  Session 9 (Week 9)  Session 10 (Week 10)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam  food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/ excess of the following nutrients Carbohydrates, lipids and proteins  Fat soluble vitamins-A, D, E and K  •Water soluble vitamins – thiamin, riboflavin, niacin, pyridoxine, folate, vitamin B12 and vitamin C  •Minerals – calcium, iron and iodine		
Session 6 (Week 6)  Session 7 (Week 7)  Session 8 (Week 8)  Session 9 (Week 9)  Session 10 (Week 10)  Session 11 (Week 11)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam  food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/excess of the following nutrients Carbohydrates, lipids and proteins  Fat soluble vitamins-A, D, E and K  • Water soluble vitamins – thiamin, riboflavin, niacin, pyridoxine, folate, vitamin B12 and vitamin C  • Minerals – calcium, iron and iodine  Nutrition during Lifecycle Physiological considerations and nutritional concerns for the following life stages:		
Session 6 (Week 6)  Session 7 (Week 7)  Session 8 (Week 8)  Session 9 (Week 9)  Session 10 (Week 10)  Session 11 (Week 11)	Basic terms used in study of food and nutrition Understanding relationship between food, nutrition and health Functions of food-Physiological, psychological and social Nutritional processes including functions,  Midterm Exam  food sources, digestion, absorption, and metabolism  Nutrients Functions, dietary sources and clinical manifestations of deficiency/excess of the following nutrients Carbohydrates, lipids and proteins Fat soluble vitamins-A, D, E and K  •Water soluble vitamins – thiamin, riboflavin, niacin, pyridoxine, folate, vitamin B12 and vitamin C  •Minerals – calcium, iron and iodine  Nutrition during Lifecycle Physiological considerations and nutritional concerns for the following life		

Session 13 (Week 13)	Adolescent children		
	Pregnant woman		
	Nursing woman and infant		
Session 14 (Week 14)	Nutrition during childhood		
	Growth and development, growth		
Session 15(Week 15)	reference/ standards, RDA,		
	nutritional guidelines, nutritional concerns and healthy food choices		
Session 16 (Week 16)	Final Exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	<ul> <li>Identify the six classes of nutrients and their primary function</li> <li>Construct a meal plan that meets nutritional guidelines</li> <li>Recognize the cause of various nutritional diseases.</li> </ul>		
Course Change	At the end of the program, the student will be familiar with the basics of proper nutrition, the damages caused by improper nutritional programs, and the relationship between chronic diseases and nutritional programs.  And the student gained a scientific base on which to build on the rest of the relevant programs		

ien	eral Pathology			
1	Course name  Course Code  Course type: /general/specialty/optional Accredited units  Educational hours		General Pathology  TN205  Optional  4	
2				
3				
4				
5				
6	Pre-requisite requirem	ents	None	
7	Program offered the co	urse	Therapeutic nutrition	
8	Instruction Language		English	
9	Date of course approva	ıl	2022	
Brief Description: The broad aims at pro Histopatho various dis		aims at provi Histopatholo various disea	pal of the teaching of undergraduate students in pathology ding comprehensive knowledge of the morbid anatomy, egy, etiology and pathogenesis with the complications of ases to provide a basis for understanding the clinical and the skills to practice as a qualified Physiotherapist.	
The state of the s		THE RESIDENCE OF THE PARTY OF T	Text book of Pathology-by Harsh Mohan Pathologic basis of disease by Cotran, Kumar, Robbins.	
Course Duration 28 weeks		28 weeks		
			ed, Group interaction and discussion, self-directed boratory experiments.	

Course Objectives:	At the end of the course, the student will be able to :			
	<ul> <li>Acquire the knowledge of concepts of cell injury &amp; changes produced thereby in different tissues &amp; organs, capacity of the body in healing process.</li> <li>Recall the etio -pathogenesis, the pathological effects &amp; the clinico-pathological correlation of common infections &amp; non-infectious diseases</li> <li>Acquire the knowledge of concepts of neoplasia with reference to the etiology, gross &amp; microscopic features, diagnosis &amp; prognosis in different tissues &amp; organs of the body.</li> <li>Correlate normal &amp; altered morphology of different organ systems in different diseases needed for understanding disease process &amp; their clinical significance [with special emphasis to neuromusculoskeletal &amp; cardio-respiratory systems]</li> <li>Acquire knowledge of common immunological disorders &amp; their resultant effects on the human body.</li> <li>Understand in brief, about the Haematological diseases &amp; investigations necessary to diagnose them &amp; determine their prognosis.</li> </ul>			
Course Assessments	Assignment 1: 30%.			
	Assignment 2: 10% Final Exam: 60%			
	60 % is required for a pass in this course.			
Content Breakdown	Topics Coverage			
Session 1 (Week 1)	Topics to be covered in the session (week):			
	<ul> <li>Cell injury-causes, mechanism &amp; toxic injuries with special reference to Physical, Chemical &amp; ionizing radiation.</li> <li>B Reversible injury [degeneration] - types, morphology, swelling, hyaline, fatty changes</li> </ul>			
Session 2 (Week 2)	Assignment 1 handed out			
	Topics to be covered in the session (week)			
	Intra- cellular accumulation hyaline, mucin			
	The state of the s			
	Intra- cellular accumulation hyaline, mucin  Irreversible cell injury types of necrosis, apoptosis, calcification,			
Session 3 (Week 3)	Intra- cellular accumulation hyaline, mucin  Irreversible cell injury types of necrosis, apoptosis, calcification, dystrophic & metastatic.  Extra-cellular accumulation amyloidosis, calcification-Pathogenesis,			
Session 3 (Week 3)	Intra- cellular accumulation hyaline, mucin     Irreversible cell injury types of necrosis, apoptosis, calcification, dystrophic & metastatic.     Extra-cellular accumulation amyloidosis, calcification-Pathogenesis, morphology.			

	Wound healing by primary & secondary union, factors promoting & delaying healing process.
Session 5 (Week 5)	Topics to be covered in the session (week)
	f] Healing at various sites-including bones, nerve & muscle g]
	Regeneration & repair
Session 6 (Week 6)	Topics to be covered in the session (week)
	Immuno-pathology-[basic concepts]
	a] Immune system : organization, cells, antibodies, regulation of
	immune responses and Organ transplantation.
Session 7 (Week 7)	Topicstobecoveredinthesession (week)
	Hyper-sensitivity
	c] Secondary immuno-deficiency including HIV
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Topicstobecoveredinthesession (week)
	Circulatory disturbancesa] Edema-pathogenesis, types,
	transudates/exudates b] Chronic venous congestion-lung,
	liver, spleen c] Thrombosis-formation, fate, effects
	d] Embolism-types, clinical effects
Session 10 (Week 10)	Topicstobecoveredinthesession (week)
	•e] Infarction-types, common sites
	f] Gangrene-types, aetiopathogenesis
	g] Shock-pathogenesis, types, morphologic changes
Session 11 (Week 11)	Deficiency disorders-Vitamin A, B, C, D.
Session 12 (Week 12)	Growth Disturbance
	a] Atrophy-malformation, agenesis, metaplasia, dysplasia,
	hypertrophy, hyperplasia b] Neoplasia,
	calcification, histogenesis, biologic behavior, difference between benign & malignant tumor
	c] Malignant neoplasms –grades, stages, local & distal spread
	d]Carcinogenesis-environmental carcinogens e] Chemical,
	Occupational, heredity, viral
Session 13 (Week 13)	Medical Genetics :
	a) Karyotypic abnormalities
	b) Mandelin disorders
	c) Inborn errors of metabolism
Session 14 (Week 14)	Specific Pathology:-
	A] CVS
	a] Arteriosclerosis-Ischemic heart diseases – angina, myocardial
	infarctionPathogenesis / Pathology b] Hypertension
	c] C.C.F.
	d] Rheumatic & Congenital H.D.
Session 16 (Week 16)	Final Exam
- 100 ( 10 CCR 10)	Final Exam

Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

### **Project Graduation**

1	Course name	Project Graduation	
2	Course Code	TN407	
3	Course type: /general/specialty/optional	Specialty	
4	Accredited units	4 units	
5	Educational hours	4 hours	
6	Pre-requisite requirements	Research Methodology	
7	Program offered the course	Therapeutic nutrition	
8	Instruction Language	English	
9	Date of course approval	2022	

Brief Description:	Training on project establishment and methodology of execution including literature reviewed and use scientific information resources		
Textbooks and References:	The students will use different resources.		
Course Duration	28 weeks		
Course Objectives:	- KNOWLEDGE & UNDERSTANDING: a1-Define the Principles of research planning and design a2- Describe principles of basics of experimental design and analysis. b- INTELLECTUAL SKILLS b1- Identify suitable research topics. b2- Undertake independent research. b3- Be able to do Critical review and analysis of related literature.		

	c-PROFESSIONAL AND PRACTICAL SKILLS		
	c1- Design research study		
	c2- Perform method validation and presentation of research report.		
	c3- Write the research proposal and theses. d- GENERAL AND TRANSFERABLE SKILLS		
	d1-Demonstrate appropriate communication skills.		
	d2- Present clearly and effectively scientific topic in a tutorial or a staf meeting.		
	d3- Work separately or in a team to research and prepare a scientific topic.		
Course Assessments	Assignment 1: 30%		
	Assignment 2: 10%		
	Final Exam: 60%		
	1		
	60 % is required for a pass in this course.		
Content Breakdown	Topical Coverage		
Session 1 (Week 1)	Development of a research protocol		
Session 26 (Week 26)	Fieldwork and data analysis  The research project course involves the generation of new scientifi		
	<ul> <li>information and a review and understanding of the scientific literature.</li> <li>The research may be conducted in a laboratory, hospital, communit laboratories, different company, etc., depending on the project and the supervisor.</li> <li>Students are divided into groups and each group is working together.</li> <li>Students are expected to work approximately 56 hours. This will include working in the laboratory, etc., reading or searching literature, and writing up the research project.</li> <li>Fields of study available may include:         <ul> <li>Biomedical genetics</li> </ul> </li> <li>Immunogenic</li> <li>Cancer genetics</li> </ul>		
	Biochemistry		
	Genetics Diagnosis		
	Embryology		
Session 27 (Week 27)	Final Exam		
Session 28 (Week 28)			
Attendance	Students are expected to attend every session of class, arriving on time		
Expectations	returning from breaks promptly and remaining until class is dismissed Absences are permitted only for medical reasons and must be supported wit a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives including skills enabling them to be life-long learners. To ensure graduate have this preparation, such generic skills as literacy and numeric, computer		

	interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



# 4- قسم الأشعة التشخيصية و العلاجية



### Radiological Imaging tech I

1	Course name		Radiological Imaging tech I RAD204	
2	Course Code			
3	Course type: /general/specialty/optional		Specialty	
4	Accredited units		3 4	
5	Educational hours			
6	Pre-requisite requ	irements	All 1 <sup>st</sup> subject to pass max. 2subjects for reset.	
7	Program offered t	he course	Radiology department	
8	Instruction Langua	age	English	
9	Date of course ap	proval	2022	
		student with theoretical and practical information in terms of the conditions and the anatomical subject of the organ to be imaged from the human body. It represents the acquisition of the necessary basic technical skills that enable the student at the end of the program to perform the basic conditions for orthopedic examinations.		
	xtbooks required r this Course:	edition by Thomas L. Po	*-	
		Call Number: e-book - multiple user license		
		ISBN: 9781451172157  Publication Date: 2013-10-25		
		an excellent study tool		
			ok of Radiographic Positioning and inpignano; Leslie E. Kendrick	
		Call Number: Circulation 616.0757 B644		
		ISBN: 9780323485258		
		Publication Date: 2017-03-01		
		NEW 8/2018  3- adiography PREP (Pro Edition by D. A. Saia	ogram Review and Exam Preparation), Ninth	
		Call Number: Course Re	eserve	
		ISBN: 9781259863578		
		Publication Date: 2018-	01-01	

	NEW 8/2021	
	4- Radiological Sciences Dictionary by David J. DowsettCall Number: e-book - one-user license ISBN: 9780340941676 Publication Date: 2009-05-17	
	5- The Radiology Handbook by J. S. Benseler Call Number: e-book - Multiple-user license ISBN: 9780821417089 Publication Date: 2014	
Course Duration	56 hours	
	An additional hours of homework per day is expected during this course.	
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, Laboratory experiments.	
Course Objectives:	The student should be able :	
	1- To promote and develop for the public benefit the science and practice of radiography and radio therapeutic technology and allied subjects.	
	2- To promote, study and research work in radiography and radio therapeutic technology and allied subjects and to publish the results of all such study and research.	
Course Assessments	Midterm exam 40%	
	Final Exam: 60%	
	A 60 %is required to pass this course.	
Content Breakdown	Topics Coverage	
Session 1 (Week 1)	Introduction to diagnostic and therapeutic radiology	
Session 2 (Week 2)  Introduction: General presentation of the course and the importation of the course and t		
	The state of the s	
Session 3 (Week 3)	Objectives of the technology of examinations x-rays	
Session 3 (Week 3) Session 4 (Week 4)	100 C	
Session 3 (Week 3) Session 4 (Week 4) Session 5 (Week 5)	Objectives of the technology of examinations x-rays	
Session 4 (Week 4) Session 5 (Week 5)	Objectives of the technology of examinations x-rays  General rules for taking x-rays	
Session 4 (Week 4) Session 5 (Week 5)	Objectives of the technology of examinations x-rays  General rules for taking x-rays  Good picture specifications  Instructions for photographing: Definition (the organ to be photographed in terms of its anatomical location) Purpose (Purpose of Photography) Equipment (preparations for shooting) Prepare the patient - prepare the	
Session 4 (Week 4) Session 5 (Week 5)	Objectives of the technology of examinations x-rays  General rules for taking x-rays  Good picture specifications  Instructions for photographing: Definition (the organ to be photographed in terms of its anatomical location) Purpose (Purpose of Photography) Equipment (preparations for shooting) Prepare the patient - prepare the equipment - prepare the films.	
Session 4 (Week 4) Session 5 (Week 5) Session 6 (Week 6)	Objectives of the technology of examinations x-rays  General rules for taking x-rays  Good picture specifications  Instructions for photographing: Definition (the organ to be photographed in terms of its anatomical location) Purpose (Purpose of Photography)  Equipment (preparations for shooting) Prepare the patient - prepare the equipment - prepare the films.  Exposure factors: fixed amps - kilovolts distance.	
Session 4 (Week 4)	Objectives of the technology of examinations x-rays  General rules for taking x-rays  Good picture specifications  Instructions for photographing: Definition (the organ to be photographed in terms of its anatomical location) Purpose (Purpose of Photography) Equipment (preparations for shooting) Prepare the patient - prepare the equipment - prepare the films.  Exposure factors: fixed amps - kilovolts distance.  Patient care before, during and after the scan.	
Session 4 (Week 4) Session 5 (Week 5) Session 6 (Week 6)	Objectives of the technology of examinations x-rays  General rules for taking x-rays  Good picture specifications  Instructions for photographing: Definition (the organ to be photographed in terms of its anatomical location) Purpose (Purpose of Photography) Equipment (preparations for shooting) Prepare the patient - prepare the equipment - prepare the films.  Exposure factors: fixed amps - kilovolts distance.  Patient care before, during and after the scan.  Situations and Projections (Method)  Radiation protection: patient protection - protection for technicians and	

Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9) Session 14 (Week 14)	Skeletal examinations, which include basic and additional examinations of the organs and the following parts:  Upper limbs - fingers - hand - wrist joint - forearm - elbow joint - humerus - scapula - shoulder joint - collarbone - lower extremities - flat feet - foot -		
	ankle joint - leg - knee joint - patella - thigh - pelvis - pelvic joint - abdomen		
Session 16 (W16)	Final Exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

#### Radiation protection

Course name		Radiation protection	
Course Code		RAD201	
Course type: /general/specialty/optional		Specialty	
Accredited units		2	
Educational hours		2	
Pre-requisite requirements		None	
Program offered the course		Radiology department	
Instruction Language		English	
Date of course approval		2022	
	Course Code  Course type: /general/specia  Accredited units  Educational hou  Pre-requisite reconstruction Lange	Course Code  Course type: /general/specialty/optional  Accredited units  Educational hours  Pre-requisite requirements  Program offered the course  Instruction Language	

	The information on radiation protection will enable the student to ensure safe practice of radiological technology, for both patient and operator.	
Textbooks required for this Course:	Barrett, A., Dobbs, J., Morris, S., & Roques, T. (2009). Practical Radiotherapy Planning. (4th Edition). London: Hodder education Bomford, C.K. &Kunkler, I.H. (2003) Walter and Miller's textbook of radiotherapy: radiation, physics, therapy and oncology. (6th ed.) Edinburgh, Churchill Livingstone. Bushberg, J. T. (2002) The essential physics of medical imaging. Philadelphia, Pa.; London: Lippincott Williams & Wilkins. Giancoli, D.C. (2005). Physics - Principles with Applications. (6th Edition). Prentice Hall, USA. Hass, M.L., Hogle, W.P., Moore-Higgs, G.J. & Gosselin-Acomb, T.K. (2007). Radiation Therapy: A guide to patient care. Mosby Elsevier, St Louis.  28 hours  An additional hours of homework per day is expected during this course.	
Course Duration		
Delivery	Lecture-based, Group interaction and discussion, self-directed activities.	
Course Objectives:	By the end of this course the student should be able to:  1. Demonstrate knowledge and application of calculations used in radiation therapy; 2. Determine knowledge, application of principles and concepts of computer planning for critiquing standard techniques; 3. Demonstrate an understanding of imaging and anatomy, relevant to computer planning; 4. Discuss the effects of radiation on biological systems.	
Course Assessments	Midterm exam 40%	
	Final Exam: 60%	
	A 60 % is required to pass this course.	
Content Breakdown	Topics Coverage	
Session 1 (Week 1)	Calibration conditions (b) Inverse square law (c) Attenuation factors for SSD and SAD techniques	
Session 2 (Week 2)	Manual calculations of radiation therapy SSD and SAD treatment techniques including shielding and extended SSD (e) Justification of factors used and resulting MU	
Session 3 (Week 3)  Consolidate knowledge of computer planning principles by production range of standard radiation therapy plans. Principles to include: - is distributions - ICRU 50/62		
Session 4 (Week 4)	Consolidate knowledge of computer planning principles by producing a range of standard radiation therapy plans. Principles to include: exit dose and arrangement - inhomogeneities - wedges	
Session 5 (Week 5)	Consolidate knowledge of computer planning principles by producing a range of standard radiation therapy plans. Principles to include: monitor units - field verification - organs at risk	

Session 6 (Week 6)	Consolidate knowledge of computer planning principles by producing a range of standard radiation therapy plans. Principles to include:  Contouring methods - volume transfer.		
Session 7 (Week 7)	(a) Applied anatomy and imaging (b) Diagnostic imaging e.g. CT, SPECT, PET, MRI		
Session 8 (W 8)	Midterm Exam		
Session 9 (Week 9)	Radiation chemistry		
Session 14 (Week	Mammalian cell sensitivity		
14)	Physical modification of radiation exposure		
	Acute radiation syndrome		
	Late effects of radiation		
	Image fusion		
	Normalization - weighting - beam energy, d-max,		
	Apply computer planning principles by students critiquing the plans produced.		
Session 16 (W 16)	Final Exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of		

### Patient care

1	Course name	Patient care
2	Course Code	RAD206
3	Course type: /general/specialty/optional	Specialty
		الراقة (الوزيد ) في الما

4	Accredited units	2	
5	Educational hours  Pre-requisite requirements		2 All 1 <sup>st</sup> subject to pass max. 2subjects for reset.
6			
7	Program offered the	course	Radiology department  English
8	Instruction Language		
9	Date of course approval		2022
Bri	ef Description:	the procedures are si invited to accompany radiology staff will me	ary in the way patients are admitted, but in general, milar. The patient's family or significant other is the patient as the interventional radiologist and eet with him or her and explain the details of what including the risks and potential complications of the
Textbooks required for this Course:		Bruce W. Long, Euger     Introduct     McKenn     Torres' P	ntials for Limited Practice - E-Book ne D. Frank, Ruth Ann Ehrlich/ Sciences, 2014/04/14 tion to Radiography and Patient Care/ Arlene a Adler, Richard R. Carlton Saunders, 1999. Patient Care in Imaging Technology Andrea TerriAnn Ryan Wolters Kluwer Health
Co	urse Duration		
De	livery	Lecture-based, Group interaction and discussion, self-directed activities Laboratory experiments.	
Co	Students will demonstrate confidence and knowledge in position skills.     Students will demonstrate the ALARA concept by practicing rade protection to patients, self, and others.     Students will determine appropriate technical factors for a qualimage.		nonstrate confidence and knowledge in positioning nonstrate the ALARA concept by practicing radiation tients, self, and others.
Co	urse Assessments	Midterm exam 40% Final Exam: 60% 60 %is required to pass this course.	
Co	ntent Breakdown		Topics Coverage
Se	ssion 1 (Week 1)	on 1 (Week 1) The concept of health - the concept of the patient	

Session 2 (Week 2)	The relationship between the radiology technician and the patient in the radiology department		
Session 3 (Week 3)	Responsibilities of the technician in the radiology department towards the patient (medically - ethical - legal - professionally)  Working with the portable or portable device inside the department in terms of sterilization (preventing pollution in the operating room - radiation protection).		
Session 4 (Week 4)			
Session 5 (Week 5)	Health care in radiological departments (non-transmission of infection)		
Session 6 (Week 6)	Appointment system for patients in departments for colorant examinations		
Session 7 (Week 7)	Medicines used in X-ray examinations  Preparing and caring for the patient for X-ray examinations		
Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9)	Preparing and caring for the patient for X-ray examinations.		
Session 14 (Week 14)	Oncology patient care in radiology and nuclear medicine departments		
	Nursing care - nursing operations - first aid - blood circulation - wounds - burns - fractures - poisoning - entry of foreign bodies into the nose, ears and eyes.		
Session 16 (Week 16)	Final Exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

Medical Terminology I

1	Course name		Medical Terminology I
2			RAD207 Specialty
3			
4	Accredited units		2
5	Educational hours		
6 Pre-requisite requirem		nents	All 1st year subjects to pass
			max. 2 subjects for reset.
7	Program offered the c	ourse	Radiology department
8	Instruction Language		English
9	Date of course approv	al	2022
compres communi Student		comprehend spoker communication in th	ned to enable students to enhance ability to and written English required for effective neir professional work.  The their skills in verbal and written English during m experience.
	this Course:  Edition by Barbara  Quick & Easy Med  MT, Med		y: An Illustrated Guide: An Illustrated Guide 9th anson Cohen, Shirley A Jones al Terminology, 9th Edition by Peggy C. Leonard, edicine, 12e 12th Edition by Davi-Ellen Chabner
An		28 hours  An additional hours of homework per day is expected during this course.	of homework per day is expected during this
De	livery	Lecture-based, Grou activities.	ip interaction and discussion, self-directed
Analyze how medic Properly spell, defin each of the major b most frequently ass		Analyze how medica Properly spell, defin each of the major be most frequently asso common abbreviation	inpletion of this course, students will be able to: 1. all terms are built using common word parts. 2. e, and pronounce medical terms associated with ody systems. 3. Identify and define the word parts ociated with the major body systems. 4. Interpret ons used in medical terminology and avoid errors
Co	ourse Assessments  Midterm Exam: 40% FinalExam: 60% A 60 %isrequiredtop		

Topical Coverage	Topics Coverage		
Session 1 (Week 1)	Body Structure Integumentary System		
Session 2 (Week 2)			
Session 3 (Week 3)	Musculoskeletal System		
Session 4 (Week 4)	Digestive System		
Session 5 (Week 5)	Respiratory System		
Session 6 (Week 6)	Cardiovascular System		
Session 7 (Week 7)	Urinary System		
Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9) Session 14 (Week 14)	Female Reproductive System  Male Reproductive System		
Session 16 (Week 16)	Final Exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

# Radiological physics

1	Course name	Radiological physics
2	Course Code	RAD200
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	2 الوحدة

6	Pre-requisite req	uirements	All 1st subject to pass max. 2subjects for reset.
7	Program offered the course Instruction Language		Radiology department
8			English
9	Date of course approval		2022
and parameters in an e studying radiologic ph		and parameters in an ef	e study of medical imaging components, technology, fort to produce optimal imaging results. The goal with sics is to ensure to get clear images while ensuring the liation.
for this Course:  Duke Review of MRI Pr Physics in Nuclear Med E. Phelps.  Nuclear Medicine Phys		Duke Review of MRI Prin Physics in Nuclear Medic E. Phelps.	Medical Imaging. Bushberg. nciples: Case Review Series, 1e. cine. Simon R. Cherry, James A. Sorenson, Michael es: The Basics. Ramesh Chandra. diologist. Eric Hall.
Course Duration 28 hours An additional hour of		12.75 (20	omework per day is expected during this course.
De	livery	Lecture-based, Group in Laboratory experiments	nteraction and discussion, self-directed activities, s.
- Describe x-ray - Compare the - Describe the various equip - Explain the m - Explain charg deposition, er		<ul> <li>Describe x-ray p</li> <li>Compare the fa</li> <li>Describe the c</li> <li>various equipm</li> <li>Explain the maj</li> <li>Explain charged</li> <li>deposition, ene</li> </ul>	production. Interest that influence x-ray production and output. Inharacteristics of the x-ray beam produced in the ment energy ranges. In influencing factors of proton beam attenuation. Independent production and output. Inharacteristics of the x-ray beam produced in the ment energy ranges. In influencing factors of proton beam attenuation. In particle interactions with matter, describing dose being loss and shielding requirements. In particle interactions with matter, describing dose being loss and public recommended dose limits.
	Course Midterm exam 40% Assessments Final Exam: 60% A 60 % isrequired to p		ss this course.
Co	ntent Breakdown	Topics Coverage	
Ses	Session 1 (Week 1) Metter and energy - ty between matter and en		pes of matter – types of energy – the relationship pergy
Ses	ssion 2 (Week 2)	Electromagnetic radiation spectrum.	on – definitions- Electromagnetic radiation
Ses			om- a brief history- Dalton model- Thomson model- or's atoms- exclusion rule- atomic number- financial ne- isomer- nuclide.

Session 4 (Week 4)	X-ray history – nucleus stability factors – radioactive decay method- radioactive decay equation – radioactive units- half –life of radioactive isotopes.
Session 5 (Week 5)	X-ray- installation of ray by losing focus- continuous spectrum of x-ray- heel effect- x-ray production efficiency – x ray distribution around the target.
Session 6 (Week 6)	The interaction of photons with matter- attenuation coefficients – half-value thickness — absorption.
Session 7 (Week 7)	Interaction of alpha and beta particles and electrons with matter.
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	- neutrons interact with matter.
Session 14 (Week 14)	-filtration and filters – definition – types of filtrs- radiation quality second thickness equal to the value
	- illumination phenomenon – defection- alkaline – phosphorous- thermal
	<ul> <li>methods for measuring the amount of radiation- general characteristics of measuring devices- the most important methods of measurement – gas meters – flash number- calculating dose of absorbed radiation.</li> </ul>
	<ul> <li>physics of radiography – structure and properties of the ray film as steps of image formation characteristic curve of the ray film- no sharpness ( aberration)- geometric factors affecting the ray image- contrast – effect of scattered radiation on contrast – improving image contrast- calculating the contrast value.</li> </ul>
	- intensive screens- their composition- their characteristic.
Session 16 (Week 16)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.

# Radiographic anatomy

1	Course name	Radiographic anatomy
2	Course Code	RAD202
	18/3/	(C) (S)

3	Course type: /general/specialt	y/optional	Specialty
4	Accredited units		3
5	Educational hour	s	4
6	Pre-requisite req	uirements	All 1 <sup>st, 2nd &amp;3rd</sup> subjects to pass max. 2 subjects for reset.
7	Program offered	the course	Radiology department
8	Instruction Langu	age	English
9	Date of course ap	pproval	2022
Tex	tbooks required this Course:	modalities, to basic a understanding of me positioning. The cour which may be encounted and the position of radiograms and the position of radiograms and the principles (5th edition of the position of the p	nages on radiographs, and from other imaging inatomical knowledge. It develops a fundamental dical imaging information, relative to radiographic realso provides an awareness of common anomalies, intered in general radiographic practice.  phic positioning and related anatomy author. Lampignano, John P., author. In Positioning, Human anatomy  Anatomy / 2nd EditionEDITORS:Paul Butler, The Royal am Mitchell, Charing Cross Hospital, London / Jeremiah Westminster NHS Foundation Trust.  Per A.M. (2013), Radiographic Imaging Concepts and (2013), Delmar, ISBN 1473720524, Core text for Fundamentals tice (PAM1020) and Medical Imaging Applications
Cou	rse Duration	56 hours An additional hours of	of homework per day is expected during this course.
Del	ivery	Lecture-based, Group Laboratory experime	o interaction and discussion, self-directed activities, nts.
Cou	rse Objectives:	1- Study of human sk the following system: c) Cardio-vascular systepithelial tissue, card tissue and nervous tis malarial parasite. 5. I sedimentation rate a	celeton. 2. Study with the help of charts and models of s and organs. a) Digestive system b) Respiratory system stem d) Urinary system 3. Microscopic examination of liac muscle, smooth muscle, skeletal muscle, connective ssue. 4. Examination of blood films for TLC, DLC and Determination of clotting time of blood, erythrocyte and hemoglobin value. 6. Recording of body temperature, od pressure and ECG.

Course Assessments	Midterm exam 40%
	Final Exam: 60%
	A 60 % is required to pass this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Structure of skeleton – structure of skeletal muscle – physiology of muscle contraction, Structure and classification of joints, movements at the joints. Bones & Joints of upper extremity, Bones of thoracic cage, Clavicle and scapula, Joints of shoulder girdle, Bones of pelvis, Bones & Joints of lower extremity, Bones of skull and Fontanelles, Base of skull, Bones of face, Cervical spine and atlanto axial joints, Dorsal spine, Lumbo Sacral spine, Mandible and TM joints, Mastoids and PNS. Anatomy
Session 2 (Week 2)	Elementary tissues of human body- Epithelial tissue, muscular tissue, connective tissues and nervous tissue
Session 3 (Week 3)	Respiratory System: various parts of respiratory system and their functions, Anatomy of upper respiratory tract, Structure and functions of lungs, Anatomy of bronchial tree, Physiology of Respiration
Session 4 (Week 4)	Cardio Vascular System - Anatomy of heart and functions- Structure and functions of various parts of the heart, arterial and venous system, brief account on common cardiovascular disorders. Blood pressure and its recording. Anatomy and function of arteries, capillaries and Arterial system, Venous system.
Session 5 (Week 5)	structure and function of kidneys- Anatomy of ureters, bladder and urethra- physiology of urine formation, its constituents- pathophysiology of renal disease and edema
Session 6 (Week 6)	Digestive System - names and various parts of digestive system-Buccal Cavity, Pharynx, Oesophagus, Stomach, intestine etcphysiology of digestion and absorption, Structure functions salivary glands. Enzymes, Structure and functions of pancreas, Anatomy of teeth, Pharynx, Oesophagus, Functions of Stomach and duodenum, Small & Large intestine structure & functions.  Anatomy and function of liver, LFT, Physiology of Jaundice. Anatomy of Portal circulation and portal hypertension. Gall bladder, structure and function, Physiology of digestion and food components.
Session 7 (Week 7)	Hematology-Composition of Blood - functions of blood elements —Blood Group and coagulation of blood, disorders of blood.
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9) Session 14 (Week 14)	General structure of the human body, anatomic terminology, planes of section-Structure and function of human cell with special reference to mitochondria and ribosomes.
	Reproductive System physiology and anatomy of Male & Female reproductive system-Prostate & Uterus & Ovaries etc. The Mammary glands – anatomy & physiology and & its importance in imaging.

	Lymphatic system - Name and function of lymph glands, Lymphatics and Lymphatic pathway outline
Session 16 (Week 16)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

### Radiography Equipment I

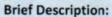
·uu	ograpity Equipiti		
1	Course name		Radiography Equipment I
2	Course Code		RAD205
3	Course type: /general/specialty/	optional	Specialty
4	Accredited units		2
5	<b>Educational hours</b>		2
5	Pre-requisite requir	rements	All 1st year subjects to pass max. 2 subjects for reset.
7	Program offered th	e course	Radiology department
3	Instruction Languag	ge	English
)	Date of course appr	roval	2022
Bri	ef Description:	Circuits. Also exami	rsics of x-ray production. Includes basic xray nes the relationship of conventional and digital nents to the imaging process.
	ktbooks required this Course:	Radiographers and	Maintenance and Repairs Workbook for Radiological Technologists Produced by the WHO ealth Technology Series. Ian R McClelland, Publisher-

	2.Quality Assurance Workbook for Radiographers & Radiologic
	Technologists, Peter J. Lloyd, Nonserial Publication, WHO.
Course Duration	28 hours
	An additional hours of homework per day is expected during this course.
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, Laboratory experiments.
Course Objectives:	By the end of this course the student should be able to:
	Compare and contrast conventional and digital equipment.
	2. Explain the physics of x-ray production.
	Describe basic x-ray circuits.
	Relate conventional and digital equipment components to the imaging process
Course Assessments	Midterm Exam: 25%
	Partical:35%
	FinalExam: 40%
	A 60 %isrequiredtopassin this course
Content Breakdown	Topics Coverage
Session 1 (Week 1)	X-ray machines – X-Ray tube: historical aspects - early X-Ray tubes     (Coolidge tubes) - construction of X-Ray tubes,
Session 2 (Week 2)	voltage, current - space charge - tube envelop and housing - cathode assembly, X-ray production efficiency
Session 3 (Week 3)	advances in X-Ray tubes, Common factors affecting
Session 4 (Week 4)	Portable/Mobile X-ray units- Equipment for mobile radiography- principle uses- mobile image intensifiers
Session 5 (Week 5)	Fluoroscopy: Fluoroscopic equipment-Direct fluoroscopy – The serial changer(spot film device) - Fluoroscopic screen -fluoroscopic image
Session 6 (Week	4. Computed Radiography (C.R) –equipment parts –advances
Session 7 (Week 7)	Digital Radiography— principle - photostimulable phosphors-image acquisition-digital spot imaging
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	6. Mammography
Session 14 (Week 14)	7.Dental Radiography
المحدة المحدة المراقية	8.Tomography

	9. Computed Tomography- 10.Angiography Equipments-
Session 16 (Week 16)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

### Radiographic Pathology

1	Course name	Radiographic Pathology
2	Course Code	RAD203
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	2
6	Pre-requisite requirements	All 1st subjects to pass max. 2 subjects for reset.
7	Program offered the course	Radiology D.
8	Instruction Language	English
9	Date of course approval	2022





The broad goal of the teaching of undergraduate students in pathology aims at providing comprehensive knowledge of the morbid anatomy, Histopathology, etiology and pathogenesis with the complications of various diseases to provide a basis for understanding the clinical correlation and the skills to practice as a qualified Radiologist.

Textbooks required for this Course:	<ul> <li>Crowley, Leonard V. An introduction to human disease: pathology and pathophysiology correlations. 8th ed. (Sudbury, MA) Jones and Bartlett, 2014.</li> <li>Eisenberg, Ronald Nancy Johnson. Comprehensive Radiographic Pathology. 6th ed. St. Louis, Mo. Mosby / Elsevier, 2015.</li> <li>Mace, James Nina Kowalczyk. Radiographic Pathology for Technologists. 6th ed. St. Louis: Mosby, 2014.</li> <li>Linn-Watson, TerriAnn. Radiographic Pathology. 2nd. Philadelphia: W.B. Saunders, 2014.</li> </ul>
	An additional hours of homework per day is expected during this course.
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, Laboratory experiments.
Course Objectives:	Upon completion of this course the student will be able to:  1. Describe the pathology of physiologic processes and conditions that can affect tissues, organs, and body systems.  2. Utilize pathology and radiologic imaging principles to develop the technical competence to perform diagnostic imaging procedures on patients afflicted with disease.  3. Develop an understanding of the intricacies associated with providing direct patient care with patients afflicted with disease in today's health care setting.  4. Apply pathology principles to recognize the difference between abnormal and normal radiographic appearances.  5. Analyze the significance of the variety of imaging and medical procedures used in diagnosing diseases.
Course Assessments	Midterm exam: 40% Final Exam: 60% A 60 % is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Topics to be covered in the session (week):  Define basic pathology related terms

Identify diseases caused by or contributed to by genetic factors.  Identify diseases caused by or contributed to by environmental factors  The healing process.  Examples of additive and destructive diseases and exposure technique alterations required by the radiographer.  NOVA's Cancer Warrior and describe the term angiogenesis.  common characteristics of benign and malignant neoplasms  Under instructor supervision, perform a core needle biopsy on an apple and examine the specimens obtained.  Multiple specialized imaging procedures used in diagnosing disease processes (US, CT, MRI, NM, PET, angiography, cardiology and mammography).
Examples of additive and destructive diseases and exposure technique alterations required by the radiographer.  NOVA's Cancer Warrior and describe the term angiogenesis.  common characteristics of benign and malignant neoplasms  Under instructor supervision, perform a core needle biopsy on an apple and examine the specimens obtained.  Multiple specialized imaging procedures used in diagnosing disease processes (US, CT, MRI, NM, PET, angiography, cardiology and mammography).
common characteristics of benign and malignant neoplasms  Under instructor supervision, perform a core needle biopsy on an apple and examine the specimens obtained.  Multiple specialized imaging procedures used in diagnosing disease processes (US, CT, MRI, NM, PET, angiography, cardiology and mammography).
Under instructor supervision, perform a core needle biopsy on an apple and examine the specimens obtained.  Multiple specialized imaging procedures used in diagnosing disease processes (US, CT, MRI, NM, PET, angiography, cardiology and mammography).
apple and examine the specimens obtained.  Multiple specialized imaging procedures used in diagnosing disease processes (US, CT, MRI, NM, PET, angiography, cardiology and mammography).
processes (US, CT, MRI, NM, PET, angiography, cardiology and mammography).
Anatomic structures on diagrams and radiographs of the chest, skeletal system, GI system, and urinary system.
Midterm Exam
The physiology and function of the respiratory system, skeletal system, GI system, and urinary system.
common pathologic disorders and identify radiographic manifestations presented in chapters
the use of non-ionizing imaging modalities such as MRI or US when clinically appropriate
Anatomic structures on diagrams and radiographs of the cardiovascular system, nervous system, hematopoietic system, endocrine system, and reproductive system.
The physiology and function of the cardiovascular system, nervous system, hematopoietic system, endocrine system, and reproductive system.
<ul> <li>Common pathologic disorders and identify radiographic manifestations presented in chapters</li> <li>Cardiac CT for calcium scoring</li> <li>The use of non-ionizing imaging modalities such as MRI or US when clinically appropriate.</li> </ul>
Final Exam
Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and mus be supported with a doctor's note.

Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

Cros	ss Sectional Anatom	У	
1	Course name		Cross sectional anatomy
2	Course Code		RAD300
3	Course type: /general/specialty/opti	ional	Specialty
4	Accredited units		3
5	Educational hours		4
6	Pre-requisite requireme	ents	All 1 <sup>st &amp; 2nd</sup> subjects to pass max. 2 subjects for reset.
7	Program offered the co	urse	Radiology D.
8	Instruction Language		English 2022
9	Date of course approva	ı	
Bri	ief Description:	sectional anat modules deve learned from using the Ana sectional anat tomography a introduction t	as developed for the student to learn the essentials of comy in an easyto-follow format with the online cloped by the ASRT. Students will solidify concepts the modules with hands-on learning in occasional labs tomage table. Students will compare planar anatomy to comy and recognize anatomical structures in computed and magnetic resonance imaging. Modules include the o sectional anatomy, cranium and facial bones, brain, norax, abdomen, pelvis, and extremities.
			L.L., Petersen, C.M. Sectional Anatomy for Imaging sionals, 2013, 3rd ed., Mosby, St. Louis.
Course Duration 56 hours An additional course.		An additional	hours of homework per day is expected during this

Delivery	Lecture-based, Group interaction and discussion, self-directed activities, Laboratory experiments.	
Course Objectives:	By the end of this course the student will be able to:  Correlate gross anatomy with imaging anatomy, including congenital and anatomic variations.  Review anatomy pertinent to diagnostic radiology, with emphasis on the following areas:  Neuroanatomy, including head and neck (includes face, skull base, cranial nerves)  Body Cavities: mediastinum, abdomen, pelvis, and all constituent organs and spaces.  Sextremities: Upper and lower limbs, girdles and neurovascular paths	
Course Assessments	Midterm exam: 40% Final Exam: 60% A 60 % is required for a pass in this course.	
Content Breakdown	Topics Coverage	
Session 1 (Week 1)	The surface anatomy of the brain, including the structure of the meninges. • Locate the structures of the brain's ventricular system. • The arterial blood supply to the brain. • The major venous sinuses that carry blood from the brain to the internal jugular veins. • The lobes of the cerebrum. • The location and structure of the cerebellum. • The components and explain the function of the limbic system. • The relationships of the basal ganglia. • Locate and identify the anatomical structures of the brainstem. • The 12 cranial nerves, state the foramina that serve as passageways for each pair of nerves and describe the function of each nerve.	
Session 2 (Week 2)	The components of the spine. • The features of the vertebrae. • The differences between cervical, lumbar and thoracic vertebrae. • The major curves found in the vertebral column. • The major ligaments found in the spinal column. • The major muscle groups supporting the spine. • The major components of the spinal cord.	
Session 3 (Week 3)	The features of the larynx. • The features of the pharynx. • the relationship of the esophagus and trachea as they descend throug	
Session 4 (Week 4)	The anatomical surface landmarks of the chest. • The Addison planes. • the skeletal components located in the chest  The major muscles of the neck and their functions. • locate the lymph nodes in the neck. • The major arteries and veins of the neck.	
Session 5 (Week 5)	The major muscles of the chest, locate their insertion points and describe their function. • The levels of the 3 parts of the sternum with respect to the viscera or thoracic vertebrae. • The structures separating the mediastinum and the pleural cavities. • Label the chambers of the heart on sectional images. • The airway structures within the chest.	

Session 6 (Week 6)	The course of blood as it passes through the pulmonary circulation system. • The major arteries and veins located within the chest and upper arm. • The vertebral level of the suprasternal notch, the sterna angle and the xiphisternal junction. • The components that make up the breast. • The anatomical structures of the thorax on applicable cross-sectional imaging studies.	
Session 7 (Week 7)	The anatomical surface landmarks and regions of the abdomen. • The Addison planes. • The vertebral structures of the abdomen. • The major muscles of the abdomen, locate their insertion points and describe their function. • identify the lobes of the liver. • The biliary system.	
Session 8 (Week 8)	Midterm Exam	
Session 9 (Week 9)	The location and general function of the stomach, gall bladder, pancreas, spleen, adrenal glands and kidneys. • The significance of the peritoneal and retroperitoneal spaces. • each anatomical structure on computed tomography (CT), magnetic resonance (MR), and ultrasound images in the transverse axial, coronal, sagittal and orthogonal (oblique) cross-sectional imaging planes.	
Session 10 (Week 10)	The 3 bones that form the pelvic girdle. • The contents of the lower abdominal cavity. • The function of the pelvic muscles.	
Session 11 (Week 11)	The location and function of the pelvic organs. • The flow of urine within the pelvic region. • The location and function of the components of the male reproductive system.	
Session 12 (Week 12)	The location and function of the components of the female reproductive system. • The course of arterial and venous blood flow within the pelvis.	
Session 13 (Week 13)	The bones that make up the shoulder, elbow, wrist, hip, knee and ankle joints. • The origin, insertion and action of the muscles of the shoulder, elbow, wrist, hip, knee and ankle joints. • the major ligaments and tendons of the shoulder, elbow, wrist, hip, knee and ankle joints	
Session 14 (Week 14)	<ul> <li>The anatomical structures displayed on radiographic scans of the shoulder, elbow, wrist, hip, knee and ankle joints.</li> <li>The modalities used to image upper and lower extremity joints, as well as their advantages and disadvantages.</li> </ul>	
Session 16 (Week 16)	Final Exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To	

	ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.  Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	
Course Change		

# Radiography Equipment II

1	Course name		Radiography Equipment II
2	Course Code		RAD303
3	Course type: /general/specialty/	optional	Specialty
4	Accredited units		2
5	Educational hours		2
6	Pre-requisite requi	rements	All 1 <sup>st</sup> & 2 <sup>nd</sup> subjects to pass max. 2 subjects for reset.
7	Program offered the course		Radiology Department
8	Instruction Langua	ge	English
9	Date of course app	roval	2022
Bri	ef Description:	examinations, prov diagnostic procedu procedures help pr	ates and prepares the student to perform radiographic vide quality patient care, and assist the radiologist with ares. This program promotes clinical experience and rovide graduates the skills necessary to obtain entrypositions in the field.
for this Course: Craig Anderson, H		Craig Anderson, H concise practical N	ok for Radiographers – Charles Sloane, Ken Holmes & odder Educations, UK 2. Diagnostic Radiography – A Manual – Glenda J. Bryan (4th edn), Churchill
Course Duration 28 hours An additional hour			s of homework per day is expected during this course.
		Lecture-based, Gro Laboratory experin	oup interaction and discussion, self-directed activities, nents.
Course Objectives:  1. Discuss the use 2. Apply proper bo		1. Discuss the use of	of medical devices used in patient care.

	<ol><li>Compare radiographic procedures used for patients of diverse populations.</li></ol>
	<ol> <li>Perform mathematical calculations to determine specific receptor exposure factors.</li> </ol>
	<ol> <li>Describe factors which influence and control radiographic qualities of density/brightness, contrast, spatial resolution, dynamic range, and exposure latitude.</li> </ol>
	<ol> <li>Discuss basic knowledge in radiographic, fluoroscopic, and mobile equipment.</li> </ol>
Course Assessments	Midterm1: 25%. Practical: 35%.
	FinalExam: 40%
	A 60 %isrequiredtopassin this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Detectors
Session 2 (Week 2)	Evaluation of detector characteristics
Session 3 (Week 3)	Dynamic range
Session 4 (Week 4)	Exposure indicators and deviation index 1. Preprocessing 2. Image Analysis
Session 5 (Week 5)	Exposure indicators and deviation index 3. Rescaling 4. VOI
Session 6 (Week 6)	Exposure indicators and deviation index 5. LUT 6. Noise reduction
Session 7 (Week 7)	Exposure indicators and deviation index 7. Smoothing
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9) Session 14 (Week 14)	Exposure indicators and deviation index 8. Edge enhancement 9.  Equalization c. Post Processing d. Image Acquisition Errors e. Image Display f. Data Management VII. Digital Image Appearance Characteristics a. Bightness b. Noise c. Contrast (Grayscale) d. SNR e. CNR f. Spatial resolution g. Contrast resolution h. Exposure indicator appropriateness
Session 16 (Week 16)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and

	numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

# Imaging technology II

	0 0		
1	Course name		Imaging technology II
2	Course Code		RAD204
3	Course type: /general/specialty/	optional	Specialty  3  4  All 1 <sup>st</sup> & 2 <sup>nd</sup> subjects to pass max. 2 subjects for reset.
4	Accredited units		
5	<b>Educational hours</b>		
6	Pre-requisite requi	rements	
7	Program offered th	e course	Radiology Department
8	Instruction Languag	ge	English
9	Date of course app	roval	2022
		procedures help p level radiography	lures. This program promotes clinical experience and provide graduates the skills necessary to obtain entrypositions in the field.
Textbooks required for this Course:  Reference for Radio Dept. of E WHO, 200 2. Quality		Reference Books for Radiographers Dept. of Essential	positions in the field.  1.X-Ray Equipment Maintenance and Repairs Workbooks and Radiological Technologists Produced by the WHO Health Technology Series. Ian R. McClelland, Publisher-
		WHO, 2004.  2. Quality Assurance Workbook for Radiographers & Radiologic Technologists, Peter J. Lloyd, Nonserial Publication, WHO.	
Course Duration 56hours An additional hou			irs of homework per day is expected during this course.
Delivery Lecture-based, Gr Laboratory experi		The second second second second	roup interaction and discussion, self-directed activities, iments.
Course Objectives:  Determine appropriate Radiographic exam Critique Radiograp exposure index.			riate patient interaction and preparation for all

	Formulate appropriate technical factors for radiographic procedures.  Explain the required breathing instructions, patient position, usable surface landmarks and suitable radiation protection during radiographic procedures.		
Course Assessments	Midterm1: 25%. Practical: 35%.		
	FinalExam: 40%		
	A 60 %isrequiredtopassin this course.		
Content Breakdown	Topics Coverage		
Session 1 (Week 1)	Urinary system imaging (IVU, MCU, RGU) Revision of anatomy and physiology, clinical indications and contraindications - patient preparation -contrast media used and dosage - physiological process by which urinary tract is outlined.		
Session 2 (Week 2)	Urinary system imaging: Film sequence (projection and timing), normal anatomy on films, additional techniques, radiation protection, care of patient during and after examination. Pathological conditions of urinary system: kidneys, ureter, urinary bladder, urethra.		
Session 3 (Week 3)	Gastrointestinal tract imaging (Barium swallow, Barium meal upper Gl, Barium meal follow through, Barium enema, small bowel enema, distal colography, defaecography). Revision of anatomy and physiology - clinical indications and contraindications.		
Session 4 (Week 4)	Gastrointestinal tract imaging: contrast media used: preparation and dosage - patient preparation – preparation of equipment – control of radiographic and fluoroscopic equipment – film sequence – radiographic projections – radiation protection – patient management – after care of patient – radiographer's role in the team. Pathological conditions of the GI tract.		
Session 5 (Week 5)	Biliary system (PTC, ERCP, T-Tube cholangiography, per-op. cholangiography) Revision of anatomy and physiology – clinical indications and contraindications – contrast media – patient preparation – film series - radiation protection – patient care - normal anatomy. Pathological conditions of biliary system.		
Session 6 (Week 6)	Sialography and sinography Anatomy - Clinical indications and contraindications – patient preparation – contrast media and dosage Injection procedure – techniques for radiographic projections - radiographic appearances – radiation protection – patient care.  Pathological conditions		
Session 7 (Week 7)	Hysterosalpingography (HSG) Revision of anatomy and physiology – clinical indications and contraindications – contrastinjection-258 6.  Procedures which are obsolete or rarely used: An overview •  Myelography – indications and contraindications – contrast used – patient preparation – injection technique – film sequence – projections – patient		

	care • Pelvimetry • Oral cholecystography/intravenous cholangiography • Dacrocystography • Arthrography • Discography
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Conventional – non-contrast - special situations 1.Paediatric Radiography Special needs of patient and radiographer – equipment considerations
Session 11 (Week 11)	(use of dedicated equipment and accessories) Technical considerations - the need to modify "adult" techniques – selection of exposure factors – image quality considerations – radiation protection of the patient - specia techniques peculiar to children as follows: – Anorectal malformation – contrast study – intersex disorders - contrast study – esophageal atresia – pre/post op. – intussusception – congenital dislocation of hip – scoliosis – Leg-length measurements – assessment of bone age – non accidental injury – radiography of babies in incubators.
Session 12 (Week 12)	Geriatric radiography Understanding patient profile - possible difficulties during radiography – Technical considerations – need to carry out standardised projections in unconventional position – equipment and accessories – exposure factor considerations in view of variations in skeletal tissue – special care. 3. Trauma/Emergency Radiography Limb fractures - Fracture of thoracic
Session 13 (Week 13)	cage, spine, and skull – GIT obstruction – lung collapse – pleural effusion – pneumo-thorax. Selection of suitable X-Ray equipment – patient position radiographic projections and sequence for each patient – modification of routine positioning, X-Ray tube and film – radiation protection – patient care.
Session 14 (Week 14)	4. Operation theatre radiography Operative cholangiography – orthopaedic procedures – pre-operative chest. Strict observation of asepsis – preparation of radiographer and equipment/accessories – careful safe use of mobile and fluoroscopic equipment – radiation protection – patient care – protection of theatre staff – rapid availability of radiographic image. 5. Mammography Anatomy and Physiology of female breast – knowledge about the nature of X-Ray beam suitable for breast imaging – equipment suitable for generating such X-radiation –
Session 15 (Week 15)	Image recording devices – accessories for immobilisation and identification, positioning, techniques for various projection; exposure factors, radiation protection – technique of biopsy procedure – characteristics of benign and malignant lesions – patient care – female attendant.
Session 16 (Week 16)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.

	Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

### Imaging Technology III

ma	ging rechnolog	7	
1	Course name  Course Code  Course type: /general/specialty/optional		Imaging Technology III  RAD400  Specialty
2			
3			
4	Accredited units		3
5	Educational hour	s	4
6	Pre-requisite req	uirements	All 1 <sup>st</sup> & 2 <sup>nd</sup> subjects to pass max. 2 subjects for reset.
7	Program offered	the course	Radiology Department
8	Instruction Language  Date of course approval		English 2022
9			
Bri	ef Description:	examinations, prodiagnostic procedu	ates and prepares the student to perform radiographic vide quality patient care, and assist the radiologist with ures. This program promote clinical experience and rovide graduates the skills necessary to obtain entry-leve ons in the field.
Textbooks required for this Course:		1.Clark's Handbook for Radiographers – Charles Sloane, Ken Holmes & Craig Anderson, Hodder Educations, UK 2.Diagnostic Radiography – A concise practical Manual – Glenda J. Bryan (4th edn), Churchill Livingstone.	
Course Duration 56 hours		30	rs of homework per day is expected during this course.

Delivery	Lecture-based, Group interaction and discussion, self-directed activities, Laboratory experiments.
Course Objectives:	By the end of this course the student should be able to:              Demonstrate clinical competence.             Properly patient's position for radiographic procedures.             Practice radiation protection.             Provide quality patient care.
Course Assessments	Midterm1: 25%. Practical: 35%.  FinalExam: 40%  A 60 %isrequiredtopassin this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Topicstobecoveredinthesession (week):  Extremities Radiography – Hand- Finger –MCP- Wrist joint- Forearm -Elbow joint – humerus - shoulder joint.
Session 2 (Week 2)	Assignment1handedout Topicstobecoveredinthesession (week) Extremities Radiography: Foot – Toes- Tarsal bones -Ankle joint - Knee joint – patella – tibia- femur – Hip joint – pelvis -sacroiliac joint.
Session 3 (Week 3)	Topics to be covered in the session (week)  Spine Radiography -Vertebral column – Atlanta occipital articulation- cervical spine.
Session 4 (Week 4)	Spine Radiography - dorsal spine - lumbar spine – sacrum -vertebral canal- vertebral foramen.
Session 5 (Week 5)	Topicstobecoveredinthesession (week)  Skull Radiography – general, sella – temporal bone – mastoid – optic foramen – Internal auditory canal.
Session 6 (Week 6)	Topicstobecoveredinthesession (week)  Skull Radiography –Superior and inferior orbital fissure – base of skull – facial bones – petrous apex – Zygomatic bone, nasal bone, sinuses of skull – mandible
Session 7 (Week 7)	Topicstobecoveredinthesession (week)  Skull Radiography – Tempro-mandibular joint – Paranasal sinuses Radiography.
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Chest Radiography –Basic views (PA & AP) - inspiratory & expiratory filmsspecial chest views & their significance – larynx- trachea- thoracic

inlet -Sternum Ribs – Heart and great vessels – mediastinum -Diaphram – double exposure technique. Abdomen & Pelvic Radiography – all projection – the acute abdomen investigation. Soft tissue radiography:
Preparations, Instructions, Various techniques, positioning digital mammography, High and low KV Technique – radiography – technique for steep range radiography – intensifying screen. Stereo Radiography of patient for conventional and differential filtration – multiple Duplication –
arrangement of Principle – tube shifting relation of patient – correct making and viewing of stereo radiographs – application.  Macro radiography: Principle sizes of focal spot its limitation.
High kv technique: technique & usefulness. Foreign body localization:  Preparation – Anatomical localization – various projections –
use of skin markers – Tangential projection – uses – opaque – foreign bodies. Dental radiography-types of equipment's –techniques- indications-films-dental radiography in trauma patients.
Practical involving patients not less than 10 numbers must be prescribed to students. The title and nature of practical may be framed by the respective institution conducting the course
Final Exam
Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The



**Radiotherapy Fundamentals** 

1	Course name		Radiotherapy fundamentals
2	Course Code		RAD305
Course type: /general/specialty/optional		otional	specialty
4	Accredited units		3
5	Educational hours		4
6	Pre-requisite requirer	ments	All 1st and second year subjects to pass
			max. 2 subjects for reset.
7	Program offered the	course	Radiology Dept.
8	Instruction Language		English
9	Date of course appro	val	2022
		Nuclear me "endoradio body rathe rays. Nuclear me organs or t	ive substances in the diagnosis and treatment of disease. edicine imaging, in a sense, is "radiology done inside out" or ology" because it records radiation emitting from within the r than radiation that is generated by external sources like X-edicine uses radioactive material inside the body to see how issue are functioning (for diagnosis) or to target and destroy or diseased organs or tissue (for treatment).
this Course:  2.Radiation 3.Short text 4.Principles 5.Radiation 6.Radiation 6.Radiation		2.Radiation 3.Short tex 4.Principles 5.Radiation	al basics of Radiation Therapy Levitt S H, Purdy J A on Oncology –Rationale, technique, & results – Moss. ext book of radiotherapy; Walter and Miller es and practice of Radiation Oncology= Perez & Brady on Oncology –Rationale, technique, & results – Moss. on therapy in the management of cancers; Fletcher, Gilbert
		An addition	nal hours of homework per day is expected during this
De	elivery	Lecture-ba	sed and practical
1. Able to e		1. Able to	execute all routine radio therapeutic procedures as per on and direction of Radiation Oncologist.

	their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Session 16 (Week 16)	Final Exam
	Sequelae associated with multimodality therapy and their management
Session 14 (Week 14)	Significance of radiation and chemotherapy in comprehensive management of cancer.
Socion 14 (Mosk 14)	of combined modality treatment and the
Session 9 (Week 9)	Chemotherapy Chemoradiation concepts
Session 8 (Week 8)	Midterm Exam
Session 7 (Week 7)	Mould room technique
Session 6 (Week 6)	CT planning MRI planning
Session 5 (Week 5)	External beam therapy practical experience
Session 4 (Week 4)	Electron Beam Therapy
Session 3 (Week 3)	Beam modifying and shaping devices
Session 2 (Week 2)	Body in homogeneities
Session 1 (Week 1)	Importance of Immobilization in radiotherapy
Content Breakdown	Topics Coverage
	Final examination 60%
Course Assessments	Med-term examination 40%
	handling of medical radiation sources, keeping in mind the radiation protection of staff, patients and public.  4. Able to demonstrate patient management skills.
	3. Able to demonstrate and apply adequate knowledge about the safe
	cancer patient independently and maintain the equipment under the guidance of Medical Physicist.

ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

lesea	rch Methodolo	gy	
1	Course Code		Research Methodology RAD302
2			
3	Course type: /general/spec	cialty/optional	Specialty  2  All 1 <sup>st</sup> & 2 <sup>nd</sup> subjects to pass max. 2 subjects for reset.
4	Accredited un	its	
5	Educational h	ours	
6	Pre-requisite	requirements	
7	Program offer	red the course	Radiology Department
8	Instruction La	nguage	English
9	Date of course	approval	2022
	ooks required is Course:	ethics, qualitative resea Students will read and o published research.  1] Methods in Biostatis research: Applications	concepts. The course will explore human research rch methods, and quantitative research methods. critique both qualitative and quantitative  stics - B.K. Mahajan 3] Foundations of clinical to practices – L.G. Portney 4] Research ds & Techniques – C.R. Kothar.
Cours	se Duration	28 hours	
Deliv	ery	Lecture-based, Group interaction and discussion, self-directed activities.	
Course Objectives:		Describe ethical consable to apply knowledge their own research properties. Compare and contrast common qualitative, quantitative, quantitative, and methodologies     Evaluate the approprimized methods research from a theoretical prince.	on of the course students will be able to: iderations pertaining to human research, and be e of research ethics principles and processes to cosal st the similarities and differences between cantitative and mixed methods research riateness of common qualitative, quantitative and th methodologies and research design issues, both ciples and applied construct ences between research questions and a testable their discipline of study, and demonstrate

	understanding of the differences based on critical appraisal of current
	literature.  5. Further develop critical appraisal skills for both qualitative, quantitative
	and mixed methods research.
Course Assessments	Assignment: 40%.
	Final Exam: 60%
	60 %isrequiredforapassin this course.
Content Breakdown	Topical Coverage
Session 1 (Week 1)	Topicstobecoveredinthesession (week):
	Meaning of Research, Research Approaches, Significance of Research, Research Process, Criteria of Good Research
Session 2 (Week 2)	Assignment1handedout
	Topicstobecoveredinthesession (week)
	Defining the Research Problem, Selecting the Research Problem,
	Necessity & Technique in defining the problem. Research Design:
	Developing a Research Plan.
Session 3 (Week 3)	Topics to be covered in the session (week)
	Data Collection: Collection of primary data, observation method, interview method
Session 4 (Week 4)	Geriatric Conditions
	<ul> <li>Data Collection: data through questionnaires &amp; schedules, collection of secondary data</li> </ul>
Session 5 (Week 5)	Topicstobecoveredinthesession (week)
	Data Collection: selection of appropriate method of data collection, guidelines for developing questionnaire,
Session 6 (Week 6)	Topicstobecoveredinthesession (week)
	Data Collection: Survey vs. Experimental method
Session 7 (Week 7)	Topicstobecoveredinthesession (week)
	Processing & Analysis of data: Data analysis, Statistics
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Topicstobecoveredinthesession (week)
Session 14 (Week 14)	<ul> <li>Processing &amp; Analysis of data: measures of central tendency, Dispersion,</li> </ul>
	Asymmetry, Relationship, and Regression Analysis
	Testing of Hypothesis: Parametric tests, Non Parametric tests
	(Distribution free tests), Design & Analysis of Experiments.
	Ethical Concepts in Research     Rele of Computer in Research
Session 16 (Marsh 16)	Role of Computer in Research
Session 16 (Week 16)	Final Exam

Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

# **Hospital Training I**

1	Course name		Hospital Training I
2	Course Code		RAD308
3	Course type: /general/specialty/	optional	Specialty
4	Accredited units		2
5	<b>Educational hours</b>		4
6	Pre-requisite requi	rements	All 1 <sup>st</sup> & 2 <sup>nd</sup> subjects to pass max. 2 subjects for reset.
7	Program offered th	fered the course Radiology Department	Radiology Department
8	Instruction Language  Date of course approval		English
9			2022
Br	ief Description:	skills and their a personal organizat be developed thro needs of society The respond to the need the practice of Maccuracy and radia whole). Program o	e assessed in the test and the examination. Professional appropriate application Provide Time management, ion and teamwork skills, and communication skills will ough the presentation projects. Engagement with the ne subject will enhance the capacity of the students to eds and grapple with ethical concerns that accompany edical Imaging (e.g. the balance between diagnostication dose to the patient, the staff and population as a bjectives will aim at making the students being able to:

Session 3 (Week 3)
Session 2 (Week 2)
Session 1 (Week 1)
Content Breakdown
Course Assessments
Course Objectives:
Delivery
Course Duration
Textbooks required for this Course:

Session 4 (Week 4)	Breast Imaging Experiential Training Requirements		
	Biopsy (ultrasound, stereotactic and MRI guidance) • US • MRI (diagnostic and screening)		
Session 5 (Week 5)	Interventional Radiology Experiential Training Requirements		
	<ul> <li>Ultrasound, Fluoroscopy and Computerised Tomography guided procedures • Vascular access – Arterial and Venous • Drainage – Effusions / Ascites / Abscess / Nephrostomy / Biliary • Biopsy and FNA targeted and general</li> </ul>		
Session 6 (Week 6)	Interventional Radiology Experiential Training Requirements		
	<ul> <li>Musculoskeletal biopsy and intervention • Angioplasty and stend (Understand principles and method and assist) • Embolisation (Understand principles and method and assist)</li> </ul>		
Session 7 (Week 7)	Obstetrics & Gynecology Experiential Training Requirements		
	Pelvic Scans (transabdominal (TA) and transvaginal (TV)) • Early pregnancy and complication scans • Nuchal Translucency scans • Obstetric Morphology scans		
Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9)	Obstetric& Gynecology Experiential Training Requirements		
Session 14 (Week 14)	Obstetric Growth Scans • Relevant MRI (foetal, placental, ovarian and uterine) • Body CT  Paediatric& Neonatal Experiential Training Requirements		
	CXR • AXR • Extremity XRs • Abdominal US • Neonatal head US • Hip US • Barium Swallow and meal • TPT placement under fluoroscopy Paediatric& Neonatal Experiential Training Requirements		
	Contrast enema • IVU • MCU • Fluoroscopy for line checks •  Nuclear Medicine Experiential Training Requirements		
	Sentinel lymph node mapping		
Session 16 (Week 16)	Final Exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure		

	numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

## **Radiology Administration**

1	Course name	Radiology Administration
2	Course Code	RAD402
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	2
6	Pre-requisite requirements	All 1 <sup>st</sup> , 2 <sup>nd</sup> & 3 <sup>rd</sup> subject to pass max. 2subjects for reset.
7	Program offered the course	Radiology department
8	Instruction Language	English
9	Date of course approval	2022
Br	rief Description: This is an	introductory course to manage (leadership and governance) in

September 1	و المحدد	a broad sense in healthcare. The course provides an overview of various planning and management issues in healthcare. The following topics are introduced: management and leadership; decision-making and resource allocation; organization and organizational development; quality improvement and change; collaboration and communication; working environment issues and conflict management. All subjects are discussed from an international perspective. Students are encouraged to contribute to the course content richness by relating to healthcare in their own country.
	Textbooks required for this Course:	William J. Callaway and Laverne Tolley Gurley, Introduction to Radiologic Technology, latest edition, G. V. Mosby Co., St. Louis, Mo. Peggy C. Leonard, Quick and Easy Medical Terminology, latest edition, W.B. Saunders Co., Philadelphia, PA.
	Course Duration	28 hours  An additional hours of homework per day is expected during this course.
	Delivery	Lecture-based, Group interaction and discussion, self-directed activities, Laboratory experiments.

Course Objectives:	Graduates completing the program will accomplish the following outcomes:
	<ol> <li>Students will be able to demonstrate practical knowledge of the functional areas of business.</li> </ol>
	<ol><li>Students will be able to integrate current technology in support of business operations.</li></ol>
	<ol><li>Students will be able to demonstrate highly developed communication skills.</li></ol>
	<ol> <li>Students will be able to evaluate strategic objectives that enhance organizational effectiveness and operational performance.</li> </ol>
	<ol><li>Students will evaluate complex financial and operational data and information for decision making.</li></ol>
	<ol> <li>Students will be able to demonstrate collaboration for effective leadership and decision making.</li> </ol>
Course Assessments	Midterm exam 40%
	Final Exam: 60%
	A 60 %is required to pass this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Quality Patient Care & Services
	A. Technical and personal aspects of radiology B. The healthcare service
	environment C. The patient's perspective D. Benefits of high-quality
	service
Session 2 (Week 2)	Quality Patient Care & Services
	E. Attitude and self-worth F. Physical Needs. G. Physiological Needs H.
	Critical Thinking G. Medical Language I. Suffixes and Combining forms
Session 3 (Week 3)	Evolution of Medicine A. Prehistoric and Primitive Medicine B. Ancient
Session 4 (Week 4)	Egypt, Greece, India and China C. Pioneers of Radiography Evolution of Medicine D. Wilhelm Reontgen E. Discovery of X-rays F.
Session 4 (Week 4)	Nuclear Medicine G. Modern Medicine H. Prefixes
Session 5 (Week 5)	Radiography Education and Medicolegal
	A. The patient as a guest B. Responsibilities in Health Care C. Radiologic
	Technology Curriculum D. Professional image
Session 6 (Week 6)	Radiography Education and Medicolegal
	E. Personal obligations F. Medical malpractice G. Diagnostic procedures and interventions H. The body as a whole
	Basic Image Production A. X-ray tube and energy conversion B. Film-
Session 7 (Week 7)	
Session 7 (Week 7)	screen system C. Fluoroscopy D. Specialized Imaging equipment E.
Session 7 (Week 7)	screen system C. Fluoroscopy D. Specialized Imaging equipment E.  Density F. Factors affecting density G. Contrast H. Musculoskeletal system
Session 7 (Week 7)  Session 8 (Week 8)	

Session 9 (Week 9)	The Healthcare Environment	
Session 14 (Week 14)	A. The economics of the department B. Revenue production C. Quality assurance programs D. Continuing Education for techs E. Respiratory system	
	Standards of Practice for Radiologic Technology A. ARRT history and organization B. Examination procedures C. Certification of Technologists D. Educational requirements E. Circulatory system	
	Professional organizations A. ASRT and other professional organizations B. Benefits of being an ASRT member C. Compliance with continuing education D. Probation for non-compliance of continuing education E. Digestive and Urinary system	
Session 16 (Week 16)	Final Exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

## Imaging Technology III

1	Course name	Imaging technology III
2	Course Code	RAD400
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4
6	Pre-requisite requirements	All 1 <sup>st</sup> & 2 <sup>nd</sup> subjects to pass max. 2 subjects for reset.
7	Program offered the course	Radiology Department
8	Instruction Language	English

9	Date of course app	roval	2022
Brief Description:		examinations, pro diagnostic proced procedures help p	cates and prepares the student to perform radiographic wide quality patient care, and assist the radiologist with ures. This program promote clinical experience and provide graduates the skills necessary to obtain entrypositions in the field.
Textbooks required for this Course:		for Radiographers Dept. of Essential WHO, 2004.	1.X-Ray Equipment Maintenance and Repairs Workbook and Radiological Technologists Produced by the WHO Health Technology Series. Ian R. McClelland, Publisher-
			nce Workbook for Radiographers & Radiologic ter J. Lloyd, Nonserial Publication, WHO.
Cou	urse Duration	56 hours An additional hou	rs of homework per day is expected during this course.
Del	livery	Lecture-based, Gr Laboratory experi	oup interaction and discussion, self-directed activities, ments.
Deter     Radio     Critiq     baseli     Demo		Determine     Radiograp     Critique si     baselines     Demonstr     protection	this course the student will be able to: rmine appropriate patient interaction and preparation for all ographic examinations and procedures. If you skull images for positioning, anatomy, centering, ines and technical factors. It is an appropriate shielding techniques and radiation ection. If y various advanced procedures.
Cou	urse Assessments	Midterm1: 25%. P FinalExam: 40% A 60 %isrequiredt	ractical: 35%. opassin this course.
Coi	ntent Breakdown		Topics Coverage
Ses	Session 1 (Week 1)  Urinary system imaging (IVU, MCU, RGU) Revision of anato physiology, clinical indications and contraindications - patie -contrast media used and dosage - physiological process by tract is outlined.		I indications and contraindications - patient preparation
anatomy on films patient during an		anatomy on films, patient during and	naging: Film sequence (projection and timing), normal additional techniques, radiation protection, care of dafter examination. Pathological conditions of urinary ureter, urinary bladder, urethra.
Ses	ssion 3 (Week 3)	Gastrointestinal tract imaging (Barium swallow, Barium meal upper G Barium meal follow through, Barium enema, small bowel enema, dist colography, defaecography). Revision of anatomy and physiology - cli indications and contraindications.	

Session 4 (Week 4)	Gastrointestinal tract imaging: contrast media used: preparation and dosage - patient preparation – preparation of equipment – control of radiographic and fluoroscopic equipment – film sequence – radiographic projections – radiation protection – patient management – after care of patient – radiographer's role in the team. Pathological conditions of the GI tract.	
Session 5 (Week 5)	Biliary system (PTC, ERCP, T-Tube cholangiography, per-op. cholangiography) Revision of anatomy and physiology – clinical indications and contraindications – contrast media – patient preparation – film series - radiation protection – patient care - normal anatomy. Pathological conditions of biliary system.	
Session 6 (Week 6)	Sialography and sinography Anatomy - Clinical indications and contraindications – patient preparation – contrast media and dosage Injection procedure – techniques for radiographic projections - radiographic appearances – radiation protection – patient care.  Pathological conditions	
Session 7 (Week 7)	Hysterosalpingography (HSG) Revision of anatomy and physiology – clinical indications and contraindications – contrastinjection-274 6.  Procedures which are obsolete or rarely used: An overview •  Myelography – indications and contraindications – contrast used – patient preparation – injection technique – film sequence – projections – patient care • Pelvimetry • Oral cholecystography/intravenous cholangiography • Dacrocystography • Arthrography • Discography	
Session 8 (Week 8)	Midterm Exam	
Session 9 (Week 9)	Conventional – non-contrast - special situations 1.Paediatric Radiography Special needs of patient and radiographer – equipment considerations (use of dedicated equipment and accessories) Technical considerations -	
Session 10 (Week 10)	the need to modify "adult" techniques – selection of exposure factors – image quality considerations – radiation protection of the patient - special techniques peculiar to children as follows: – Anorectal	
Session 11 (Week 11)	malformation – contrast study – intersex disorders - contrast study – esophageal atresia – pre/post op. – intussusception – congenital dislocation of hip – scoliosis – Leg–length measurements – assessment of bone age – non accidental injury – radiography of babies in incubators 2.Geriatric radiography Understanding patient profile - possible	
Session 12 (Week 12)	difficulties during radiography – Technical considerations – need to carry out standardised projections in unconventional position – equipment and accessories – exposure factor considerations in view of variations in skeletal tissue – special care. 3. Trauma/Emergency Radiography Limb	

Session 13 (Week 13)	fractures - Fracture of thoracic cage, spine, and skull — GIT obstruction — lung collapse — pleural effusion — pneumo-thorax. Selection of suitable X-Ray equipment — patient position - radiographic projections and sequence for each patient — modification of routine positioning, X-Ray tube and film — radiation protection — patient care. 4. Operation theatre radiography Operative cholangiography — orthopaedic procedures — pre-operative chest. Strict observation of asepsis — preparation of radiographer and equipment/accessories —	
Session 14 (Week 14)	careful safe use of mobile and fluoroscopic equipment – radiation protection – patient care – protection of theatre staff – rapid availability of radiographic image. 5. Mammography Anatomy and Physiology of female breast – knowledge about the nature of X-Ray beam suitable for breast imaging –	
Session 15 (Week 15)	equipment suitable for generating such X-radiation – image recording devices – accessories for immobilisation and identification, positioning, techniques for various projection; exposure factors, radiation protection – technique of biopsy procedure – characteristics of benign and malignant lesions – patient care – female attendant.	
Session 16 (Week 16)	Final Exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

# **Computed Tomography**

1	Course name	Computed Tomography
2	Course Code	RAD405

3	Course type: /general/specialty/optional  Accredited units  Educational hours		Specialty 3
4			
5			4
6	Pre-requisite requ	uirements	All 1 <sup>st, 2nd &amp;3rd</sup> subjects to pass max. 2 subjects for reset.  Radiology department  English
7	Program offered	the course	
8	Instruction Langu	age	
9	Date of course ap	proval	2022
Bri	ef Description:	from different angle create cross-section	ography (CT) scan combines a series of X-ray images taken es around your body and uses computer processing to hal images (slices) of the bones, blood vessels and soft body. CT scan images provide more-detailed information
	ktbooks required this Course:		raphy for technologist – a comprehensive text
ioi tins course.		2]Human sectional anatomy atlas of body sections, CT and MRI images 3] Step by Step CT; Step by Step MRI and MRI made Easy for beginners – Govind B.	
Co	urse Duration	56 hours An additional hours of homework per day is expected during this course.	
De	livery	Lecture-based, Grou Laboratory experim	up interaction and discussion, self-directed activities, ents.
Describe the various generations of Computed Tomography Scann Define the CT imaging system components and their functions. Discuss image quality as it relates to spatial resolution, contrast renoise, linearity, and uniformity.  Define contrast media's role in CT imaging and how it may affect provided by Explain the application of pharmacology as it pertains to CT. Identify the major organs as seen in cross sectional anatomy/ path head, neck, chest, abdomen and pelvis.		g system components and their functions. y as it relates to spatial resolution, contrast resolution, uniformity. ia's role in CT imaging and how it may affect patient care. on of pharmacology as it pertains to CT. gans as seen in cross sectional anatomy/ pathology of the	
Assessments Partical:35% FinalExam: 40%			
Co	ntent Breakdown		Topics Coverage
Ses	ssion 1 (Week 1)	History- generation	s of scanners-CT technology
Ses	ssion 2 (Week 2)	helical/spiral & mul	ti slice C.Tultra fast scanners-system components

Session 3 (Week 3) - performance parameters - image quality and methods of image reconstruction	
Session 4 (Week 4) radiation dose measurements and technical aspects of Q.A	
Session 5 (Week 5)	-calibration and image acquisition
Session 6 (Week 6)	CT of head and neck – thorax – abdomen
Session 7 (Week 7)	Pelvis – musculo skeletal system – spine – PNS. Anatomy – clinical indications and contraindications
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9) Session 14 (Week 14)	<ul> <li>patient preparation – technique – contrast media-types, dose, injection technique; timing, sequence - image display – patient care – utilization of available techniques &amp; image processing facilities to guide the clinician-CT anatomy and pathology of different organ systems</li> </ul>
Session 16 (Week 16)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.
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Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.

# Magnetic Resonance Imaging

1	Course name	Magnetic Resonance Imaging
2	Course Code	RAD404
3	Course type: /general/specialty/optional	Specialty

4	Accredited units  Educational hours		3 4	
5				
5	Pre-requisite requ	uirements	All 1st, 2nd &3rd subjects to pass max. 2 subjects for reset.	
7	Program offered the course		Radiology department	
8	Instruction Langu	age	English	
9	Date of course approval		2022	
ge so ce ai di		generate radio of scanner, which is center, contains and computer-of during the scan- control room the	ed using a specialized scanner, a patient table, systems that waves and magnetic fields, and a computer workstation. The is usually shaped like a large rectangle with a hole in the sthe systems that generate the magnetic field. A motorized controlled patient table moves into the scanner's center hole. A technologist operates the MRI scanner from an adjacent act contains a computer system and an intercom system for with the patient during the scan.	
Te	xtbooks required	Step by Step Mi	RI and MRI made Easy for beginners – Govind B.	
for this Course:		Chavhan – Jaypee brothers and Medical Publishers (p) Ltd, New Delhi CT &MRI		
		protocol – Satish K. Bhargava, CBS publishers.		
Co	ourse Duration	56 hours		
		An additional hours of homework per day is expected during this course.		
Delivery Lecture-based, Laboratory expe		The second secon	Group interaction and discussion, self-directed activities, eriments.	
Co	ourse Objectives:	By the end of th	nis course the student should be able to:	
		27.0	owledge of anatomy, physiology, positioning, and MRI e parameters to accurately demonstrate anatomical es.	
		Determi	ne imaging parameters to achieve optimum imaging.	
		<ul> <li>Evaluate quality.</li> </ul>	images for appropriate positioning, coil selection, and image	
		The state of the s	e principles of ferromagnetic safety and contrast application protection of the patient, technologist, and others.	
			ze emergency patient conditions and initiate life-saving first basic life-support procedures.	
			e the performance of MRI systems, know the safe limits of ent operation, and report malfunctions to the proper	

Course	Midtore Francisco 250/		
Assessments	Midterm Exam: 25%		
	Partical:35%		
	FinalExam: 40%		
	A 60 %isrequiredtopassin this course		
Content Breakdown	Topics Coverage		
Session 1 (Week 1)	-NMR signals— instrumentation		
Session 2 (Week 2)			
Session 3 (Week 3)	hard ware-MR system components- magnet system-		
	Magnetic shielding- RF shielding		
Session 4 (Week 4)	shielding- bioeffects of MRI- site selection and safety		
	-reconstruction system		
Session 5 (Week 5)	- different coils used -NMR signals advantage -imaging		
	methods		
Session 6 (Week 6)	– pulse imaging sequences - spectroscopy parameters		
Session 7 (Week 7)	-calibration and image acquisition - reconstructions  Midterm Exam		
Session 8 (Week 8)			
Session 9 (Week 9)	3D images image contrast – factors affecting image quality - artifacts -		
Session 14 (Week	difference between CT and MRI images- host computer -viewing archiving-		
14)	hard copy - image formation and storage device.		
Session 16 (W16)	Final Exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

**Radiotherapy Planning** 

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1	Course name		Radiotherapy Planning	
2	Course Code  Course type: /general/specialty/optional		RAD401	
3			Specialty	
4	Accredited units		2	
5	<b>Educational hours</b>			
6	Pre-requisite requi	rements	All 1st, 2nd& 3rd subject to pass max. 2subjects for reset.	
7	Program offered th	e course	Radiology department	
8	Instruction Languag	ge	English	
9	Date of course app	roval	2022	
Bri	ef Description:	To enable students to apply their understanding of computers, radiation therapy equipment, radiation therapy physics and imaging to the planning and delivery of radiation therapy.		
Textbooks required for this Course:		Principles and Practice of Radiation Therapy 5th Edition Washington/Leaver ISBN-13./ Portal Design in Radiation Therapy - 2nd Edition Dasher ISBN: Rad Science for Technologists: Physics, Biology, Protection 11th edition Bush Radiation Therapy Physics 3rd editionHendee ISBN		
Co	urse Duration	28 hours  An additional hours of homework per day is expected during this course.		
De	livery	Lecture-based, Group interaction and discussion, self-directed activities.		
Co	urse Objectives:	By the end of this course the student should be able to:		
		demonstrate knowledge and application of calculations used in radiation therapy;		
		<ol> <li>demonstrate knowledge, application of principles and concepts of computer planning for critiquing standard techniques;</li> </ol>		
		<ol> <li>demonstrate an understanding of imaging and anatomy, relevant to computer planning;</li> </ol>		
		4. Discuss the effects of radiation on biological systems.		
Co	urse Assessments	Midterm exam 40%		
		Final Exam: 60%		
	A 60 % is req		ed to pass this course.	
Content Breakdown			Topical Coverage	
Session 1 (Week 1)		Historical backgr		

Session 2 (Week 2)	Radiation sources - natural sources - modified natural sources - artificial sources		
Session 3 (Week 3)	The biological effect of ionizing radiation - the direct and indirect effect on DNA such as physical and biological factors affecting the sensitivity of tissues to radiation, acute effects of radiation, delayed effects of radiation, estimation of radiation hazard, absorbed radiation dose.		
Session 4 (Week 4)	Maximum limits, radiation doses for workers in the field of radiation to the general public, equivalent to the effective absorbed dose.		
Session 5 (Week 5)	External radiation protection methods - Using a distance from the barriers to protect the general radiation particles - Respiration and regular monitoring - Dosimetry for workers in the radiation field.		
Session 6 (Week 6)	Diagnostic and therapeutic radiology room design, design of barriers in nuclear medicine department, thickness of major and secondary barriers.		
Session 7 (Week 7)	Radiation dosimetry devices, general characteristics, mid-ray meter		
Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9) Session 14 (Week 14)	Prevention of internal pollution by radiation, pollution methods, and half- effect, maximum limits of internal pollution, dealing with radiation accidents in hospitals.		
	Scientific methods of radiation protection for patients and workers in the departments of radiology, radiotherapy - nuclear medicine.		
Session 16 (Week 16)	Final Exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to		



# **Emergency Imaging Technology**

1	Course name		Emergency Imaging Technology
2	Course Code		RAD403
3	Course type: /general/specialty/	optional	Specialty  3
4	Accredited units		
5	<b>Educational hours</b>		
6	Pre-requisite requi	rements	All 1 <sup>st, 2nd &amp;3rd</sup> subjects to pass max. 2 subjects for reset.
7	Program offered th	e course	Radiology department
8	Instruction Language	ge	English
9	Date of course app	roval	2022
		techniques neede patient care & res maintenance deco maintenance. Flu Medicolegal aspe emergencies-help hour care -Traum casualty manager views. Knowing the	cositioning procedures & projections - modification of ed for seriously injured patients. Radiographic factors - sponsibilities-Search of profession confidence-orum of the job responsibility - the importance of records oroscopy and its application in emergency radiology - ects of the radiographers work. Common medical oing in first aids &zero hour care / know to help in critical a patients handling – trauma ward bed X-rays – mass ments-selection of study / procedures & radiographic he emergency care places in the hospital & preplanning ness of mobile units in functioning status -screening of the in various procedure-supportive facilities to encounter ical training.
	Reference Books: 1. Notes on Radiological Emergencies – Ansell and Churchill 2. Care of patient in diagnostic Radiography – Chesney & Chesney. 3. First Aid – Haugher and Gardner. 4. Practical Nursing and Aid – Ross and Wilson.		of patient in diagnostic Radiography – Chesney & Aid – Haugher and Gardner. 4. Practical Nursing and First
Course Duration 56 hours An additional hou		A STATE OF THE STA	urs of homework per day is expected during this course.
De	Delivery  Lecture-based, Group interaction and discussion, self-directed activit Laboratory experiments.		
Co	15/3/201		and skills performing radiographic procedures at a new

	Determine appropriate patient interaction and preparation for all Radiographic examinations and procedures.	
	Perform routine pediatric (ages 6 and under) examinations.	
	Perform Operating Room procedures maintaining the principles of sterile	
	technique, applying knowledge of C-arm operation and manipulation.	
	Demonstrate interpersonal and organizational skills when conducting radiographic procedures in emergency cases.	
Course Assessments	Midterm Exam: 25%	
	Partical:35%	
	FinalExam: 40%	
	A 60 %isrequiredtopassin this course.	
Content Breakdown	Topics Coverage	
Session 1 (Week 1)	Extremities Radiography – Hand- Finger - Wrist joint- Forearm -Elbow join	
Session 2 (Week 2)	Humerus - shoulder joint. Foot – Toes- Tarsal bones -Ankle joint - Knee joint	
Session 3 (Week 3)	Patella – tibia- femur – Hip joint – pelvis -sacroiliac joint.	
Session 4 (Week 4)	<b>Spine Radiography -</b> Vertebral column – Atlanta occipital articulation-cervical spine- dorsal spine	
Session 5 (Week 5)	lumbar spine – sacrum -vertebral canal- vertebral foramen	
Session 6 (Week 6)	<b>Skull Radiography –</b> general, sella – temporal bone – mastoid – optic foramen – Internal auditory canal	
Session 7 (Week 7)	Superior and inferior orbital fissure – base of skull – facial	
	bones – petrous apex	
Session 8 (Week 8)	Midterm Exam	
Session 9 (Week 9)	Zygomatic bone, nasal bone, sinuses of skull – mandible –	
Session 14 (Week 14)	Tempro-mandibular joint – Paranasal sinuses Radiography.	
	Chest Radiography –Basic views (PA & AP) - inspiratory & expiratory filmsspecial	
	chest views & their significance – larynx- trachea- thoracic inlet -Sternum -	
	Ribs – Heart and great vessels – mediastinum -Diaphram – double exposure technique.	
Session 16 (Week 16)	Final Exam	

Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.		

### **Hospital Training II**

1	Course name	Hospital Training II
2	Course Code	RAD406
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	4
6	Pre-requisite requirements	All 1 <sup>st</sup> , 2 <sup>nd</sup> & 3 <sup>rd</sup> subjects to pass max. 2 subjects for reset.
7	Program offered the course	Radiology Department
8	Instruction Language	English
9	Date of course approval	2022

#### **Brief Description:**



The material will be assessed in the test and the examination. Professional skills and their appropriate application Provide Time management, personal organization and teamwork skills, and communication skills will be developed through the presentation projects. Engagement with the needs of society The subject will enhance the capacity of the students to respond to the needs and grapple with ethical concerns that accompany the practice of Medical Imaging (e.g. the balance between diagnostic accuracy and radiation dose to the patient, the staff and population as a whole). Program objectives will aim at making the students being able to: Perform objective self-assessments of their knowledge and skills learn and refine existing skills and acquire new skills. Social Accountability and

Session 1 (Week 1)	Magnetic Resonance Imaging Experiential Training Requirements
Content Breakdown	A 60 %isrequiredtopassin this course.  Topical Coverage
Course Assessments	Midterm1: 25%. Practical: 35%. FinalExam: 40%
Course Objectives:	Determine appropriate patient interaction and preparation for a Radiographic examinations and procedures.  Operate radiographic equipment appropriately.  Demonstrate appropriate interpersonal relations, organizational skills and professional ethics when interacting with staff and patients.  Employ the use of appropriate radiation protection procedures including collimation, time, distance and shielding.  Demonstrate interpersonal and organizational skills when conducting radiographic procedures.  Demonstrate assertiveness in seeking out diagnostic exams for increased levels of proficiency.  Determine appropriate patient interaction and preparation for a Radiographic examinations and procedures.  Critique skull images for positioning, anatomy, centering, baselines and technical factors.  Demonstrate appropriate shielding techniques and radiation protection. Specify various advanced procedures.
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, Laboratory experiments.
Course Duration	56 hours
Textbooks required for this Course:	Textbook of radiographic positioning and related anatomy Bontrager, Kenneth L., author. Lampignano, John P., author. Radiography, Medical Positioning, Human anatomy Applied Radiological Anatomy / 2nd EditionEDITORS:Paul Butler, The Royal London Hospital /Adam Mitchell, Charing Cross Hospital, London / Jeremiah C. Healy, Chelsea and Westminster NHS Foundation Trust. Carlton R.R. and Adler A.M. (2013), Radiographic Imaging Concepts and Principles (5 <sup>th</sup> edition), Delmar, ISBN 1473720524, Core text for Fundamentals of Radiographic Practice (PAM1020) and Medical Imaging Applications (PAM2013).
	Responsibility the students will recognize that allied and healthcare professionals need to be advocates within the health care system, to judiciously manage resources and to acknowledge their social accountability. They have a mandate to serve the community, region and the nation and will hence direct all research and service activities towards addressing their priority health concerns.

	Brain • Spine • Head and Neck • Musculoskeletal		
Session 2 (Week 2)	Magnetic Resonance Imaging Experiential Training Requirements		
	Body • Cardiovascular • Breast		
Session 3 (Week 3)	Nuclear Medicine Experiential Training Requirements		
	Bone • Thyroid •		
Session 4 (Week 4)	Nuclear Medicine Experiential Training Requirements		
	• GI Bleed scan • Renal: DTPA / MAG 3 • Renal: DMSA • Liver colloid		
Session 5 (Week 5)	Nuclear Medicine Experiential Training Requirements		
	Liver Haemangioma		
Session 6 (Week 6)	Nuclear Medicine Experiential Training Requirements		
	<ul> <li>Cardiac (including performing exercise and pharmacological stress tests under supervision – also expect correlation of at least 2 cases with an anatomical modality such as CTCA or Catheter Angiography)</li> </ul>		
Session 7 (Week 7)	MRI Training		
Session 8 (Week 8)	Midterm Exam		
Session 9 (Week 9)	Nuclear Medicine Experiential Training Requirements		
Session 14 (Week 14)	Paediatric Nuclear Medicine, ESP Renal, (obstruction, infection, reflux) bone, (fracture, non-accidental injury, infection) Liver,-biliary atresia versus neonatal hepatitis Therapy-lodine 131 for thyrotoxicosis or thyroid CT Coronary Angiography CTCA CT Colonography		
Session 16 (Week 16)	Final Exam		
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.		
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.		
Course Change  Information contained in this course outline is correct at the time publication. Content of the courses is revised on an ongoing base ensure relevance to changing educational employment and many			

needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

1	Course Code		Graduation project  RAD407	
2				
3	Course type: /general/specia	alty/optional	Specialty 2	
4	Accredited unit	S		
5	Educational ho	urs	2	
6	Pre-requisite re	equirements	All 1st, 2nd& 3rd subjects to pass max. 2 subjects for reset	
7	Program offere	ed the course	Radiology Department	
8	Instruction Language  Date of course approval		English 2022	
9				
Brief Description:  Textbooks and References:		development of new n research, we would no treatments. It is how d Student must be pass	Research is what allows doctors to decide how to best treat patients. It is what makes the development of new medicines, new procedures and new tools possible. Without clinic research, we would not be able to decide if new treatments are better than our current treatments. It is how doctors find the most effective methods of care for our patients. Student must be pass in order to investigate radiology related research.  Research Methods in Radiology: A Practical Guide 2018.	
Cou	rse Duration	28 H		
Course Objectives:		1-Define the Princip		

Course Objectives:	By the end of this course the student should be able to:		
	1-Define the Principles of research planning and design		
	2- Describe principles of basics of experimental design and analysis.		
	3- Identify suitable research topics.		
	4- Undertake independent research.		
	5- Be able to do Critical review and analysis of related literature.		
	6- Design research study		
	7- Perform method validation and presentation of research report.		
	8- Write the research proposal and theses.		
	9-Demonstrate appropriate communication skills.		
	10- Present clearly and effectively scientific topic in a tutorial or a staff meeting.		
	11- Work separately or in a team to research and prepare a scientific topic.		
Course Assessments	PPT Slides -End of semester after presentation		
Content Breakdown	Topical Coverage		
Session 1 (Week 1)	Development of a research protocol		
Session 14 (Week 14)	Fieldwork and data analysis		
	- The research project course involves the generation of new scientific		
600000	information and a review and understanding of the scientific literature.		

Session 15 (Week 15)	<ul> <li>The research may be conducted in a laboratory, hospital, community laboratories, different company, etc., depending on the project and the supervisor.</li> <li>Students are divided into groups and each group is working together.</li> <li>Students are expected to work approximately 56 hours. This will include working in the laboratory, etc., reading or searching literature, and writing up the research project.</li> <li>Fields of study available may include:</li> <li>O Biomedical genetics</li> <li>o Immunogenic</li> <li>o Cancer genetics</li> <li>o Biochemistry</li> <li>o Genetics Diagnosis</li> <li>o Embryology</li> </ul> Final Exam
Session 16 (Week 16)	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



# 5- قسم العلاج الطبيعي



### Physiotherapy for plastic surgery &burns

1	Course name	Physiotherapy for plastic surgery &burns
2	Course Code	PT301
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4
6	Pre-requisite requirements	All 1st 2 subjects to pass max. 2subjects for reset.
7	Program offered the course	Physiotherapy department
8	Instruction Language	English
9	Date of course approval	2022

Content Breakdown	Topics Coverage	
Course Assessments	Assignment1: 15%. Assignment2:15% Partical:20% FinalExam: 40%DailyAssessments:10% 60 %to pass.	
Course Objectives:	<ol> <li>Upon completion of this course, the student will have reliably demonstrated the ability to:         <ol> <li>Describe the effects of surgical trauma &amp; Anaesthesia</li> <li>2] Classify, clinically evaluate &amp; describe the surgical management in brief in a] Wounds &amp; Ulcers b] Burns c] Head injuries</li> <li>3] Describe pre-operative evaluation, surgical indications &amp; various surgical approaches &amp; post operative management in various abdominal/ thoracic/peripheral vascular conditions/ENT conditions / Opthal conditions/ Plastic Surgery conditions</li> <li>4] Recall the surgical approaches in the form of line diagram &amp; will be able to describe the components of soft tissues cut to reach the target tissue &amp; the possible Post operative complications 59</li> <li>5] Be able to read &amp; interpret findings of the X ray-chest.</li> </ol> </li> </ol>	
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, Laboratory experiments.	
Course Duration	42hours An additional hours of homework per day is expected during this course.	
Textbooks required for this Course:	Standard surgrical techniques- Shriram Bhatt Manipal Manual Surgery- K. Rajgopal Shenoy Short Practice of surgery – Bailey & Love	
	thoracic/peripheral vascular conditions/ENT conditions / Opthal conditions/ Plastic Surgery conditions	
Brief Description:	Describe pre-operative evaluation, surgical indications & various surgical approaches & post operative management in various abdominal/	

Session 1 (Week 1)	1] Effect of Anesthesia & surgical trauma: Hemorrhage (Clinical
	Manifestations and types) Shock ( Neurogenic , septic etc.) Water &
	Electrolyte imbalance : Basic physiology, clinical manifestations
Session 2 (Week 2)	2] Inflammation-acute & chronic-signs, symptoms, complications &
	management 3] Wounds/ ulcers-classification, healing process, management
Session 3 (Week 3)	4] Common abdominal surgeries for G.I.tract, Genito-urinary system Scar
	during surgical approach through abdominal wall. Scar management in brief
	- Level 2 : Surgical Procedure 5] Modified Radical mastectomy-complications
	& management 6] Amputation-types, sites, complications & management 7]
	Burns-causes, classification complications & management
Session 4 (Week 4)	2) Neuro Surgery 1] Head Injury – types, clinical features, management 2]
	Intra cranial & spinal tumors - Types, Locations, Clinical Picture - Level 2 :
	Surgical Management 3] Surgeries of Head & neck in neurosurgical
	conditions & post operative care
Session 5 (Week 5)	4] Congenital & childhood disorders of nervous system- Hydrocephalus,
	spina bifida etc. Clinical features, surgical management & post operative care
	3) Cardio vascular -thoracic surgery 1] Surgical approach 2] Post operative
	complications & management- in Thoracotomy, Thoracoplasty, Lobectomy,
	Pneumonectomy, Decortication, CABG, Valvular Surgery, Congenital Heart
	Disease Surgeries and Surgery for Peripheral Vascular Diseas
Session 6 (Week 6)	4) E.N. T. Surgery 61 1] Upper respiratory tract surgery & post operative
	care- Level 2 2] Tracheostomy – indications, surgical approach &
	management 3] Surgery for cancer – indications & post operative care- Level
C - 1 - 7 (144 - 1 7)	2 4] Surgical procedures in VII th cranial nerve palsy 5) Ophthalmic Surgery
Session 7 (Week 7)	1] Surgeries for III, IV & VI cranial nerve palsy- Level 2 6) Plastic Surgery 1]
	Skin grafts & flaps-Types, indications with special emphasis to burns,
C	wounds, ulcers
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	2] Tendon transfers, with special emphasis to hand, foot & facial paralysis 3]
Session 14 (Week 14)	Keloid & Hypertrophied scar management 4] Reconstructive surgery of
	peripheral nerves 5] Surgeries for PVD (arterial & lymphatic dysfunction)
Session 16 (Week 16)	Final Exam
Attendance	Students are expected to attend every session of class, arriving on time,
Expectations	
	returning from breaks promptly and remaining until class is dismissed.
	returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported
	returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.
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Generic Skills	returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.  The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer,
Generic Skills	returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.  The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded
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Physiotherapy for Orthopedic

1	Course name	Physiotherapy for Orthopedic
2	Course Code	PT304
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4
6	Pre-requisite requirements	All 1 <sup>st</sup> & 2 <sup>nd</sup> subjects to pass max. 2subjects for reset.
7	Program offered the course	Physiotherapy Department
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	The study focused on the physical therapy and treatment of the musculoskeletal system its means muscles and bones of the body, includes injury on the treatment related to sprains, strains, post fracture, post-surgery, and repetitive of the patient.  The master study deals with both surgery and non-surgery to treat and care sports persons, degenerative disease, infection and tumors and congenital disorder and all manner of bones and muscles in the human body. The
	course prepares candidates with knowledge, skills and abilities to provide relief the pain of orthopedics or musculoskeletal problems like chronic joint pain, joint stiffness, poor mobility, arthritis and back or neck pain with the help to assist the medical service in dealing with different aspects of treatment, rehabilitation and prevention of disorder utilizing exercise and
	electrotherapy procedures.
Textbooks required	1. Outline of Fractures 8th edition - Adams
for this Course:	2. Outline of Orthopaedics 8th edition - Adams
	3. System of Ortho - Apley
	4. Essentials of Orthopaedics for Physiotherapists- John Ebnezar
	5. Essential Orthopaedics – Maheshwari
	6. Mercer's Orthopedic Surgery- Duthie, R.B. &Bently G
Course Duration	56 hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, Laboratory experiments.
Course Objectives:	-At the end of the course, the candidate will :
	1] Be able to discuss the Pathophysiology, clinical manifestations &
	conservative /Surgical management of various traumatic & cold cases of the Musculoskeletal Conditions
	2] Gain the skill of clinical examination & interpretation of the preoperative
	cold cases & all the post- operative cases
	3] Will

	be able to read & interpret a]- salient features of the X-ray of the spine
	&Extremities b]- pathological/ biochemical studies pertaining to Orthopedic
	condition
	4] Will be able to correlate the radiological findings with the clinical findings
Course Assessments	Assignment1: 30%.
	Assignment2:10%
	FinalExam: 60%
	60 %isrequiredforapassin this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Post trauma Pathology, clinical manifestations, healing process in bone &
	intra articular & extra articular soft tissues& introduction to implants &
	prosthesis - Level 1: stages of healing process, assessment, conservative &
	surgical management, complications & their management - Level 2: recent
	advances in surgical management,
Session 2 (Week 2)	Fractures & dislocations of upper extremity & lower extremity &spine.
	i) Classification ii) Pathology
	iii) Conservative treatment iv) Surgical intervention - a) Surgical approach
	b) soft tissue section / repair c) internal / external fixation / arthroplasty d)
	post-operative complications e) post-operative management &
	management of complications - Level 2: diagnostic methods - Level 3:
	surgical advances
Session 3 (Week 3)	Fractures & dislocations of spine, fractures of thoracic cage, shoulde girdle &
	pelvisi) Classification ii) pathology iii) Conservative treatment iv) Surgical
	intervention - a) Surgical approach b) Soft tissue section / repair c) Internal
	/ external fixation / arthroplasty d) Post-operative complications e) Post-
	operative management & management of complications - Level 2:
	diagnostic methods - Level 3: surgical advances
Session 4 (Week 4)	Topics to be covered in the session (week)
	Management of Metabolic disorders a) Osteoporosis b)
	Osteomalacia, rickets Classification, type, assessment, management,
	complications
	<ul> <li>Level 2 : diagnostic methods (MRI, CT Scan, USG)</li> </ul>
Session 5 (Week 5)	Brachial Plexus / Lumbo Sacral Plexus & Peripheral nerve injuries
	Nerve course, mechanism of injury, types of nerve injury, diagnostic
	methods & assessment, conservative & surgical management - Level
	2 : diagnostic methods (MRI, CT Scan, USG )
Session 6 (Week 6)	Topics to be covered in the session (week)
	Deformities a )spine – scoliosis / kyphosis b) Deformities of extremities like
	Varus / Valgus, Torsion, Deformities of hands & feet aetiopathology,
	assessment, investigations, conservative & surgical management.
Session 7 (Week 7)	Topics to be covered in the session (week)
	Common Congenital Malformation like CTEV, Developmental dysplasia of
	- Common Congenital Manormation like CTEV, Developmental dyspiasia of
	hip, torticollis etc. pathologenesis, clinical manifestation, assessment, investigations ,conservative& surgical management

Session 9 (Week 9)	Vascular Disorders like Avascular Necrosis, Perthe's Disease, and Compartmental Syndromeaetiopathologenesis, clinical manifestation, assessment, investigations, conservative & surgical management.	
Session 10 (Week 10)	Soft tissue lesions Pathology, clinical manifestation, investigation, conservative & surgical management, complications & their management a) Sport injuries b) Overuse injuries.	
Session 11 (Week 11)	Arthritis of spine & extremity a) degenerative-OA b) infectious- septic, TB C) inflammatory-RA, Ankylosing spondylitis Pathology, clinical manifestation, risk factor, investigation, conservative & surgical management, complications & their management - Level 2: other types of arthritis like gout, haemophilic, neuropathic etc.	
Session 12 (Week 12)	Reconstructive surgery a) Reconstructive surgery for bone lengthening b) Reconstructive surgery in Polio & Cerebral Palsy c) Soft tissue lesions of Shoulder, Knee & Ankle.  Osteomyelitis Pathology, clinical manifestation, investigation, conservative & surgical management, complications & their management.	
Session 13 (Week 13)	Tumors of bone & management Classification Pathology, clinical manifestation, risk factor, investigation, conservative & surgical management, complications & their management.  Traumatic Amputation & management Level of amputation, assessment, management.  Hand injury & management Common fractures & dislocations of hand, soft tissue involvement related to tendon injury, crush injury of hand Classification Pathology, clinical manifestation, risk factor, investigation, conservative & surgical management, complications & their management.	
Session 14 (Week 14)	X-rays of extremities & spine - Level 2: CT/MRI/USG findings. Relevant biochemical investigations - Level 2 Bed side clinic based on: a] acute soft tissue lesion [including nerve injury] b] Degenerative arthritis of extremity joint c] Degenerative arthritis of spine d] Acute P.I. e] Chronic backaches f] Post-operative case of fractures of extremities g] Traumatic paraplegia /quadriplegia	
Session 15 (Week 15)	Final Exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.  Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	

Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The
	instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

#### Pediatric Pathologies, Surgery & Physiotherapy managements

1	Course name	Pediatric Pathologies, Surgery & Physiotherapy
	是这些一个一个不是	managements
2	Course Code	PT401
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4
6	Pre-requisite requirements	All 1 <sup>st</sup> & 2 <sup>nd</sup> subjects to pass max. 2 subjects for reset.
7	Program offered the course	Physiotherapy Department
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This coursewillprovidestudentswithafundamentalunderstandingofthebroad range of activity and skill disorders including Anatomical and physiological issues, developmental delays, orthopaedic/musculoskeletal anomalies, respiratory conditions, neuromuscular and neurological disorders in varying domain working in preposition of their purview of enactment.	
Textbooks required for this Course:	Stuart Porter, at al. Tidy's Physiotherapy, Chapter 8 "Paediatric Physiotherapy". 2003 Edition 13. Paediatric Physiotherapy. In: Schmidt R., Willis W. 2007 (eds) Encyclopaedia of Pain. Springer, Berlin, Heidelberg.	
Course Duration	56 hours	
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, Laboratory experiments.	
Course Objectives:	<ul> <li>Upgrade the student's ability to:</li> <li>Improves posture and reflexes of child</li> <li>Make movement easier by training normal pattern of movements</li> <li>Improves gross motor skills. Improves functional mobility</li> <li>Improves muscle imbalance and muscle strength</li> <li>Improves balance and coordination</li> <li>Improves range of motion. Improves muscle tone</li> <li>Improved gait/gait training</li> </ul>	
Course Assessments	Assignment1: 30%. Assignment2:10%	

	FinalExam: 60%	
	60 %isrequiredforapassin this course.	
Content Breakdown	Topics Coverage	
Session 1 (Week 1)	Topicstobecoveredinthesession (week):	
	Normal intra-uterine development of fetus	
Session 2 (Week 2)	Assignment1handedout	
	Topicstobecoveredinthesession (week)	
	Normal development & growth:	
	Normal & abnormal reflexes in neonate & child	
Session 3 (Week 3)	Topics to be covered in the session (week)	
	•Immunization, Handling of the child, Significance of breast-feeding	
	Chronic pain	
	Differentiation of pain	
Session 4 (Week 4)	Geriatric Conditions	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Common causes for Developmental disorders like Sepsis,	
	Prematurity, Asphyxia &	
	Hyperbilirubinemia. Rheumatic & Congenital heart disease	
	CLINICAL- 1] Examination of the nervous system	
Session 5 (Week 5)	Topicstobecoveredinthesession (week)	
	Brain damage-Cerebral Palsy-types & Medical Management	
Session 6 (Week 6)	Topicstobecoveredinthesession (week)	
	•Spinal Cord Disorders like Poliomyelitis, Spinal Dysraphism, Spina Bifida,	
	Meningocele, Myelomeningocele	
Session 7 (Week 7)	Topicstobecoveredinthesession (week)	
	<ul> <li>Common infections of C.N.S. &amp; peripheral nervous system</li> </ul>	
	Malnutrition related conditions	
Session 8 (Week 8)	Midterm Exam	
Session 9 (Week 9)	Topicstobecoveredinthesession (week)	
	•Epilepsy	
Session 14 (Week 14)	Mental Retardation. Genetically transmitted neuro-muscular conditions	
	CLINICAL-	
Session 16 (Week 16)	6) Final Exam	
Attendance	Students are expected to attend every session of class, arriving on time,	
Expectations	returning from breaks promptly and remaining until class is dismissed.	
	Absences are permitted only for medical reasons and must be supported	
	with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of	
	knowledge and skills required for full participation in all aspects of their	
	lives, including skills enabling them to be life-long learners. To ensure	
	graduates have this preparation, such generic skills as literacy and numeric,	
	computer, interpersonal communications, and critical thinking skills will be	
	embedded in all courses.	
Course Change		
Course Change	Information contained in this course outline is correct at the time of	
	publication. Content of the courses is revised on an ongoing basis to ensure	
	relevance to changing educational employment and marketing needs. The	
	instructor will endeavor to provide notice of changes to students as soon as	
	possible. Timetable may also be revised.	
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#### **Pain Management**

1	Course name		Pain Management	
2			PT400 Specialty	
3				
4	Accredited units		3	
5	Educational hour	s	4	
6	Pre-requisite req	uirements	All 1 <sup>st</sup> , 2 <sup>nd</sup> & 3 <sup>rd</sup> subjects to pass max. 2 subjects for reset.	
7	Program offered	the course	Physiotherapy Department	
8	Instruction Langu	age	English	
9	Date of course ap	proval	2022	
nature ofpain an		nature ofpain an	rovidestudentswithafundamentalunderstanding of the documental documental documental documental documental documental documents and documental d	
for this Course: Publications. Me ed. Seattle: IASP				
Cou	irse Duration	56 hours	urs of homework per day is expected during this course.	
Del	ivery		roup interaction and discussion, self-directed activities,	
Course Objectives:  Upon the above t		<ul> <li>Manage pate</li> <li>Demonstrate appropriate clinical rease</li> <li>Understand relationship</li> <li>Promote operactive and well</li> <li>Use a patient</li> </ul>	the principles of an effective therapeutic /professional to reduce pain. timal function and reduce disability through the use of where appropriate, passive pain management approaches at-centred perspective to formulate collaborative in strategies consistent with a physical therapy	
Cou	urse Assessments	Assignment1: 30 Assignment2:109 Final Exam: 60%	%. %	

Content Breakdown	Topics Coverage
Session 1 (Week 1)	Topicstobecoveredinthesession (week):
	•Introductiontopain
	Typesofpain
Session 2 (Week 2)	Assignment1handedout
	Topicstobecoveredinthesession (week)
	Pain perceptions
	Risk factors
	Assignment2handedout
Session 3 (Week 3)	Topics to be covered in the session (week)
	Pain Mechanisms
	•Sorts of pain mechanism
	Assignment1due
Session 4 (Week 4)	Geriatric Conditions
	Acute pain
	Chronic pain
	Differentiation of pain
Session 5 (Week 5)	Topicstobecoveredinthesession (week)
	Causes of Acute &Chronic pain
	Related conditions of acute and chronic pain
Session 6 (Week 6)	Topicstobecoveredinthesession (week)
	Pain receptors inside body & brain
	Pain receptors types
Session 7 (Week 7)	Topicsto becoveredinthesession (week)
	A. Pain assessment, measures & Scales. Pain analogue scale.
	B. Case scenarios
	C. Self report measures.
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Topicstobecoveredinthesession (week)
Session 14 (Week 14)	Biopsychosical approach. Cognitive Behavioral Therapy
	Pain flags. Therapeutic Neuroscience Education
Session 16 (Week 16)	Final Exam
Attendance	Students are expected to attend every session of class, arriving on time,
Expectations	returning from breaks promptly and remaining until class is dismissed.
	Absences are permitted only for medical reasons and must be supported
	with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of
	knowledge and skills required for full participation in all aspects of their lives,
	including skills enabling them to be life-long learners. To ensure graduates
	have this preparation, such generic skills as literacy and numeric, computer,
	interpersonal communications, and critical thinking skills will be embedded
C Ch	in all courses.
Course Change	Information contained in this course outline is correct at the time of
	publication. Content of the courses is revised on an ongoing basis to ensure
	relevance to changing educational employment and marketing needs. The
	instructor will endeavor to provide notice of changes to students as soon as
	possible. Timetable may also be revised.
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#### Pharmacology

1	Course name	Pharmacology
2	Course Code	PT201
3	Course type: /general/specialty/optional	optional
4	Accredited units	2
5	Educational hours	2
6	Pre-requisite requirements	All 1st subjects to pass max. 2 subjects for reset.
7	Program offered the course	Physiotherapy D.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of the Pharmacology effects of commonly used drugs by patients referred for Physiotherapy.list their adverse reaction, precautions to be taken and contra – indication, formulation and route of administration.
Textbooks required for this Course:	Pharmacology by Gaddum. Pharmacology & Pharmacotherapeutics Revised 19th Edition 2005 by Dr.S.D.Satoskar&Dr.S.D. Bhandarkar . Essential of Medical Pharmacology 5th Edition 2003 By Dr.K.D.Tripathi
Course Duration	28 hours An additional hours of homework per day is expected during this course.
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, Laboratory experiments.
Course Objectives:	<ul> <li>Upon completion of this course, the student will have reliably demonstrated the ability to:</li> <li>Describe Pharmacology effects of commonly used drugs by patients referred for Physiotherapy</li> <li>Identify whether the pharmacological effects of the drug interferes with Therapeutic response of Physiotherapy &amp; vise a versa</li> <li>Indicate the use of analgesics &amp; anti-inflammatory agents with the movement disorders withconsideration of cost efficiency &amp;safety for individuals need.</li> <li>Get the awareness of other essential &amp;commonly used drug by patients –The basis for their use &amp;common as well as serious adverse reaction.</li> </ul>
Course Assessments	Assignment 1: 30%. Assignment 2: 10% Final Exam: 60% 60 % is required for a pass in this course.
Content Breakdown	Topical Coverage

Session 1 (Week 1)	Topics to be covered in the session (week):
	Drug Pharmaco-kinetics, Pharmacology adverse reaction, Factors
	modifying drug effects, sources &routes of administration.
Session 2 (Week 2)	Assignment 1 handed out
	Topics to be covered in the session (week)
	Drug acting on CNS :
	· Introduction, Alcohols,
	· Sedatives & Hypnotics
	- Anti-convulsants
Session 3 (Week 3)	Topics to be covered in the session (week)
	Immunization, Handling of the child, Significance of breast-feeding
	Drug acting on CNS:
	· Analgesics & Antipyretics
	· Gout &R.A.
Session 4 (Week 4)	Drug acting on CNS:
	- Psycho Therapeutics
	· General anaesthetic, Local anaesthetic
	· Drug therapy in PARKINSONISM.
Session 5 (Week 5)	Topics to be covered in the session (week)
	Drugs acting on Autonomic nervous system
	i) Cholinergic Agonist
	ii) Cholinergic Antagonist
Session 6 (Week 6)	Topics to be covered in the session (week)
	Drugs acting on Autonomic nervous system
	iii) Adrenergic Agonist
	iv) Adrenergic Antagonist
Session 7 (Week 7)	Topicstobecoveredinthesession (week)
	Skeletal muscle relaxants
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Topicstobecoveredinthesession (week)
	• Drugs acting on CVS :
	i) Hypertension
	ii) Diuretics
	iii) CCF
	iv) Angina
Session 10 (Week 10)	Topicstobecoveredinthesession (week)
	• Drugs acting on CVS :
	i) Hypertension
	ii) Diuretics
	iii) CCF
	iv) Angina
Session 11 (Week 11)	Drugs acting on CVS :
	- Level 2: v) Antiarrythmia
	- Level 2: vi) Shock
	- Level 2: vii) Drug satisfying Homeostasis
Session 12 (Week 12)	Drug acting on Respiratory system
	1)cough& Bronchial asthma
Session 13 (Week 13)	Chemotherapy
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	i) General principles ,Sulphonamides& Cotrimoxazole	
	ii) Broad Spectrum Antibioteics, Aminoglycides, Macrolides.	
Session 14 (Week 14)	iii) Beta lactams, Quinolones	
	ivi) Anti Tuberculosis	
Session 16 (Week 16)	Final Exam	
Attendance	Students are expected to attend every session of class, arriving on time,	
Expectations	returning from breaks promptly and remaining until class is dismissed.	
	Absences are permitted only for medical reasons and must be supported	
	with a doctor's note.	
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

## Pathology

1	Course name	Pathology
2	Course Code	PT202
3	Course type: /general/specialty/optional	Optional
4	Accredited units	2
5	Educational hours	2
6	Pre-requisite requirements	All 1 <sup>st</sup> subjects to pass max. 2 subjects for reset.
7	Program offered the course	Physiotherapy D.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	The broad goal of the teaching of undergraduate students in pathology aims at providing comprehensive knowledge of the morbid anatomy, Histopathology, etiology and pathogenesis with the complications of various diseases to provide a basis for understanding the clinical correlation and the skills to practice as a qualified Physiotherapist.
Textbooks required for this Course:	Text book of Pathology-by Harsh Mohan Pathologic basis of disease by Cotran, Kumar, Robbins.

Course Duration	28 hours.
Delivery	Lecture-based, Group interaction and discussion, self-directed
	activities, Laboratory experiments.
Course Objectives:	At the end of the course, the student will be able to :
	Acquire the knowledge of concepts of cell injury & changes produced thereby in different tissues & organs, capacity of the body in healing process.
	<ul> <li>Recall the etio -pathogenesis, the pathological effects &amp; the clinico-pathological correlation of common infections &amp; non-infectious diseases</li> </ul>
	<ul> <li>Acquire the knowledge of concepts of neoplasia with reference to the etiology, gross &amp; microscopic features, diagnosis &amp; prognosis in different tissues &amp; organs of the body.</li> </ul>
	Correlate normal & altered morphology of different organ systems in different diseases needed for understanding disease process & their clinical significance [with special emphasis to neuro- musculoskeletal & cardio-respiratory systems]
	<ul> <li>Acquire knowledge of common immunological disorders &amp; their resultant effects on the human body.</li> </ul>
	<ul> <li>Understand in brief, about the Haematological diseases &amp; investigations necessary to diagnose them &amp; determine their prognosis.</li> </ul>
Course Assessments	Assignment 1: 30%. Assignment 2: 10% Final Exam: 60% 60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Topics to be covered in the session (week):
	<ul> <li>Cell injury-causes, mechanism &amp; toxic injuries with special reference to Physical, Chemical &amp; ionizing radiation.</li> <li>b] Reversible injury [degeneration] - types, morphology, swelling,</li> </ul>
	hyaline, fatty changes
Session 2 (Week 2)	Assignment 1 handed out
	Topics to be covered in the session (week)
	Intra- cellular accumulation hyaline, mucin
	Irreversible cell injury types of necrosis, apoptosis, calcification, dystrophic & metastatic.
	Extra-cellular accumulation amyloidosis, calcification-Pathogenesis,
	morphology.
Session 3 (Week 3)	Topics to be covered in the session (week)
	Inflammation & Repair:-
	a] Acute inflammation-features, causes, vascular & cellular events b]
	Morphologic variations
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Session 4 (Week 4)	c] Inflammatory cells & mediators
Session 4 (Week 4)	d] Chronic inflammation:-causes, types, non-specific
Session 4 (Week 4)	d] Chronic inflammation:-causes, types, non-specific &Graunulomatous – with examples
Session 4 (Week 4)	d] Chronic inflammation:-causes, types, non-specific &Graunulomatous – with examples e] Wound healing by primary & secondary union, factors promoting &
Session 4 (Week 4) Session 5 (Week 5)	d] Chronic inflammation:-causes, types, non-specific &Graunulomatous – with examples

	f] Healing at various sites-including bones, nerve & muscle g]
	Regeneration & repair
Session 6 (Week 6)	Topics to be covered in the session (week)
	Immuno-pathology-[basic concepts]
	a] Immune system : organization, cells, antibodies, regulation of
	immune responses and Organ transplantation.
Session 7 (Week 7)	Topicstobecoveredinthesession (week)
	Hyper-sensitivity
	c] Secondary immuno-deficiency including HIV
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Topicstobecoveredinthesession (week)
	Circulatory disturbancesa] Edema-pathogenesis, types,
	transudates/exudates b] Chronic venous congestion-lung,
	liver, spleen c] Thrombosis-formation, fate, effects
	d] Embolism-types, clinical effects
Session 10 (Week 10)	Topicstobecoveredinthesession (week)
	•e] Infarction-types, common sites
	f] Gangrene-types, aetiopathogenesis
	g] Shock-pathogenesis, types, morphologic changes
Session 11 (Week 11)	Deficiency disorders-Vitamin A, B, C, D.
Session 12 (Week 12)	Growth Disturbance
	a] Atrophy-malformation, agenesis, metaplasia, dysplasia,
	hypertrophy, hyperplasia b] Neoplasia,
	calcification, histogenesis, biologic behavior, difference between
	benign & malignant tumor
	c] Malignant neoplasms –grades, stages, local & distal spread
	d]Carcinogenesis-environmental carcinogens e] Chemical,
	Occupational, heredity, viral
Session 13 (Week 13)	Medical Genetics :
	a) Karyotypic abnormalities
	b) Mandelin disorders
	c) Inborn errors of metabolism
Session 14 (Week 14)	Specific Pathology:-
	A] CVS
	a] Arteriosclerosis-Ischemic heart diseases – angina, myocardial
	infarctionPathogenesis / Pathology
	b] Hypertension
	c] C.C.F.
	d] Rheumatic & Congenital H.D.
Session 16 (Week 16)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on
	time, returning from breaks promptly and remaining until class is
	dismissed. Absences are permitted only for medical reasons and must
	be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range
Scholic Skills	
	of knowledge and skills required for full participation in all aspects of
	their lives, including skills enabling them to be life-long learners. To
HE STATES WILLIAMS OF STATES	ensure graduates have this preparation, such generic skills as literacy

	and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

#### **Therapeutic Exercise**

1	Course name	Therapeutic exercise
2	Course Code	PT203
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4
6	Pre-requisite requirements	All 1 <sup>st</sup> subjects to pass max. 2 subjects for reset.
7	Program offered the course	Physiotherapy Department
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This courselnclude the text therapeutic Exercise Prescription which serve as a thorough and practical treatment ,manual, providing detailed instructions on exercise prescription to address specific problems in the lower extremity ,upper extremity and spine , specific exercises are described along with modifications progressions ,alternatives, teaching tips ,and common compensations , case studies are presented ,with explanations of choices and application of concepts and principles, this course is a detailed practical application guide for a therapeutic exercise prescriptions.	
Textbooks required	Butler, D.S, Moseley, L. (2003). Explain Pain. Adelaide. Noigroup	
for this Course:	Publications. Merskey H, Bogduk N. Classification of chronic pain. 2nd ed. Seattle: IASP Press; 1994.	
	Many other learning materials.	
Course Duration	56 hours	
Delivery	Lecture-based, Group interaction and discussion, self-directed activities.  Laboratory experiments.	
Course Objectives:	At the end of the course, the candidate will be able to—  1] Define the various terms used in Mechanics, Biomechanics & Kinesiology, Recall the basic principles of Physics related to mechanics of movement/motion  2] Describe & acquire the skill of use of various tools of the Therapeutic gymnasium	

	3] Acquire knowledge of Movements – Classification, Principles, and Techniques & Uses. 4] Acquire knowledge of different starting & derived positions 5] Acquire the skill of application of various massage manipulations & Describe Principles, Physiological effects, Therapeutic use, Merits & Demerits. 6] Acquire skill of assessment -Sensations, Superficial & Deep Reflexes, Pulse rate/ Heart rate, Blood Pressure, Chest Expansion, Respiratory Rate, Limb Length & Girth Measurement on Models 7] Acquire knowledge & skill of Relaxation 8] Describe the skill & significance of Group & Recreational Exercises & their
	Advantages & Disadvantages 9] Be able to describe Principles of Yoga, its types, its physiological & psychosomatic effects & demonstrate standard yoga postures used by the beginners 10] Be able to demonstrate General Fitness exercises & understand principles of General
	Fitness 11] Understand biomechanics of joints of the skeletal system
Course Assessments	Assignment1: 30%. Assignment2: 10% FinalExam: 60% 60 % is required for a pass in this course.
Content Breakdown	Topical Coverage
Session 1 (Week 1)	General Biomechanics
	· Force — Analysis of Force · Internal & External force, Resolution of force, force vectors, force systems. Level 3- Calculation of force: Parallelogram of forces, use of coordinates · Mechanics of Position-Gravity, Center of Gravity, Line of Gravity, Base of support, Equilibrium, Fixation & Stabilisation - Level 3- deviations with respect of center of mass, line of gravity & stability · Introduction to statics & dynamic, Newton laws of motion · Mechanics of Movements- Axes & Planes, Speed, velocity, work, mechanical advantage, energy, power, acceleration, Momentum, Inertia & Friction, - Level 3- friction types · Simple Machine - a) Levers — Types, mechanical advantage & Uses, Angle of Pull b) Pulleys- Types (single & multiple) mechanical advantage & Uses c) Pendulum d) Elasticity — Springs, stress, strain, Hooke's Law - Level 2- behavior under stress · Types of muscle work
Session 2 (Week 2)	Starting & derived positions  Description of position, Muscle Work & Effects & Uses: Lying, sitting, kneeling, standing, hanging, positions derived by moving arm, legs & trunk Level 3- positions in water

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Session 3 (Week 3)	Movement  Classification Principles Techniques 8 Uses
	- Classification, Principles, Techniques & Uses - Level 3- trick movements
Session 4 (Week 4)	
Session 4 (week 4)	Range of Motion –
	Goniometry (Technique, Uses & Types of Goniometry)
	- Level 2- Other methods of range of motion assessment (tape)
	- Level 3- trick movements, range of motion of spine especially lumbar &
	cervical,
	· Inclinometer, motion analysis, C-ROM, B-ROM
Session 5 (Week 5)	Limb length measurement (only lower limb - apparent, true)
	- Level 2- supra- trochanteric)
	- Level 3- other methods, clinical aspects
	· girth measurements: upper limb & lower limb(tape).
	· Level 2- volumetric assessment, girth measurements of fingers.
	- Level 3- girth measurements of ankle
Session 6 (Week 6)	Assessment of Sensations & Reflexes,
	- Level 2- assessment of sensations dermatome wise & peripheral nerve
	distribution,
	monofilament testing, algometer
	- Level 3- grades of deep tendon reflexes, clinical application in UMN & LMN
	lesion
	Blood Pressure, Pulse Rate, Respiratory Rate & Chest Expansion (in normals)
	- Level 3- Blood Pressure, Pulse Rate, Respiratory Rate & Chest Expansion
	Variations in normal & abnormal
Session 7 (Week 7)	General Relaxation-
	Principles, methods & effects/ uses
	- Level 2- Biofeedback
Carrier O (Marak O)	- Level 3- clinical applications.
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	Topicstobecoveredinthesession (week)
Session 14 (Week 14)	Introduction to Manual Therapy*
	i) Peripheral joint mobilization- accessory movements, oscillations, concave-
	convex rule
	ii) Soft tissue mobilization- Massage (Principles, Classification, Effects,
	Merits, Demerits,
	Skills on extremities, scalp, spine, abdomen, face),
	- Level 2- Myofascial release, muscle energy technique,
	- Level 3- Cyriax
Session 16 (Week 16)	Final Exam
Attendance	Students are expected to attend every session of class, arriving on time,
Expectations	returning from breaks promptly and remaining until class is dismissed.
	Absences are permitted only for medical reasons and must be supported with
	a doctor's note.
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Generic Skills	The faculty is committed to ensuring that students have the full range of
	knowledge and skills required for full participation in all aspects of their lives,
	including skills enabling them to be life-long learners. To ensure graduates
	have this preparation, such generic skills as literacy and numeric, computer,
	interpersonal communications, and critical thinking skills will be embedded in
	all courses.
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Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as
	possible. Timetable may also be revised.

## Neurology, Neurosurgery & Physiotherapy managements

1	Course name	Neurology, Neurosurgery & Physiotherapy managements
2	Course Code	PT403
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4
6	Pre-requisite requirements	All 1st, 2nd & 3rd subjects to pass max. 2 subjects for reset.
7	Program offered the course	Physiotherapy Department
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This program integrates the clinical & academic and research components of Neuro-physotherapy Practice, with an emphasis on the management of
	patients with Neurological disorders.
	You will develop an understanding of evidence based practice and develop as an advanced physiotherapy practitioner.
	Student will be able to select from a wide range of modules according to your interest and complete at least one clinical placement.
Textbooks required	1. Cash's Textbook for Physiotherapists in Neurological conditions- Patricia
for this Course:	Downie
	2. Physical Rehabilitation – O'Sullivan
	3. Steps to follow – Patricia Davies
	4. Motor Control theory& practical Application- Shumway Cook
	5. Treatment of CP & motor delay - Sophie Levitt
	6. Neurological Rehab – Darcy Umphred
	7. Normal Child –Illingworth
Course Duration	28hours
	An additional hours of homework per day is expected during this course.
Delivery	Lecture-based, Group interaction and discussion, self-directed activities,
	Laboratory experiments.
Course Objectives:	By the end of this course the student will be able to:
	1] detect abnormalities in neurodevelopment.
	2] assess, identify &analyze neuro-motor & psychosomatic dysfunction in adult &

	paediatric & co-relate the finding with provisional diagnosis, interpretation of routine neurological
	investigations & arrive at functional diagnosis with clinical reasoning
	3] understand the principles & acquire Neuro therapeutics skills
	4] plan, prescribe & execute short term &long term goals with appropriate
	therapeutic
	interventions & be able to modify treatment techniques according to
	stage of disease.
Course Assessments	Assignment1: 30%.
	Assignment2:10%
	Final Exam: 60%
	60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	1] Understanding theories of motor control & motor learning
	2] Understanding sensory system & organization of sensory strategies for
	efficient motor
	output.
	3] Skills of sensory-motor learning & neuro-muscular skeletal training
Session 2 (Week 2)	A) Pediatric
	· Detection of abnormalities in Neurodevelopment in terms of Maturational
	Reflexes,
	Reactions, Tone, Movement, Motor age, Posture, Balance & Locomotion &
	identification of
	Primary & Secondary dysfunction
	· Screening for high risk babies & role of early intervention
	· Plan short & long term goals based on ICF and implement appropriate
	treatment programme.
	- Level 2: Detection of abnormalities in Neurodevelopment in terms of
	mental age,
	Recent advances in treatment in the above mentioned conditions
Session 3 (Week 3)	i] Upper Motor Neuron Lesions
	1] Different types of Cerebral Palsy
	2] Head Injury
	- Level 2: Infective diseases of CNS- Meningitis, Encephalitis, Tetanus, Space
	Occupying Lesions etc.,
	ii] Lower Motor Neuron lesions –
	1] Spinal dysraphysm, hydrocephalus, SMA etc.
	2] Polio myelitis- Level 2
	iii] Muscle disease
	Musculo dystrophies (Duchenne Muscular Dystrophy, Becker Muscular
	Dystrophy)
	iv] ADHD, Autism, Down 's syndrome, Learning disability- Level 2
Session 4 (Week 4)	B) Adult
	Planning short term &long term goals & formulating treatment programme
	based on ICF for all the
	topics given as follows80
	- Level 2: Recent advances in treatment
	· Central Nervous System
	1] Disorders of circulation
	2] Space occupying lesions- Cortical, Cerebellar, Thalamic &Brain stem
	-Level 2
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