# جامعة المنوفية
# اللائحة الداخلية لكلية تكنولوجيا العلوم الصحية التطبيقية
# بنظام الساعات المعتمدة

# 2021/2020م

# الفهرس

# مقدمة

جامعة المنوفية من الجامعات الرائدة الطموحة التي تحرص علي استحداث عدد من الكليات والبرامج الجديدة التي تواكب التطور السريع في احتياجات سوق العمل وفي ضوء التطور السريع للمعلوماتية الصحية ومستجدات التعليم الصحى أصبح تطوير برامج التعليم الصحى ضرورة ملحة لمواكبة هذه المستجدات.

وتميزت جامعة المنوفية بانشاء كلية العلوم الطبية التطبيقية بجامعة المنوفية وهى إحدى الكليات المصرية التي أنشئت بقرارمن رئيس مجلس الوزراء رقم 1399 لسنة 2015. وبناءا علي القرار الوزاري رقم 141 لسنة 2020 تم تعديل اسم الكلية الي كلية تكنولوجيا العلوم الصحية التطبيقية – جامعة المنوفية ولذا فقد قامت الكلية بمراجعة العديد من البرامج الدراسيه للكليات المناظرة على المستويين العالمي والإقليمي بالاضافة الى عمل دراسة عن احتياجات سوق العمل عن طريق استطلاع آراء عينة من القيادات العامله بالمجال الصحى وبعض الخريجين ومجموعة من طلاب الكلية وانتهت الى تعديل اللائحة في ضوء المستجدات والتحديات التي تواجه التعليم الصحى.

والله ولي التوفيق،،،

**فلسفة الكلية والقيم الحاكمة:**

- الالتزام الاجتماعي والأخلاقي وترسيخ قيم العدل والمساواة والمثل الانسانية العليا.
- الانتماء الوطني الصادق للطلبة والعاملين ووضع المصلحة العامة فوق أي مصالح شخصية.
- عدم التمييز بسبب اللون أو النوع أو الدين أو الجنسية .
- الرؤية العالمية والتواصل مع الأخر إقليمياً و عالمياً.
- الشفافية مع عرض الإيجابيات والسلبيات أملاً في التطوير والتحسين المستمر.
- الحرية الفكرية والأكاديمية في إطار الثوابت المجتمعية والقيم الجامعية .
- الجودة والتميز مع السعي الدائم لتطوير العملية التعليمية والبحث العلمي.
- المشاركة المجتمعية والمساهمة في خدمة المجتمع وتنميته .

**رؤيــة الكليــة**

كلية رائدة تتميز بتخريج تكنولوجي صحى ذو كفاءة عالية قادر على المنافسة في سوق العمل محلياً وإقليمياً للارتقاء بمستوى الخدمات الصحية

**رسالــة الكليــة**

تخريج تكنولوجي صحى, ملتزم بالأخلاقيات المهنية متقن للمهارات التقنية المتخصصة التى تؤهله للمساعدة فى تقديم رعاية صحية متميزة وأمنة مبنية على الادله والبراهين تخدم مختلف المؤسسات الصحية, وأن يكون الخريج قادر على المشاركة في البحث العلمى وخدمه المجتمع ومهيأ للتعليم المستمر والعمل الجماعى متمتعا بمهارات الادارة من خلال تقديم برامج متنوعة تلتزم بمعايير الجودة التعليمية.

**الاهداف الاستراتيجية:**

- **اعداد تكنولوجي صحي متميز بمهارات علمية متقدمة الي جانب الاهتمام بالمهارات الشخصيه**
- **ربط مهارات الخريج ومواصفاته بمتطلبات سوق العمل**
- **تأهيل الخريجين وتدريبهم علي سبل التعلم الذاتي والتعلم المستمر**
- **الاهتمام بالبحث العلمي وربطه بالتقدم التكنولوجي وحاجات سوق العمل**
- **التطوير المستمر في برامج الكلية لمواكبة التطور التكنولوجي السريع**
- **عقد بروتوكولات تعاون مع العديد من المؤسسات والشركات التي تخدم تدريب الطلاب بالأقسام المختلفة**
- **التوسع في تطوير المعامل والورش بالكلية**
- **تطوير البنية التحتية لتسهيل طرق التعلم الالكتروني والتعلم عن طريق المحاكاة**
- **انشاء دبلومات تأهيلية ودراسات عليا لخريجي الكلية**

**المواصفات العامة لخريج كلية تكنولوجيا العلوم الصحية التطبيقية :**

**أن يكون الخريج:**

1- **متقنا للمهارات التكنولوجية المتخصصة لرفع كفاءة الخدمة الصحية تحت اشراف طبيب متخصص.**
2- **قادرا علي التعلم الذاتى ومتحفز للتعلم المستمر.**
3- **ملما بأساسيات البحث العلمى وملتزما بأخلاقياته.**
4- **محترما لاخلاقيات المهنة والجوانب القانونية فى الممارسة الصحية.**
5- **قادرا علي التفكير التحليلى وملما بمهارات حل المشكلات.**
6- **ملتزما بمعايير الجودة .**
7- **قادرا علي العمل فى فريق بنجاح.**

**المواصفات الخاصة لخريج كل برنامج:**

1. **خريج برنامج تكنولوجيا المختبرات الطبية**

تكنولوجي صحي لديه خلفية اكاديمية شاملة المعارف الصحية الحديثة والاتجاهات المواكبة لتطور سوق العمل في المجال الصحي الخاص بتكنولوجيا المختبرات الطبية و مزود اً بالمهارات العلمية والعملية قادر علي إعداد وتحضير العينات الطبية بمعظم صورها بدقة وسرعة، وقادر علي تشغيل أجهزة التحليل الطبي تحت اشراف ومتابعة طبيب المعمل المختص ، و ملماً باجراءات الصيانة الدورية للاجهزة داخل المعمل طبقا لمعايير الجودة والاعتماد في المنشأت الصحية مع مراعاة السلامة المهنية له وللمريض

2. **خريج برنامج تكنولوجيا علوم الأشعة والتصوير الطبى**

تكنولوجي صحي لديه خلفية اكاديمية شاملة المعارف الصحية الحديثة والاتجاهات المواكبة لتطور سوق العمل في المجال الصحي الخاص بتكنولوجيا علوم الاشعة والتصوير الطبي مدرباً على كافة اجهزة التصوير الاشعاعى التشخيصى والعلاجى ملماً بالقوانين الفيزيائية للإشعاع ومخاطره ، قادرا علي التعامل مع جميع أجهزة الأشعة بمختلف أنواعها تحت اشراف طبيب الاشعة المختص طبقا لمعايير الجودة والاعتماد في المنشأت الصحية مع مراعاة السلامة المهنية له وللمريض.

3. **خريج برنامج تكنولوجيا الاجهزة الطبية الحيوية**

تكنولوجي صحي لديه خلفية اكاديمية شاملة المعارف الصحية الحديثة والاتجاهات المواكبة لتطور سوق العمل في المجال الصحي الخاص بتكنولوجيا الأجهزة الطبية مدرب على تركيب ومتابعة وتشغيل وصيانة الاجهزة الطبية المختلفة تحت اشراف مهندس أجهزة طبية وقادر على التواصل مع الشركات المصنعة فى حالات اكتشاف العيوب الاكثر تعقيدا لاجراء الصيانة اللازمة طبقا لمعايير الجودة والاعتماد في المنشأت الصحية مع مراعاة اسس السلامة المهنية.

4. **خريج برنامج تكنولوجيا صناعة تركيبات الأسنان**

تكنولوجي صحي لديه خلفية اكاديمية شاملة المعارف الصحية الحديثة والاتجاهات المواكبة لتطور سوق العمل في المجال الصحي الخاص بتكنولوجيا صناعة تركيبات الاسنان ذو كفاءة ومهارة عالية فى المجالات المختلفة المساعدة لمهنة طب الاسنان من صناعة التركيبات الثابتة والمتحركة واجهزة التقويم والتجميل والحشوات التحفظية ملما بتكنولوجيا الاجهزة الجراحية والتعويضية المستخدمة فى الوجه والفكين تحت إشراف طبيب الاسنان طبقا لمعايير الجودة والاعتماد في المنشأت الصحية مع مراعاة اسس السلامة المهنية له وللمريض.

5. **خريج برنامج تكنولوجيا البصريات**

تكنولوجي صحي لديه خلفية اكاديمية شاملة المعارف الصحية الحديثة والاتجاهات المواكبة لتطور سوق العمل في المجال الصحي الخاص بتكنولوجيا البصريات ملما بالقوانين الفيزيائية لانعكاس الضوء وإنكساره و يتعامل مع المعينات البصرية (النظارات العدسات اللاصقة وغيرها ) ملما بتقنيات اجهزة البصريات المختلفة والفحوصات المرتبطة بالعين تحت إشراف طبيب العيون طبقا لمعايير الجودة والاعتماد في المنشأت الصحية مع مراعاة اسس السلامة المهنية له وللمريض.

6. **خريج برنامج تكنولوجيا الرعاية التنفسية**

تكنولوجي صحي لديه خلفية اكاديمية شاملة المعارف الصحية الحديثة والاتجاهات المواكبة لتطور سوق العمل في المجال الصحي الخاص بتكنولوجيا الرعاية التنفسية ملماً بأساسيات التعامل مع الأجهزة الموجودة بغرف الرعاية المركزة وملماً باساسيات الانعاش والاكتشاف المبكر للمضاعفات وقادر علي التعامل مع المريض علي الاجهزة التنفسية تحت اشراف الطبيب و تعليماته المباشرة طبقا لمعايير الجودة والاعتماد في المنشأت الصحية مع مراعاة اسس السلامة المهنية له وللمريض.

**السمات والملامح المميزة**

**تسعى كلية تكنولوجيا العلوم الصحية التطبيقية جامعة المنوفية إلى تطبيق برامج دراسية تتسق مع معايير جودة التعليم والاعتماد القومية ومن أهم السمات المميزة للبرامج:**

- **أستخدام طرق التدريس التفاعلى والحلقات النقاشية المصغرة لاكساب الطالب مهارات التعلم الذاتى من خلال ادخال نظام المحاضرات التفاعلية والحلقات النقاشيه الصغيرة.**
- **الاهتمام بالبحث العلمى وإعداد طالب قادر على متابعة الجديد فى مجال تكنولوجيا العلوم الصحية التطبيقية من من خلال ادخال مقرر اساسيات البحث العلمي والاهتمام بتدريب الطلاب علي البحث العلمي من خلال الانشطة.**
- **تطبيق طرق التعليم الالكترونى فى التدريس بالاضافة الى مهارات التعلم عن بعد .**
- **استحداث مصفوفة من المقررات التى تهتم بتنمية المهارات الشخصية للطلاب وتلبى احتياجات سوق العمل ومتطلبات التعلم المستمر مثل مهارات التواصل والعرض الفعال ومهارات الاداره ومكافحة العدوى والسلامة المهنية.**
- **استحداث مصفوفة من المقررات الاختيارية التي لها علاقة بالقطاع الصحي تسمح للطلاب بدراسة موضوعات ذات علاقة بتكنولوجيا العلوم الصحية مثل الطب البديل والبيولوجيا الجزيئية وايضا مصفوفه ليس لها علاقة بالمجال الصحي ولكنها تخدم الاهتمامات الشخصية للطلاب وهواياتهم مثل اللغات وفنون الرسم والتمثيل والادب وغيرها.**
- **تطوير طرق واساليب التقييم مثل تطبيق الامتحانات التى تقيس المهارات الخاصة بالفهم والتحليل مثل اختيار من متعدد واذكر السبب واستخدام حالات مماثلة لما يقابله التكنولوجي في الواقع وتطبيق الامتحانات الالكترونية.**

**أماكن التعليم والتعلم:**

- **قاعات الدروس ومكتبة الكلية**
- **التدريب العملي يتم في معامل الكلية والكليات المشاركة في التدريس ومعامل مستشفيات الجامعية بما تتضمنه من تجهيزات تشمل ميكروسكوبات ومختلف التجهيزات المعملية تبعا للقسم المختص بالتدريب.**
- **التدريب الميدانى يتم في الكليات المشاركة في التدريس التابعة للجامعة والورش الهندسية التابعة للجامعة و مستشفيات الجامعة و اى اماكن اخرى يتم اقتراحها في مجلس الكلية.**

# الباب الاول

**مادة(1):قواعد القبول بالكلية:-**

**اولا: الشروط العامه لقبول الطلاب الحاصلين على الثانويه العامه:**

1- التقدم للالتحاق عن طريق مكتب التنسيق بالجامعات وذلك طبقا للقواعد التى يحددها المجلس الاعلى للجامعات

2- أن يكون الطالب حاصلا على شهادة الثانوية العامة (القسم العلمي) او ما يعادلها.

3- ان يكون الطالب متفرغا للدراسه

4- أن تكون اللغه الانجليزيه إحدى اللغات التى تمت دراستها

5- إجتياز اختبارات القبول واالمقابله الشخصيه التى تعقد بالكليه

6- اجتياز الكشف الطبى

7- قبول الطلاب المحولين من الكليات والمعاهد طبقا للقواعد التى يحددها المجلس الاعلى للجامعات

8- يقبل الطلاب الوافدين وفقا للقواعد والشروط التى يحددها المجلس الاعلى للجامعات

**ثانيا: الشروط العامه لقبول الطلاب الحاصلين على دبلوم المعاهد الفنيه الصحيه والمعاهد المناظرة:**

1- التقدم للالتحاق عن طريق مكتب التنسيق بالجامعات وذلك طبقا للقواعد التى يحددها المجلس الاعلى للجامعات

2- اجتياز اختبارات القبول والمقابله الشخصيه

**مادة (2):الأقسام العلمية بالكلية:-**

| | | |
|---|---|---|
| 1 | قسم تكنولوجيا المختبرات الطبية | Department of Technology of Medical Laboratories |
| 2 | قسم تكنولوجيا علوم الأشعة والتصوير الطبى | Department of Technology of Radiology and Medical Imaging |
| 3 | قسم تكنولوجيا الاجهزة الطبية الحيوية | Department of Technology of Biomedical Equipment |
| 4 | قسم تكنولوجيا صناعة تركيبات الأسنان | Department of Technology of Dental Prostheses Manufacture |
| 5 | قسم تكنولوجيا البصريات | Department of Technology of Optics |
| 6 | قسم تكنولوجيا الرعاية التنفسية | Department of Technology of Respiratory Therapy |

**يجوز لمجلس الكلية وبموافقة مجلس الجامعة والمجلس الاعلي للجامعات إنشاء أقسام علمية جديدة تواكب المستجدات في تكنولوجيا ا لعلوم الصحية التطبيقية**

**مادة (3): الدرجة العلمية التي تمنح للخريجين:**

- **يمـــنح مجلـــــس جـــــامعة المنوفية بناءا علـــــى توصـــــية مجلـــــس كـلية تكنولوجيا العلوم الصحية التطبيقية درجة البكالوريوس فى تكنولوجيا العلوم الصحية التطبيقية بنظام الساعات المعتمدة فى أحد البرامج التالية:**

| م | البرامج العلمية | Program | Code |
|---|---|---|---|
| 1 | برنامج تكنولوجيا المختبرات الطبية | Technology of Medical Laboratories | ML |
| 2 | برنامج تكنولوجيا علوم الأشعة والتصوير الطبى | Technology of Radiology and Medical Imaging | RI |
| 3 | برنامج تكنولوجيا الاجهزة الطبية الحيوية | Technology of Biomedical Equipment | BE |
| 4 | برنامج تكنولوجيا صناعة تركيبات الأسنان | Technology of Dental Prostheses Manufacture | DP |
| 5 | برنامج تكنولوجيا البصريات | Technology of Optics | OP |
| 6 | برنامج تكنولوجيا الرعاية التنفسية | Technology of Respiratory Therapy | RT |

- تقبل جميع البرامج بالكلية شعبة علمي علوم ويجوز أن يقبل برنامج البصريات وبرنامج الأجهزة الطبية الحيوية الثانوية العامة بشعبتيها علمي العلوم وعلمي الرياضة وذلك بناء علي استمارة رغبات يقدمها الطلاب لإدارة الكلية ووفقا للشروط التي يحددها مجلس الكلية وبناء علي المجموع الكلي للطلاب بالمستوى الأول مع استيفاء أي اشتراطات خاصة ببرنامج معين ان وجدت.

# الباب الثاني – نظام الدراسة

**مادة(4) : مدة الدراسة :**

- مدة الدراسة لنيل درجة البكالوريوس في تكنولوجيا العلوم الصحية التطبيقة – بنظـــــــام الساعـــــات المعتمـــــدة هي أربع مستويات دراســية مقسمة علـــى ثمانية فصول دراسية رئيسية كل فصل دراسى مدته 15 أسبوع بحد اقصى 18 ساعه معتمده وبحد ادنى 12ساعه معتمده وباجمالي 127 ساعة معتمدة.
- مدة الدراسة والاختبارات لكل مستوى هى ستة وثلاثون أسبوعاً (لكل فصل دراسي خمسة عشر أسبوعاً للدراسة وثلاثة أسابيع للاختبارات)
- الفصل الدراسى الصيفى:-

يجوز لمجلس الكلية في حالات محددة أن يوافق على فتح فصل دراسى صيفى (ثالث) مكثف مدته ثمانيه (8) أسابيع شاملة فترة الامتحانات على ألا يسمح بالتسجيل في هذا الفصل الدراسى الصيفى لأكثر من تسع ساعات (9) معتمدة ويعتبر فصلا اختياريا بالنسبة للطالب وفقاً للشروط التالية :-

1. عدم إستيفاء الطالب للحد الأقصى للعبء الدراسى في الفصليين الدراسيين الرئيسين .
2. إعادة دراسة مقررات سبق له دراستها ورسب فيها.
3. إستكمال الطالب لمتطلبات التخرج .

- تبدأ الدراسة مع الفصول المختلفة على النحو التالى:-

أ. الفصل الرئيسي الاول (الخريف): يبدأ في شهر سبتمبر والدراسة لمده لا تقل عن 15 اسبوع

ب. الفصل الرئيسي الثاني (الربيع): يبدأ في شهر فبراير لمده لا تقل عن 15 اسبوع

ج. الفصل الصيفي: يبدأ في شهر يونيو لمده 8 اسابيع مكثفة.

**مادة(5) : نظام الدراسة:**

- نظام الدراسة بالكلية بنظام الساعات المعتمدة مقسمة إلى أربع مستويات دراسية بنظام الفصلين الدراسيين لكل مستوى
- يجب على الطالب متابعة الدروس النظرية والعملية والميدانية وفقاً للنظام الذى يقرره مجلس الكلية على ألا تقل نسبة الحضور عن 75%.
- التدريس في جميع المقررات باللغة الانجليزية ويجوزأن تدرس بعض المقررات باللغة العربية وفقا لطبيعة المقرر
- تدرس المقررات في صورة محاضرات وتدريبات معملية وميدانية وتطبيقات عملية وحلقات نقاشية وورش عمل ومشروعات بحثيه.
- يجوز لمجلس الكلية بعد اخذ رأي مجلس القسم وحسب طبيعة المقررات الدراسية ان يقرر تدريس مقرر او اكثر بنمط التعليم الهجين بحيث تكون الدراسة في المقرر بنسبة 60% وجها لوجه وبنسبة 40% بنظام التعليم عن بعد أو بأي نسبة اخري وعلي أن يتم عرض ذلك علي مجلس شئون التعليم والطلاب بالجامعة للموافقة عليه ورفعه لمجلس الجامعة لاعتماده.

**تقسم الدراسة كالاتي :-**

- **المستوى الأول** يشتمل على مقررات دراسية عامة تدرس لجميع طلاب البرامج الدراسية والتعرف على كافة البرامج .
- **المستوى الثانى والثالث والرابع** يشمل مقررات تخصصية لكل برنامج و يتم توزيع الطلاب على البرامج المختلفة وفقا للشروط التي يضعها مجلس الكلية سنويا.

**التدريب الميداني والصيفى:-**

يؤدي طلاب المستوى الثانى والثالث والرابع تدريب ميداني في بعض المقررات بما يعادل ساعة معتمدة في الفصل الدراسي على أن تحسب درجاته ضمن درجة الأنشطة لهذه المقررات و يحدد مجلس الكلية بناء على اقتراح مجالس الأقسام طريقة التدريب والمتابعة طبقا لما هو موضح مع الجداول الدراسية.

يؤدي طلاب المستوى الثانى والثالث تدريب صيفى لمدة أربع أسابيع على الأقل لكل مستوي علي أن يحدد مجلس الكلية بناء على اقتراح مجالس الأقسام طريقة التدريب والمتابعة ويقدم الطالب تقريرا وافيا عن تدريبه يعتمد من مجلس القسم بعد إنتهاء مدة التدريب.

**مادة (6): الساعة المعتمدة :**

**الساعة المعتمدة وحدة قياسية للدراسة وتعادل اسبوعيا:**

- **1 ساعة دراسية نظرية.**
- **أو2 ساعة دراسية عملية .**
- **أو 4 ساعات مشروعات تطبيقية أو أنشطة أو تدريب ميداني .**

**مادة (7) متطلبات الحصول على درجة البكالوريوس فى تكنولوجيا العلوم الصحية التطبيقية:-**

**يجتاز الطالب (127) ساعة معتمدة للحصول على بكالوريوس تكنولوجيا العلوم الصحية التطبيقية . ولا يمنح الطالب درجة البكالوريوس الا بعد استيفاء متطلبات التخرج.**

**الساعات موزعة على النحو التالى :-**

| المجموع بالساعات المعتمدة | المتطلبات بالساعات المعتمدة | | | |
|---|---|---|---|---|
| | متطلبات لا تضاف للمجموع | | متطلبات تضاف للمجموع | |
| | متطلبات كلية اختيارية Elective Faculty Requirements (EFR) | متطلبات جامعة University Requirements (UR) | متطلبات تخصصية للبرنامج Program Requirements (PR) | متطلبات كلية اجبارية Obligatory Faculty Requirements (OFR) |
| 127 | 6 | 2 | 85 | 34 |

**أولاً:- مقررات تضاف للمجموع :-**

**1- متطلبات كلية اجبارية ( Obligatory Faculty Requirements, OFR) مشتركة بين جميع البرامج:**

| Course Code | Course | Contact Hours | | | | Credit Hours |
|---|---|---|---|---|---|---|
| | | Lecture | Practical | Tutorial | Field | |
| OFRET101 | English Language &Terminology | 1 | 0 | 2 | 0 | 2 |
| OFRPY102 | Basic physics | 1 | 0 | 2 | 0 | 2 |
| OFRMA103 | Mathematics | 1 | 0 | 2 | 0 | 2 |
| OFREE104 | Introduction to electrical Engineering | 2 | 2 | 0 | 0 | 3 |
| OERCS105 | Basic Computer Skills | 1 | 2 | 0 | 0 | 2 |
| OFRME106 | Mechanics | 1 | 0 | 2 | 0 | 2 |
| OFREC111 | Electronic circuits &devices | 2 | 2 | 0 | 0 | 3 |
| OERAH112 | General Anatomy and histology For Technologists | 1 | 2 | 2 | 0 | 3 |
| OFRGP113 | General Physiology For Technologists | 1 | 2 | 2 | 0 | 3 |
| OFRGM114 | General Microbiology | 1 | 2 | 2 | 0 | 3 |
| OFRGC115 | General Chemistry | 1 | 2 | 2 | 0 | 3 |
| OFRME200 | Mechatronics engineering | 1 | 1 | 0 | 0 | 2 |
| OFRCP001 | Effective communication and presentation skills | 0.5 | 0 | 1 | 0 | 1 |
| OFRSR002 | Basics of scientific research | 0.5 | 0 | 1 | 0 | 1 |
| OFRIS003 | Infection control and occupational safety | 0.5 | 1 | 0 | 0 | 1 |
| OFRHM004 | Hospital management | 1 | 0 | 0 | 0 | 1 |

2- **متطلبات تخصصية للبرامج (Program Requirements):- (Appendix 1)**

**ثانياً:- متطلبات لاتضاف للمجموع :-**

**(لايؤثر الرسوب فى هذه المتطلبات على إنتقال الطالب من مستوى دراسى إلى مستوى دراسى أعلى)**

1. **متطلبات الجامعة University Requirements (UR):-**

**يجب أن يجتاز الطالب متطلبات جامعة المنوفية وهي مقررات نظرية تعادل (Two credit hours)**

| Course code | Course title | Credit hours (Lectures ) |
|---|---|---|
| - UR 01 | Introduction to Quality<br>مدخل للجودة | 1 |
| - UR 02 | Human right and fighting corruption<br>حقوق الانسان ومكافحة الفساد | 1 |

2. **متطلبات كلية إختيارية Elective Faculty Requirements (EFR) ( Six credit hours)**

**يختار الطالب ستة مقررات دراسية بداية من المستوي الثانى من قائمة يعتمدها سنويا مجلس الكلية قبل بدء الدراسة (3 مقررات عامة + 3 مقررات تخدم المجال الصحى) كما هو موضح بالجدول التالى :**

| م | مقررات عامة (ساعة نظرية لكل مقرر) | | مقررات تخدم المجال الصحى (ساعة نظرية لكل مقرر) |
|---|---|---|---|
| 1 | الرسم و التصوير | 1 | Stem cells |
| 2 | تصميم الرسومات | 2 | Biomedical genetics |
| 3 | الموسيقى | 3 | Advanced Molecular biology |
| 4 | الحاسب الآلي و لغات البرمجة | 4 | Basic life support |
| 5 | تصميم الأزياء | 5 | Ethical & Legal issues |
| 6 | تدريب المدربين | 6 | Experimental animal model |
| 7 | الإدارة المالية | 7 | Clinical nutrition |
| 8 | التسويق الإلكتروني | 8 | Biomedical engineering |
| 9 | اللغة الإنجليزية (مستوي متقدم) | 9 | Complementary and alternative medicine |
| 10 | اللغة الألمانية | 10 | Organ transplantation |
| 11 | اللغة الفرنسية | 11 | Tissue culture |
| 12 | الترجمة | 12 | Biostatistics |
| 13 | فن الكتابة ( رواية– قصة قصيرة – مقال) | 13 | Disaster management for health professionals |
| 14 | الفلسفة | 14 | Quality of health care |
| 15 | الأعمال الفنية ( الرسم- أعمال الزجاج – الحرق على الخشب – الجرافيتي) | 15 | Biomedical informatics |
| 16 | مشغولات يدوية | | |
| 17 | فنون الطهى | | |
| 18 | التمثيل و فن المسرح | | |
| 19 | فن الخط | | |
| 20 | القيادة و إدارة المشاريع | | |
| 21 | إدارة الوقت | | |
| 22 | الإبداع و التخطيط العقلي | | |
| 23 | اداره الموارد البشرية | | |
| 24 | العلاقات العامة | | |
| 25 | الحضاره المصرية القديمة | | |

**ويجوز لمجلس الكلية إقتراح مقررات جديدة و اضافتها بعد موافقة مجلس الجامعة**

**مادة (8): الإرشاد الأكاديمي:**

- تحدد الكلية لكل مجموعة من الطلاب مرشداً أكاديمياً من أعضاء هيئة التدريس بالكلية.
- يقوم المرشد الأكاديمي بتقديم النصح والإرشاد ومساعدة الطلاب في اختيار المقررات الدراسية.
- لا تقبل بطاقات التسجيل أو الإضافة أو الانسحاب إلا باعتماد المرشد الأكاديمي.
- يمكن تغيير المرشد الأكاديمي بناءا على طلب مسبب من الطالب أو أسباب أخرى تراها الكلية.
- يقوم المرشد الأكاديمي بدعم المتعثرين من الطلاب للوقوف على أسباب التعثر و معالجتها.

**مادة(9): تسجيل المقررات والعبء الدراسي:**

- يقوم الطالب بتسجيل المقررات التى يرغب فى دراستها فى كل فصل دراسى وفقاً لتوجيهات المرشد الاكاديمى وفي المواعيد المحددة بتوقيتات التسجيل وقواعده التي تصدرها الكلية سنويا وتنشر في دليل البرنامج ولا يجوز للطالب الانتظام فى الدراسة إلا بعد انتهاء عمـــلية التسجيل. ويشترط ألا يقل العبء الدراســـي عــن 12 ساعة معتمدة ولا يزيد عن 18 ساعة معتمدة في الفصل الدراسي الرئيسي أو 9ساعات معتمدة فى الفصل الدراسى الصيفي .
- لا يجوز للطالب التسجيل فى أى من المقررات الدراسيه بعد مواعيد التسجيل المعلن عنها إلا بعد موافقه مجلس الكلية.
- يسمح للطالب بالتسجيل خلال اسبوعين قبل بدء الدراسة.
- يجوز للطالب الذي لم يتمكن من التسجيل لاسباب قهرية يوافق عليها مجلس الكلية ان يسجل تسجيلا متاخرا خلال الاسبوع الاول من الدراسة.
- الطالب الذى يتخلف عن المواعيد المحددة للتسجيل (في حدود العبء الدراسي )دون تقديم عذر يحسب له طالب غير مسجل ويحتسب من سنوات الرسوب.

**مادة (10) : الإضافة والحذف:**

- يجوز للطالب بعد إكمال إجراءات التسجيل وموافقه المرشد الاكاديمى أن يحذف أو يضيف خلال أسبوعين من بدء الدراسة إلى ساعاته المعتمدة مقرراً أو أكثر مع مراعاة الحد الأدنى والحد الأقصى للعبء الدراسى.

**مادة (11) :الانسحاب:**

- يجوز للطالب وبموافقة المرشد الاكاديمي بعد تسجيله الانسحاب من مقررأو أكثر فى خلال ثمانية أسابيع على الأكثرمن بدء الدراسة في أى فصل دراسى دون أن يعتبر راسباً فى هذا المقرر ويحصل علي الرمز (W) بشرط الا يخل الانسحاب بالعبء الدراسي. الطالب الذي ينسحب من فصل دراسي لظروف مرضيه أو عذر تقبله الكلية يقوم بالتسجيل فيها في فصل دراسي لاحق.

**مادة ( 12) :المواظبة:**

يجب علي الطالب متابعة الدروس والحضور في التدريبات العملية والتدريبات الميدانية وفقا للنظام الذي يقرره مجلس الكلية علي الا تقل نسبة حضوره عن 75%. اذا زادت نسبة غياب الطالب عن 25% بدون يعذر تقبله لجنة شئون التعليم والطلاب ويعتمد من مجلس الكلية يسجل للطالب تقدير راسب في المقرر.

**مادة(13): التحويل :**

- **يتم التحويل من خارج وداخل الكلية حسب القواعد العامة للتحويلات المنصوص عليها فى قانون تنظيم الجامعات .**
- **يجوز للطالب التحويل بين برامج الكلية المختلفة بموافقة مجلسي القسمين ومجلس الكلية وبشرط أن يتم ثلاث مستويات دراسية فى التخصص المحول اليه للحصول على الدرجة العلمية وبعد إجراء مقاصة علمية توضح ثبوت إعفاءه من المقررات المتشابهه السابق له اداء امتحانات فيها بنجاح مع الاحتفاظ بحالة قيد الطالب وعلي أن يحتفظ بتقديرات المقررات الغير متشابهة كمواد مستجدة.**

# الباب الثالث – نظام الامتحانات

**مادة (14): يتخرج الطالب بعد إنقضاء 4 سنوات دراسية على الأقل وانتهاء متطلبات التخرج فى نهاية الفصول الدراسية ويتم منح الدرجة العلمية فى دور يناير او مايو او سبتمبر من كل عام.**

**مادة(15): نظام التقييم و حساب الدرجات:**

- **الدرجة النهائية لكل مقرر دراسى تساوى عدد الساعات المعتمدة للمقرر × 50 درجة**
- **توزع الدرجة النهائية لكل مقرر دراسى كما يلى :-**
  - **40% للاختبار التحريرى فى نهاية الفصل الدراسى (المقررات التى ليس لها دروس عملية يمثل فيه الامتحان التحريرى 80% من الدرجة)**
  - **40% للاختبار العملى فى نهاية الفصل الدراسى.**
  - **20% لجميع الاعمال الفصلية (التقييم الفصلي المستمر (Continuous semester evaluation CSE)**
- **تشمل الاعمال الفصلية (الأنشطة الدراسية والبحثية وتقييم المجموعات التعليمية الصغيرة وامتحانات موضوعية فصلية والتدريب الميدانى فى بعض المقررات) وذلك أثناء أعمال التدريس بالفصول الدراسية و كذلك الإنتظام والحضور والسلوك طبقا لما يقرره مجلس الكلية بناءا على رأى القسم العلمي.**
- **يتم اجراء اختبارات بنائية (formative assessment) مرة واحدة على الأقل خلال كل فصل دراسى ولا يحتسب لها درجات.**
- **عدد ساعات الإختبار التحريري النهائي يعادل عدد الساعات النظرية المعتمدة للمقرر .**
- **يعتبر التدريب الصيفي شرط للتخرج ويقدم الطالب مايثبت حضوره في اماكن التدريب.**
- **يجوز لمجلس الكلية بعد أخذ رأي مجلس القسم المختص وحسب طبيعة المقررات الدراسية ان يقرر عقد الامتحان الكترونيا في مقرر أو اكثر كما يجوز عقد الامتحان في كل المقرر أو جزء منه بما يسمح بتصحيحه الكترونيا وعلي أن يتم عرض ذلك علي مجلس شئون التعليم والطلاب بالجامعة للموافقة عليه ورفعه لمجلس الجامعة لاعتماده.**

**مادة (16): النجاح والرسوب والانتقال من مستوى لآخر وتقدير المقرر :**

**يحسب تقديرالطالب لكل مقرر طبقاً للجداول التالية:**

| توزيع التقديرات للمقررات الدراسية التى نسبة النجاح فيها لاتقل عن 60% من الدرجة | | |
|---|---|---|
| النسبة | الرمز | التقدير |
| 85% فأكثر | A | ممتاز |
| 75% لأقل من 85% | B | جيد جدا |
| 65% لأقل من 75% | C | جيد |
| 60% لأقل من 65% | D | مقبول |
| أقل من 60% | F | راسب |
| | W | منسحب |
| | I | غير مكتمل |
| | Abs | غائب |

| توزيع التقديرات للمقررات الدراسية اللأختيارية ومتطلبات الجامعة التى نسبة النجاح فيها 50% من الدرجة | | |
|---|---|---|
| النسبة | الرمز | التقدير |
| 85% فأكثر | A | ممتاز |
| 75% لأقل من 85% | B | جيد جدا |
| 65% لأقل من 75% | C | جيد |
| 50% لأقل من 65% | D | مقبول |
| أقل من 50% | F | راسب |
| | W | منسحب |
| | I | غير مكتمل |
| | Abs | غائب |

- **درجة النجاح للمقرر الدراسى لا تقل عن 60% "D" من المجموع الكلي بشرط الحصول على 30%على الأقل من درجة الامتحان التحريري النهائي .**
- **إذا حصل الطالب على أقل من 30% من درجة الإمتحان التحريرى لايرصد له درجة أعمال السنه ويعتبر راسباً.**
- **يعتبر الطالب ناجحاً في المقررات الإختيارية ومتطلبات الجامعة إذا حصل على 50% من الدرجة.**
- **يحصل الطالب علي الرمز (I ) اذا استوفي نسبة الحضور ولم يتمكن من حضور الامتحان التحريري النهائي في مقرر دراسي أو أكثر في نفس الفصل الدراسي لعذر قهري يقبله مجلس الكلية فلا يحسب غيابه رسوبا ويجب عليه أداء الامتحان التحريري النهائي في أول طرح للمقرر ويحتفظ بدرجات الانشطة الفصلية والعملي كما يحتفظ بالتقدير.**
- **يحصل الطالب علي الرمز (Abs) اذا لم يتمكن من دخول الامتحان التحريري النهائي في الموعد المذكور بالفقرة الخاصة بالرمز (I) لعدم زوال العذر القهري ويجب علي الطالب التسجيل في هذا المقرر في الفرصة التالية ودراسته كاملا مع احتفاظه بالتقدير.**
- **إذا رسب الطالب فى مقرر إختيارى فبإمكانه إعادة الإمتحان بدون اعادة الدراسة أو دراسة مقرر إختيارى آخر بديل لإكمال متطلبات التخرج وذلك بعد استشارة المرشد الأكاديمي .**
- **الطالب الذي يتغيب عن أداء الامتحان بغير عذر مقبول من قبل مجلس الكلية يعتبر راسبا (F) .**
- **يوضع الرمز W عند انسحاب الطالب من الاستمرار فى دراسة مقرر و بعذر مقبول.**
- **ترصد كسور الدرجات فى إختبارات المقرر كما هى وبالنسبة للمجموع النهائى يحذف ما هو أقل من نصف درجة ويجبر النصف درجة فأكثر إلى درجة كاملة .**
- **<u>تعريف موقع الطالب</u>:**

**ينتقل الطالب من مستوى إلى المستوى الاعلي وفقا للجدول التالى**

| المستوى | عدد الساعات |
|---|---|
| المستوى الأول | أقل من 25 ساعة |
| المستوى الثانى | من 25 الي 57 ساعة |
| المستوى الثالث | من 58 الي 89 ساعة |
| المستوى الرابع | أكتر من 89 ساعة |
| الأجمالـــــــــى | يتم تخرج الطالب بإجمالى 127 ساعة معتمدة |

**<u>مادة (17):قواعد الفصل من الكلية :</u>**

**1-إذا إرتكب الطالب أى مخالفة تأديبية تستوجب الفصل النهائى من الكلية وفقاً لما يقره قانون تنظيم الجامعات**

**2-بالنسبة لعدد مرات الرسوب يطبق قانون تنظيم الجامعات ولائحته التنفيذية.**

**<u>مادة( 18): التظلمات و تعديل التقدير :</u>**

- **تعتبر جميع التقديرات نهائية وذلك بمجرد اعتمادها رسميا.**
- **يجوز للطالب ان يتقدم بطلب خطى إلى عميد الكلية لمراجعة درجات الامتحان النهائى فى مقرر دراسى او اكثر خلال مدة اقصاها أسبوعين من تاريخ اعلان النتيجة ويتم تحديد آليه تنفيذ ذلك وفقاً للقوانين و القرارت المنظمة لذلك.**

**مادة (19): حساب معدل نقاط التقدير (المعدلات الفصلية و التراكمية): Grade Point average or GPA**

- **معدل نقاط التقدير هو معدل يحدد المستوى الأكاديمى للطالب عن طريق المعدل الفصلي والمعدل التراكمي.**
- **يحسب المعدل الفصلى للطالب (GPA) على أساس المقررات التى يسجل فيها الطالب خلال فصل دراسى معين ويساوى مجموع حاصل ضرب نقاط كل مقرر في عدد ساعاته المعتمدة مقسوما على الساعات المعتمدة للمقررات التي درسها الطالب في الفصل الدراسي.**
- **يحسب المعدل التراكمى للطالب (CGPA) على جميع المقررات التى سجل فيها الطالب فى جميع الفصول الدراسية حتى تاريخه, وهو حساب لمعدل منفصل (وليس متوسط للمعدلات) اذ يساوى مجموع حاصل ضرب نقاط كل مقرر في عدد ساعاته المعتمدة مقسوما على مجموع الساعات المعتمدة للمقررات التي درسها الطالب حتى تاريخه**

**مادة (20): التقديرات :**

**تكون تقديرات الفصول الدراسية والمستويات الدراسية والتراكمى طبقاً للجدول التالي:-**

| النسبة المئوية | النقاط | الرمز | التقدير |
|---|---|---|---|
| من 85% - 100 % | 4.0-3.25 | A | ممتاز |
| من 75 % < 85 % | 3.25 > 2.75 | B | جيد جدا |
| من 65% < 75% | 2.75 >2.25 | C | جيد |
| من 60 % < 65% | 2.25 >2 | D | مقبول |
| أقل من 60% | 0.0 | F | ضعيف |
| منسحب | غير مكتمل | W | IC |

- **يحسب التقدير العام والنسبة المئوية للطالب على أساس إجمالى عدد النقاط (CPGA) ويتم إحتساب النسبة المئوية وفقاً للجدول الموضح أعلاه**
- **الحد الأدني للتخرج هو CGPA =2**
- **مرتبة الشرف : يحصل الطالب على مرتبة الشرف وفقاً لما يلى:**

**أ- ألا يكون رسب فى أى مادة خلال سنوات الدراسة**

**ب- أن لا يقل إجمالى عدد نقاط فى أى مستوى عن ( 2.75 نقطة بنسبة 75%بتقدير B).**

**مادة (21):إجمالى درجات المجموع التراكمى لكل برنامج:-**

| المستويات | البرامج | | | | | |
|---|---|---|---|---|---|---|
| | تكنولوجيا المختبرات الطبية | تكنولوجيا علوم الاشعة والتصوير الطبي | تكنولوجيا الاجهزه الطبية الحيوية | تكنولوجيا تركيبات الاسنان | تكنولوجيا البصريات | تكنولوجيا الرعاية التنفسية |
| الاول | 1450 | 1450 | 1450 | 1450 | 1450 | 1450 |
| الثاني | 1500 | 1500 | 1500 | 1400 | 1500 | 1450 |
| الثالث | 1500 | 1500 | 1500 | 1600 | 1550 | 1550 |
| الرابع | 1500 | 1500 | 1500 | 1500 | 1450 | 1500 |
| المجموع | 5950 | 5950 | 5950 | 5950 | 5950 | 5950 |

**مادة (22): الإنذار الأكاديمي:**

- **يتم وضع الطلاب غير القادرين على الحصول على الحد الأدنى المطلوب في المعدل الأكاديمي (GPA) على قائمة الإنذار الأكاديمي**

# الباب الرابع – الاحكام العامة

- **تطبق هذه اللائحة اعتبارا من العام الدراسى التالى لصدور القرار الوزارى على الطلاب المستجدين.**

- **تخضع هذه اللائحة لأحكام قانون تنظيم الجامعات ولائحته التنفيذية والقوانين والقرارات الجمهورية المعدلة لهما . ويطبق فيما لا يرد بشأنه نص خاص في هذه اللائحة كل من :**

  - **أ. القرارات الوزارية وتعليمات المجلس الأعلى للجامعات فى أمور الدراسة لمرحلة البكالوريوس .**
  - **ب. القواعد العامة التى تصدرها جامعة المنوفية دون تعارض مع أحكام هذه اللائحة .**
  - **ج. الضوابط التي يضعها مجلس الكلية لتنظيم العمل فى أمور الدراسة لمرحلة البكالوريوس طبقا لمواد هذه اللائحة ودون تعارض مع أحكام البندين أ – ب**
  - **يجوز بعد توصية مجلس الكلية وموافقة مجلس الجامعة تعديل بعض أحكام هذه اللائحة ما لم يستوجب هذا التعديل العرض على لجنة القطاع والمجلس الأعلى للجامعات**

# جامعة المنوفية

# اللائحة الداخلية للبرامج الخاصة

# كلية تكنولوجيا العلوم الصحية التطبيقية

# بنظام الساعات المعتمدة

# 2021/2020م

## أهداف البرامج الخاصة:

وفقاً للأهداف الإستراتجية للكلية ولاعداد تكنولوجي صحي متميز بمهارات علمية متقدمة للارتقاء بمستوي الخدمة الصحية المقدمة للمجتمع ونظرا لأهمية الوظائف التكنولوجية في دعم المنظومة الصحية لمواكبة التطور في التقنيات الصحية الحديثة في التشخيص والعلاج وما يصاحبها من ثورة في المعلومات وعلوم الكمبيوتر. اصبح من الضروري تطوير وتنمية قدرات خريجي المعاهد الفنية الصحية وغيرهم ممن يرغب من حملة الدبلومات الفنية الصناعية والمؤهلات العليا من خلال برامج تعليمية صحية متقدمة لرفع المستوي المعرفي والعملي لهؤلاء الخريجين وعليه تقوم الكلية باعداد برامج خاصة وفقا للائحة الداخلية لكلية تكنولوجيا العلوم الصحية التطبيقية بجامعة المنوفية

**تطبق بنود اللائحة الداخلية (البرامج الأساسيه) على طلاب البرامج الخاصة ما عدا قواعد القبول بالكلية**

**مادة 1 : قواعد القبول بالبرامج الخاصه**

**1- يقبل خريجي المعهد الفني الصحي والمعاهد المناظرة (ماعدا شعبة فنيات التمريض) ويكون التقدم مباشرة الي جامعة المنوفية بالشروط التالية:**

- يتم تحديد المستوى الذي سيلتحق به الطالب بعد عمل مقاصة.
- ألا يتعدى السن وقت فتح باب التقديم الثلاثون عاما .
- الأ يكون قد مر على تخرجه من المعهد أكثر من عشرة أعوام .
- أن يكون تقديره جيد جدا على الأقل .
- تقديم ما يفيد حسن السير والسلوك.
- تقديم شهاده المعامله العسكريه بالنسبه للذكور او الاعفاء منها لمن وصل سن التجنيد .
- يتم الترتيب للقبول حسب محصلة اجراءات منها المجموع التراكمي في سنتي المعهد، و أن يجتاز اختبارات القبول و المقابلة الشخصية، وطبقاً لأعلى مجموع الدرجات الكلي لما سبق وطبقاً للنسبة المئوية لكل محدد للقبول و التي تقرها لجنة الاشراف على البرنامج و موافقة مجلس الكلية، وضعاً في الاعتبار الأعداد المخصصة لكل برنامج، و يجرى الكشف الطبي على الطلاب المقبولين، وكل ما سبق يتم وفق شروط و آليات يحددها مجلس الكلية ويعتمدها مجلس الجامعة.
- يتم احتساب المعدل التراكمي للطالب للثلاث سنوات الاخيرة.

**2- قبول حملة المؤهلات العليا علي النحو التالي :-**

- يجوز لمجلس الكلية قبول طلاب من حملة المؤهلات العليا وفقا لقرارات المجلس الاعلي للجامعات.
- ان يكون الملتحق حاصل علي الثانوية العامة الشعبة العلمية
- يلتحق المتقدم بالمستوى الأول فى الكلية.

- **يجتاز المتقدمون اختبارات القبول والمقابلة الشخصية وفقاً للشروط والأعداد التي يحددها مجلس الكلية ويعتمدها مجلس الجامعة.**
- **تقبل جميع البرامج بالكلية شعبة علمي علوم ويجوزأن يقبل برنامج البصريات وبرنامج الأجهزة الطبية الحيوية الثانوية العامة بشعبتيها علمي العلوم وعلمي الرياضة وذلك بناء علي استمارة رغبات يقدمها الطلاب لإدارة الكلية ووفقا للشروط التي يحددها مجلس الكلية وبناء علي المجموع الكلي للطلاب بالمستوى الأول مع استيفاء أي اشتراطات خاصة ببرنامج معين ان وجدت.**

# Appendix (1)

## Requirements for programs and Study plans

## متطلبات البرامج والخطة الدراسية للطالب المنتظم دراسيا

## First level - The First Semester

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course Marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | OFRET101 | English Language &Terminology | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 80 | 0 | 20 | 2 | 100 |
| 2 | OFRPY102 | Basic physics | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 80 | 0 | 20 | 2 | 100 |
| 3 | OFRMA103 | Mathematics | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 80 | 0 | 20 | 2 | 100 |
| 4 | OFREE104 | Introduction to electrical Engineering | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 5 | OFRCS105 | Basic Computer Skills | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 6 | OFRME106 | Mechanics | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 80 | 0 | 20 | 2 | 100 |
| Total Marks | | | | | | | | | | | | | | - | 650 |
| 7 | UR 01 | Introduction to Quality | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 20 | 0 | 0 | 1 | 20 |
| Total Credit Hours | | | | | | | | | | | | | | 14 | - |

| | First level - The Second Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course Marks |
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | OFREC111 | Electronic circuits &devices | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 2 | OFRAH112 | General Anatomy and histology For Technologists | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | OFRGP113 | General Physiology For Technologists | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | OFRGM114 | General Microbiology | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 5 | OFRGC115 | General Chemistry | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 6 | OFRCP001 | Effective communication and presentation skills | 0.5 | 0 | 0.5 | 0 | 0.5 | 0 | 1 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | | |
| 7 | UR02 | Human right and fighting corruption | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 20 | 0 | 0 | 1 | 20 |
| | | | | | | | | | | | | | | - | **800** |
| Total Credit Hours | | | | | | | | | | | | | | **17** | - |

## متطلبات تخصصية للبرنامج

## Program Requirements of

## Technology of Medical Laboratories Program

| Course Code | Course | Contact Hours | | | | Credit Hours | Pre-requisite |
|---|---|---|---|---|---|---|---|
| | | Lecture | Practical | Tutorial | Field | | |
| MLBC201 | Biochemistry For Technologists (1) | 2 | 2 | 2 | 0 | 4 | |
| MLPA202 | Parasitology For technologists (1) | 1 | 2 | 0 | 0 | 2 | |
| MLBA203 | Bacteriology For Technologists | 2 | 2 | 2 | 0 | 4 | |
| MLHS204 | Histology For laboratory Technologists | 1 | 2 | 0 | 0 | 2 | |
| MLMB211 | Molecular biology For Technologists | 1 | 4 | 0 | 4 | 4 | |
| MLHE212 | Hematology For Technologists (1) | 2 | 2 | 2 | 0 | 4 | |
| MLSP213 | Systemic physiology For Lab Technologists | 2 | 2 | 2 | 0 | 4 | OFR GP113 |
| MLGP214 | General Pathology For lab Technologists | 1 | 2 | 0 | 4 | 3 | OFR AH112 |
| MLLI301 | laboratory Instrumentation for technologists (1) | 1 | 2 | 2 | 1 | 4 | |
| MLEH302 | Enzymology & Hormones For Technologists | 2 | 2 | 2 | 0 | 4 | |
| MLPA303 | Parasitology For Technologists (2) | 1 | 2 | 0 | 4 | 3 | MLPA202 |
| MLSP304 | Systemic Pathology for technologists | 1 | 2 | 0 | 4 | 3 | MLGP214 |
| MLBC311 | Biochemistry For Technologists (2) | 1 | 2 | 2 | 4 | 4 | OFR GC115 |
| MLBI312 | Basic Immunology | 2 | 2 | 0 | 0 | 3 | |
| MLLQ313 | Laboratory Quality Management (1) | 2 | 2 | 2 | 0 | 4 | |
| MLLI314 | laboratory instrumentation For Technologists (2) | 2 | 2 | 0 | 4 | 4 | |
| MLBC401 | Biochemistry For Technologists (3) | 1 | 2 | 2 | 0 | 3 | OFR GC115 |
| MLVM402 | Virology and mycology For Technologists | 1 | 2 | 2 | 0 | 3 | |
| MLHE403 | Haematology For Technologists (2) | 2 | 2 | 0 | 4 | 4 | MLHE212 |
| MLBB404 | Blood banking For Technologists | 2 | 2 | 0 | 4 | 4 | |
| MLIS411 | Laboratory Immunology &serology For Technologists | 2 | 2 | 0 | 4 | 4 | MLBI312 |
| MLAI412 | Age and pregnancy Related Investigation | 2 | 2 | 2 | 0 | 4 | |
| MLLQ413 | Laboratory quality management (2) | 1 | 2 | 0 | 4 | 3 | |
| MLFT414 | Forensic chemistry& toxicology For Technologists | 2 | 2 | 2 | 0 | 4 | MLBC201 |

## Second level - The First Semester
## (Technology of Medical Laboratories Program )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course Marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | OFRME200 | Mechatronics Engineering | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 2 | MLBC201 | Biochemistry For Technologists (1) | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 3 | MLPA202 | Parasitology For Technologists(1) | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 4 | MLBA203 | Bacteriology For Technologists | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 5 | MLHS204 | Histology For laboratory Technologists | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 6 | OFRSR002 | Basics of Scientific Research | 0.5 | 0 | 0.5 | 0 | 0.5 | 0 | 1 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 7 | EFR01 | Elective Faculty requirement | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 50 |
| | | | | | | | | | | | | | | | |
| Total Credit Hours | | | | | | | | | | | | | | 16 | - |

## Second level - The Second Semester
## (Technology of Medical Laboratories Program )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course Marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | MLMB211 | Molecular biology For Technologists | 1 | 2 | 0 | 1 | 1 | 4 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| 2 | MLHE212 | Hematology For Technologists (1) | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 3 | MLSP213 | Systemic physiology For lab Technologists | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 4 | MLGP214 | General Pathology For lab Technologists | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 5 | EFR02 | Elective Faculty Requirement | | | | | | | | | | | | 1 | 50 |
| Total Credit Hours | | | | | | | | | | | | | | 16 | |

## Third level - The First Semester
## (Technology of Medical Laboratories Program )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course Marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | MLLI301 | Laboratory Instrumentation for technologists (1) | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 80 | 80 | 40 | 4 | 200 |
| 2 | MLEH302 | Enzymology & Hormones For Technologists | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 3 | MLPA303 | Parasitology For Technologists (2) | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 4 | MLSP304 | Systemic Pathology for technologists | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 5 | OFRIS003 | Infection Control and Occupational Safety | 0.5 | 0.5 | 0 | 0 | 0.5 | 1 | 0 | 0 | 20 | 20 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | – | 750 |
| 6 | EFR03 | Elective Faculty Requirement | | | | | | | | | | | | 1 | 50 |
| Total Credit Hours | | | | | | | | | | | | | | 16 | |

## Third level - The Second Semester
## (Technology of Medical Laboratories Program )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | MLBC311 | Biochemistry For Technologists (2) | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 80 | 80 | 40 | 4 | 200 |
| 2 | MLBI312 | Basic Immunology | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | MLLQ313 | Laboratory Quality Management (1) | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 4 | MLLI314 | Laboratory instrumentation For Technologists (2) | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 5 | EFR04 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total Credit Hours | | | | | | | | | | | | | | 16 | - |

## Fourth level - The First Semester
## (Technology of Medical Laboratories Program )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | MLBC401 | Biochemistry For Technologists (3) | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 2 | MLVM402 | Virology and mycology For Technologists | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | MLHE403 | Hematology For Technologists (2) | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| 4 | MLBB404 | Blood banking For Technologists | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| 5 | OFRHM004 | Hospital management | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | – | 750 |
| 5 | EFR04 | Elective Faculty Requirement | | | | | | | | | | | | 1 | 50 |
| Total Credit Hours | | | | | | | | | | | | | | 16 | - |

## Fourth level - The Second Semester
## (Technology of Medical Laboratories Program )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | MLIS411 | Laboratory immunology &serology For Technologists | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| 2 | MLAI412 | Age and pregnancy Related Investigation | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 3 | MLLQ413 | Laboratory quality management (2) | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 4 | MLFT414 | Forensic chemistry& toxicology For Technologists | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 5 | EFR06 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total Credit Hours | | | | | | | | | | | | | | 16 | - |

# Requirements for

# Technology of Radiology and Medical Imaging

| Course Code | Course | Actual Hours | | | | Credit Hours | Pre-requisite |
|---|---|---|---|---|---|---|---|
| | | Lecture | Practical | Tutorial | Field | | |
| RIBR201 | Basic Radiation Technique (1) | 1 | 2 | 0 | 4 | 3 | electric |
| RIRP202 | Radiation Physics &Instrumentation(1) | 1 | 0 | 2 | 0 | 2 | OFR PY102 |
| RIDR203 | Dark Room Techniques | 1 | 2 | 0 | 0 | 2 | |
| RIAA204 | Applied Anatomy For Technologists (1) | 1 | 2 | 0 | 0 | 2 | OFR AH112 |
| RIRP205 | Radiographic pathology for technologists | 2 | 2 | 0 | 0 | 3 | |
| RIBR211 | Basic Radiation Technique (2) | 1 | 2 | 0 | 4 | 3 | RIBR201 |
| RIRP212 | Radiation physics &Instrumentation (2) | 2 | 0 | 2 | 0 | 3 | OFR PY102 |
| RIRP213 | Radiobiology &Radiation Protection | 1 | 2 | 2 | 0 | 3 | |
| RIAA214 | Applied Anatomy For Technologists (2) | 1 | 2 | 2 | 0 | 3 | OFR AH112 |
| RINM215 | Basic Nuclear Medicine Technology and protection | 1 | 2 | 2 | 0 | 3 | |
| RICP301 | Computed Tomography Physics | 1 | 0 | 2 | 0 | 2 | OFR PY102 |
| RICA302 | Computed Tomography Anatomy For Technologists | 1 | 2 | 2 | 0 | 3 | OFR AH112 |
| RICT303 | Principles of Computed Tomography Techniques | 1 | 2 | 0 | 4 | 3 | |
| RIAI304 | Basic of Angiography & Intervention For Technologists | 1 | 2 | 0 | 4 | 3 | |
| RISN305 | Systemic Nuclear Medicine Technology | 1 | 2 | 2 | 0 | 3 | |
| RISC311 | Special Computed Tomography Techniques | 1 | 2 | 0 | 4 | 3 | RICT303 |
| RIUP312 | Ultrasound Physics | 2 | 0 | 2 | 0 | 3 | OFR PY102 |
| RIUA313 | Ultrasound Anatomy &Techniques | 1 | 2 | 0 | 4 | 3 | OFR AH112 |
| RIRP314 | General Radiotherapy physics &Equipment | 1 | 2 | 0 | 4 | 3 | OFR PY102 |
| RIRP315 | Contrast media and Radio Pharmaceutics For Imaging | 1 | 2 | 2 | 0 | 3 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **RIMP401** | **MRI Physics** | **1** | **0** | **2** | **0** | **2** | **OFR PY102** |
| **RIMA402** | **MRI Anatomy For Technologists** | **1** | **2** | **2** | **0** | **3** | **OFR AH112** |
| **RIPM403** | **Principles of MRI Techniques** | **1** | **2** | **2** | **0** | **3** | |
| **RIPC404** | **Patient Care In Radiography** | **1** | **2** | **0** | **4** | **3** | |
| **RIGR405** | **General Radiotherapy Technology** | **1** | **2** | **0** | **4** | **3** | |
| **RISM411** | **Special MRI Techniques** | **1** | **2** | **0** | **4** | **3** | |
| **RISR412** | **Systemic Radiotherapy Technology** | **1** | **4** | **0** | **4** | **4** | |
| **RIBD413** | **Bone Densitometry** | **1** | **2** | **2** | **0** | **3** | |
| **RISU414** | **Special u/s Techniques** | **1** | **2** | **0** | **4** | **3** | |
| **RIPR415** | **PACS &RIS in radiology** | **1** | **2** | **0** | **0** | **2** | |

## Second level - The First Semester
## ( Technology of Radiology and Medical Imaging )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | BSME200 | Mechatronics Engineering | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 2 | RIBR201 | Basic Radiation Technique (1) | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 3 | RIRP202 | Radiation Physics &Instrumentation(1) | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 80 | 0 | 20 | 2 | 100 |
| 4 | RIDR203 | Dark Room Techniques | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 5 | RIAA204 | Applied Anatomy For Technologists (1) | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 6 | RIRP205 | Radiographic pathology for technologists | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 7 | OFRSR002 | Basics of Scientific Research | 0.5 | 0 | 0.5 | 0 | 0.5 | 0 | 1 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 8 | EFR01 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 16 | - |

## Second level - The Second Semester
## ( Technology of Radiology and Medical Imaging )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | RIBR211 | Basic Radiation Technique (2) | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 2 | RIRP212 | Radiation physics &Instrumentation (2) | 2 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 120 | 0 | 30 | 3 | 150 |
| 3 | RIRP213 | Radiobiology &Radiation Protection | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | RIAA214 | Applied Anatomy For Technologists (2) | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 5 | RINM215 | Basic Nuclear Medicine Technology and protection | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 6 | EFR02 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 16 | - |

## Third level - The First Semester
## ( Technology of Radiology and Medical Imaging )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | RICP301 | Computed Tomography Physics | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 80 | 0 | 20 | 2 | 100 |
| 2 | RICA302 | Computed Tomography Anatomy For Technologists | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | RICT303 | Principles of Computed Tomography Techniques | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 4 | RIAN304 | Basics of Angiography For Technologists | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 5 | RISN305 | Systemic Nuclear Medicine Technology | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 6 | OFRIS003 | Infection Control and Occupational Safety | 0.5 | 0.5 | 0 | 0 | 0.5 | 1 | 0 | 0 | 20 | 20 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 7 | EFR03 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 16 | - |

## Third level - The Second Semester
## ( Technology of Radiology and Medical Imaging )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | RISC311 | Special Computed Tomography Techniques | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 2 | RIUP312 | Ultrasound Physics | 2 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 120 | 0 | 30 | 3 | 150 |
| 3 | RIUA313 | Ultrasound Anatomy &Techniques | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 4 | RIRP314 | General Radiotherapy physic &Equipment | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 5 | RIRP315 | Contrast media and Radio Pharmaceutics For Imaging | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 6 | EFR04 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 16 | - |

## Fourth level - The First Semester
## ( Technology of Radiology and Medical Imaging )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | RIMP401 | MRI Physic | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 80 | 0 | 20 | 2 | 100 |
| 2 | RIMA402 | MRI Anatomy For Technologists | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | RIPM403 | Principles of MRI Techniques | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | RIPC404 | Patient Care In Radiography | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 5 | RIGR405 | General Radiotherapy Technology | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 5 | OFRHM004 | Hospital management | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 7 | EFR05 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 16 | - |

## Fourth level - The Second Semester
## ( Technology of Radiology and Medical Imaging )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | RISM411 | Special MRI Techniques | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 2 | RISR412 | Systemic Radiotherapy Technology | 1 | 2 | 0 | 1 | 1 | 4 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| 3 | RIBD413 | Bone Densitometry | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | RISU414 | Special U/S Techniques | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 5 | RIPR415 | PACS &RIS in radiology | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 6 | EFR06 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 16 | - |

# Requirements for

# Technology of Biomedical Equipment Program

| Course Code | Course | Actual Hours | | | | Credit Hours | Pre-requisite |
|---|---|---|---|---|---|---|---|
| | | Lecture | Practical | Tutorial | Field | | |
| BEBM201 | Biomaterial | 1 | 2 | 0 | 0 | 2 | |
| BEDC202 | Digital circuits &systems | 2 | 2 | 0 | 0 | 3 | |
| BECP203 | Computer programming(1) | 2 | 2 | 0 | 0 | 3 | |
| BEME204 | Medical Electronics | 2 | 2 | 0 | 4 | 4 | |
| BEBE211 | Introduction to Biomedical Engineering | 2 | 0 | 2 | 0 | 3 | |
| BEBR212 | Biomechanics &rehabilitation | 1 | 2 | 2 | 0 | 3 | |
| BEME213 | Technical principles of medical Instruments | 2 | 2 | 2 | 0 | 4 | |
| BEEM214 | Electrical machines &power electronics | 2 | 2 | 2 | 4 | 5 | OFR EE104 OFR EC111 |
| BEAL301 | Automation in clinical laboratories | 2 | 0 | 2 | 0 | 3 | |
| BECP302 | Computer programming (2) | 2 | 2 | 2 | 0 | 4 | OFRCP203 |
| BETP303 | Therapeutic & Prosthetic Devices (1) | 2 | 2 | 0 | 4 | 4 | |
| BEPC304 | Programmable Logic Controller | 1 | 2 | 2 | 0 | 3 | |
| BEIE311 | Instruments & electrical measurement | 2 | 2 | 0 | 0 | 3 | OFR EE104 |
| BEMC312 | Microcontroller (1) | 2 | 2 | 2 | 0 | 4 | |
| BETP313 | Therapeutic & Prosthetic Devices (2) | 2 | 2 | 0 | 4 | 4 | BETP303 |
| BEPS314 | Physiologic signal instrumentation | 2 | 2 | 0 | 4 | 4 | |
| BECL401 | Clinical Laboratory instrumentation | 2 | 2 | 0 | 0 | 3 | |
| BEMC402 | Microcontroller (2) | 1 | 2 | 2 | 0 | 3 | BEMC312 |
| BEBM403 | Biomedical modeling& simulation | 2 | 2 | 2 | 0 | 4 | |
| BEBI404 | Biomedical imaging equipment (1) | 2 | 2 | 0 | 4 | 4 | |
| BEBO411 | Biomedical optics | 2 | 2 | 2 | 0 | 4 | |
| BEBI412 | Biomedical imaging equipment (2) | 1 | 2 | 2 | 0 | 3 | |
| BEFD413 | Fault detection &preventive maintenance program | 1 | 2 | 2 | 0 | 3 | |
| BECE414 | Calibration of biomedical Equipment | 1 | 2 | 2 | 0 | 3 | |
| BEGP415 | Graduation project | | | | | 2 | |

## Second level - The First Semester
## ( Program Technology of Biomedical Equipment )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | BSME200 | Mechatronics Engineering | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 2 | BEBM201 | Biomaterial | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 3 | BEDC202 | Digital circuits &systems | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | BECP203 | Computer programming(1) | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 5 | BEME204 | Medical Electronics | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| 6 | OFRSR002 | Basics of Scientific Research | 0.5 | 0 | 0.5 | 0 | 0.5 | 0 | 1 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 7 | EFR01 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total Credit Hours | | | | | | | | | | | | | | 16 | - |

## Second level - The Second Semester
## ( Program Technology of Biomedical Equipment )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | CSE | | |
| 1 | BEBE211 | Introduction to Biomedical Engineering | 2 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 120 | 0 | 30 | 3 | 150 |
| 2 | BEBR212 | Biomechanics &rehabilitation | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | BEME213 | Technical principles of medical Instruments | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 4 | BEEM214 | Electrical machines &power electronics | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 4 | 100 | 100 | 50 | 5 | 250 |
| Total marks | | | | | | | | | | | | | | - | 750 |
| 5 | EFR02 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total Credit Hours | | | | | | | | | | | | | | 16 | - |

## Third level – The Frist Semester
## ( Program Technology of Biomedical Equipment )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | BEAL301 | Automation in clinical laboratories | 2 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 120 | 0 | 30 | 3 | 150 |
| 2 | BECP302 | Computer programming (2) | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 3 | BETP303 | Therapeutic & Prosthetic Devices (1) | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| 4 | BEPC304 | Programmable Logic Controller | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 5 | OFRIS003 | Infection Control and Occupational Safety | 0.5 | 0.5 | 0 | 0 | 0.5 | 1 | 0 | 0 | 20 | 20 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | - | 750 |
| 6 | EFR03 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total Credit Hours | | | | | | | | | | | | | | 16 | - |

## Third level – The Second Semester
## ( Program Technology of Biomedical Equipment )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | Practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | BEIE311 | Instruments & electrical measurement | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 2 | BEMC312 | Microcontroller (1) | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 3 | BETP313 | Therapeutic & Prosthetic Devices (2) | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| 4 | BEPS314 | Physiologic signal instrumentation | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| Total marks | | | | | | | | | | | | | | - | 750 |
| 5 | EFR04 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total Credit Hours | | | | | | | | | | | | | | 16 | - |

## Fourth level - The Frist Semester
## ( Program Technology of Biomedical Equipment )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | BECL401 | Clinical Laboratory instrumentation | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 2 | BEMC402 | Microcontroller (2) | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | BEBM403 | Biomedical modeling& simulation | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 4 | BEBI404 | Biomedical imaging equipment (1) | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| 5 | OFRHM004 | Hospital management | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | - | 750 |
| 6 | EFR05 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total Credit Hours | | | | | | | | | | | | | | 16 | - |

## Fourth level - The Second Semester
## ( Program Technology of Biomedical Equipment )

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | BEBO411 | Biomedical optics | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 2 | BEBI412 | Biomedical imaging equipment (2) | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | BEFD413 | Fault detection &preventive maintenance program | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | BECE414 | Calibration of biomedical Equipment | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 5 | BEGP415 | Graduation project | | | | | | | | | | | | 2 | 100 |
| Total marks | | | | | | | | | | | | | | - | 750 |
| 6 | EFR06 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total Credit Hours | | | | | | | | | | | | | | 16 | - |

# Requirements for
# Technology of Dental prosthesis manufacture Program

| Course Code | Course | Actual Hours | | | | Credit Hours | Pre-requisite |
|---|---|---|---|---|---|---|---|
| | | Lecture | Practical | Tutorial | Field | | |
| DPHD201 | Human Dentition(1) | 1 | 2 | 0 | 0 | 2 | |
| DPDB202 | Dental Biomaterials (1) | 1 | 2 | 2 | 4 | 4 | |
| DPOP203 | Basic Oral physiology For Technologists | 1 | 2 | 2 | 0 | 3 | OFR GP113 |
| DPDC204 | Technology of Complete Denture Construction (1) | 1 | 2 | 2 | 0 | 3 | |
| DPHD211 | Human Dentition (2) | 1 | 2 | 2 | 0 | 3 | DPHD201 |
| DPDB212 | Dental Biomaterial (2) | 1 | 2 | 2 | 0 | 3 | |
| DPDC213 | Technology of Complete Denture Construction (2) | 1 | 4 | 2 | 0 | 4 | DPDC204 |
| DPHA214 | Head &Neck Anatomy For Technologists | 1 | 2 | 2 | 0 | 3 | OFR AH112 |
| DPRD301 | Removable partial Denture Construction (1) | 2 | 4 | 0 | 4 | 5 | |
| DPFP302 | Fixed Prosthodontics Fabrication (1) | 2 | 4 | 0 | 4 | 5 | |
| DPTO303 | Technology of Occlusion | 1 | 4 | 0 | 0 | 3 | |
| DPOP304 | Oral pathology for dental technologists | 1 | 2 | 0 | 0 | 2 | |
| DPMP311 | Technology of Maxillofacial prosthesis | 1 | 4 | 0 | 0 | 3 | |
| DPOP312 | Orthodontic and pedodontic Appliances (1) | 1 | 2 | 2 | 0 | 3 | |
| DPRD313 | Removable Partial Denture Construction (2) | 2 | 4 | 0 | 4 | 5 | DPRD301 |
| DPFP314 | Fixed Prosthodontics Fabrication (2) | 2 | 4 | 0 | 4 | 5 | DPFP302 |
| DPDE401 | Dental lab equipment | 1 | 2 | 0 | 0 | 2 | |
| DPAD402 | Technology of Advanced Denture | 2 | 4 | 2 | 0 | 5 | |
| DPFP403 | Fixed Prosthodontics Fabrication (3) | 2 | 4 | 0 | 4 | 5 | DPFP302 |
| DPNT404 | Nanotechnology in dental lab | 1 | 2 | 2 | 0 | 3 | |
| DPDI 411 | Technology of dental implant | 1 | 2 | 2 | 0 | 3 | |
| DPFP412 | Fixed prosthodontic fabrication (4) | 2 | 4 | 0 | 4 | 5 | DPFP302 |
| DPOP413 | Orthodontic and pedodontic appliance (2) | 1 | 2 | 2 | 0 | 3 | DPOP312 |
| DPDP414 | Digital prosthodontics technology | 1 | 2 | 2 | 0 | 3 | |

## Second level - The First Semester
## ( Technology of Dental prosthesis manufacture Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | BSME200 | Mechatronics Engineering | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 2 | DPHD201 | Human Dentition(1) | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 3 | DPDB202 | Dental Biomaterials (1) | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 80 | 80 | 40 | 4 | 200 |
| 4 | DPOP203 | Basic Oral physiology For Technologists | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 5 | DPDC204 | Technology of Complete Denture Construction (1) | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 6 | OFRSR002 | Basics of Scientific Research | 0.5 | 0 | 0.5 | 0 | 0.5 | 0 | 1 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 7 | EFR01 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 16 | - |

## Second level – The Second Semester
## ( Technology of Dental prosthesis manufacture Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | DPHD211 | Human Dentition (2) | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 2 | DPDB212 | Dental Biomaterial (2) | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | DPDC213 | Technology of Complete Denture Construction (2) | 1 | 2 | 1 | 0 | 1 | 4 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 4 | DPHA214 | Head &Neck Anatomy For Technologists | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| Total marks | | | | | | | | | | | | | | _ | 650 |
| 5 | EFR02 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 14 | - |

## Third level - The First Semester
## ( Technology of Dental prosthesis manufacture Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | DPRD301 | Removable partial Denture Construction (1) | 2 | 2 | 0 | 1 | 2 | 4 | 0 | 4 | 100 | 100 | 50 | 5 | 250 |
| 2 | DPFP302 | Fixed Prosthodontics Fabrication (1) | 2 | 2 | 0 | 1 | 2 | 4 | 0 | 4 | 100 | 100 | 50 | 5 | 250 |
| 3 | DPTO303 | Technology of Occlusion | 1 | 2 | 0 | 0 | 1 | 4 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | DPOP304 | Oral pathology for dental technologists | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 5 | OFRIS003 | Infection Control and Occupational Safety | 0.5 | 0.5 | 0 | 0 | 0.5 | 1 | 0 | 0 | 20 | 20 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | _ | 800 |
| 6 | EFR03 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 17 | - |

## Third level – The Second Semester
## ( Technology of Dental prosthesis manufacture Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | DPMP311 | Technology of Maxillofacial prosthesis | 1 | 2 | 0 | 0 | 1 | 4 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 2 | DPOP312 | Orthodontics and pedodontics Appliances (1) | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | DPRD313 | Removable Partial Denture Construction (2) | 2 | 2 | 0 | 1 | 2 | 4 | 0 | 4 | 100 | 100 | 50 | 5 | 250 |
| 4 | DPFP314 | Fixed Prosthodontics Fabrication (2) | 2 | 2 | 0 | 1 | 2 | 4 | 0 | 4 | 100 | 100 | 50 | 5 | 250 |
| Total marks | | | | | | | | | | | | | | _ | 800 |
| 5 | EFR04 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 17 | - |

## Fourth level - The First Semester
## ( Technology of Dental prosthesis manufacture Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | DPDE401 | Dental lab equipment | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 2 | DPAD402 | Technology of Advanced Denture | 2 | 2 | 1 | 0 | 2 | 4 | 2 | 0 | 100 | 100 | 50 | 5 | 250 |
| 3 | DPFP403 | Fixed Prosthodontics Fabrication (3) | 2 | 2 | 0 | 1 | 2 | 4 | 0 | 4 | 100 | 100 | 50 | 5 | 250 |
| 4 | DPNT404 | Nanotechnology in dental lab | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 5 | OFRHM004 | Hospital management | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | _ | 800 |
| 6 | EFR05 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 17 | - |

## Fourth level - The Second Semester
## ( Technology of Dental prosthesis manufacture Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | DPDI 411 | Technology of dental implant | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 2 | DPFP412 | Fixed prosthodontic fabrication (4) | 2 | 2 | 0 | 1 | 2 | 4 | 0 | 4 | 100 | 100 | 50 | 5 | 250 |
| 3 | DPOP413 | Orthodontics and pedodontics appliance(2) | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | DPDP414 | Digital prosthodontics technology | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| Total marks | | | | | | | | | | | | | | _ | 700 |
| 5 | EFR02 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| | | Total credit hours | | | | | | | | | | | | 15 | |

# Requirements for
# Technology of Optics Program

| Course Code | Course | Actual Hours | | | | Credit Hours | Pre-requisite |
|---|---|---|---|---|---|---|---|
| | | Lecture | Practical | Tutorial | Field | | |
| OPAN201 | Ocular anatomy and physiology for technologists | 2 | 2 | 2 | 0 | 4 | OFR AH112 OFR GP113 |
| OPOS202 | Optometric statistics | 1 | 0 | 2 | 0 | 2 | |
| OPOL203 | Optics and light | 2 | 0 | 2 | 0 | 3 | |
| OPBO204 | Biomaterials in ophthalmology | 1 | 2 | 2 | 0 | 3 | |
| OPAO211 | Adult optometry | 2 | 2 | 2 | 0 | 4 | |
| OPOE212 | Optical electronics | 2 | 2 | | 0 | 3 | |
| OPMI213 | Ocular microbiology and infection control for technologists | 1 | 2 | 2 | 0 | 3 | OFR GM114 |
| OPER214 | Errors of refraction | 2 | 2 | 2 | 0 | 4 | |
| OPCL301 | Contact lenses (1) | 2 | 2 | 2 | 0 | 4 | |
| OPSP302 | Spectacles | 2 | 2 | 2 | 0 | 4 | |
| OPPO303 | Pediatric optometry | 2 | 2 | 0 | 0 | 3 | |
| OPOI304 | Ophthalmic instruments (1) | 1 | 2 | 2 | 4 | 4 | |
| OPLV311 | Low vision& low vision aids | 2 | 2 | 2 | 0 | 4 | |
| OPBV312 | Binocular vision | 2 | 2 | 2 | 0 | 4 | |
| OPCL313 | Contact lens (2) | 2 | 2 | 2 | 0 | 4 | |
| OPOI314 | Ophthalmic instruments (2) | 1 | 2 | 2 | 4 | 4 | |
| OPOR401 | Orthoptics | 2 | 2 | 0 | 0 | 3 | |
| OPFE402 | First aid and emergency | 2 | 2 | 0 | 4 | 4 | |
| OPLO403 | Laser in ophthalmology | 1 | 2 | 2 | 0 | 3 | |
| OPOI404 | Ocular imaging techniques (1) | 2 | 2 | 0 | 4 | 4 | |
| OPME411 | Maintenance of ophthalmic equipment | 1 | 2 | 2 | 4 | 4 | |
| OPAE412 | Artificial Eye Technology | 1 | 2 | 2 | 0 | 3 | |
| OPEO413 | Environmental optometry | 2 | 0 | 2 | 0 | 3 | |
| OPOI414 | Ocular imaging techniques (2) | 2 | 2 | 0 | 4 | 4 | |

## Second level – The Frist Semester
## ( Technology of optics Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | BSME200 | Mechatronics Engineering | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 2 | OPAN201 | Ocular anatomy and physiology for technologists | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 3 | OPOS202 | Optometric statistics | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 80 | 0 | 20 | 2 | 100 |
| 4 | OPOL203 | Optics and light | 2 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 120 | 0 | 30 | 3 | 150 |
| 5 | OPBO204 | Biomaterials in ophthalmology | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 6 | OFRSR002 | Basics of Scientific Research | 0.5 | 0 | 0.5 | 0 | 0.5 | 0 | 1 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | | 750 |
| 7 | EFR01 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 16 | -- |

## Second level – The Second Semester
## ( Technology of optics Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | OPAO211 | Adult Optometry | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 2 | OPOE212 | Optical electronics | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | OPMI213 | Ocular microbiology and infection for optometrists | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | OPER214 | Errors of refraction | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| Total marks | | | | | | | | | | | | | | _ | 700 |
| 5 | EFR03 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total Credit Hours | | | | | | | | | | | | | | 15 | - |

## Third level – The Frist Semester
## ( Technology of optics Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | OPCL301 | Contact lenses (1) | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 2 | OPSP302 | Spectacles | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 3 | OPPO303 | Pediatric Optometry | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | OPOI304 | Optometric instruments (1) | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 80 | 80 | 40 | 4 | 200 |
| 5 | OFRIS003 | Infection Control and Occupational Safety | 0.5 | 0.5 | 0 | 0 | 0.5 | 1 | 0 | 0 | 20 | 20 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | – | 800 |
| 6 | EFR03 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Credit Hours | | | | | | | | | | | | | Total | 17 | - |

## Third level – The Second Semester
## ( Technology of optics Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | OPLV311 | Low vision& low vision aids | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 2 | OPBV312 | Binocular vision | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 3 | OPCL313 | Contact lenses (2) | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 4 | OPOI314 | Ophthalmic instruments (2) | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 80 | 80 | 40 | 4 | 200 |
| Total marks | | | | | | | | | | | | | | _ | 800 |
| 5 | EFR04 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 17 | - |

## Fourth level - The Frist Semester
## ( Technology of optics Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | OPOR401 | Orthoptic | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 2 | OPFE402 | First aid and emergency | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| 3 | OPLO403 | Laser in ophthalmology | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | OPOI404 | Ocular imaging techniques (1) | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| 5 | OFRHM004 | Hospital management | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 7 | EFR05 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 16 | - |

## Fourth level - The Second Semester
## ( Technology of optics Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | OPME411 | Maintenance of ophthalmic equipment | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 80 | 80 | 40 | 4 | 200 |
| 2 | OPAE412 | Artificial Eye Technology | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | OPEO413 | Environmental optometry | 2 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 120 | 0 | 30 | 3 | 150 |
| 4 | OPOI414 | Ocular imaging techniques (2) | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 4 | 80 | 80 | 40 | 4 | 200 |
| Total marks | | | | | | | | | | | | | | _ | 700 |
| 5 | EFR06 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 15 | - |

# Requirements for
# Technology of Respiratory therapy Program

| Course Code | Course | Actual Hours | | | | Credit Hours | Pre-requisite |
|---|---|---|---|---|---|---|---|
| | | Lecture | Practical | Tutorial | Field | | |
| RTSA201 | Systemic anatomy | 1 | 2 | 2 | 0 | 3 | OFR AH112 |
| RTSP202 | Systemic physiology for respiratory therapist | 1 | 2 | 2 | 0 | 3 | OFR GP113 |
| RTPH203 | Pharmacology for respiratory therapist | 1 | 2 | 2 | 0 | 3 | |
| RTGP204 | General pathology for respiratory therapist | 2 | 2 | 0 | 0 | 3 | |
| RTMI211 | Microbiology for respiratory therapist | 1 | 2 | 0 | 0 | 2 | OFR GM114 |
| RTSP212 | Systemic pathology for Respiratory Therapist | 1 | 2 | 2 | 0 | 3 | |
| RTNM213 | Basic nutrition and metabolism | 2 | 2 | 0 | 0 | 3 | |
| RTPA214 | Principles of airway management | 1 | 2 | 0 | 4 | 3 | |
| RTBS215 | Biostatistics | 1 | 2 | 2 | 0 | 3 | |
| RTPM301 | Patient monitoring and instrument in ICU (1) | 1 | 2 | 0 | 4 | 3 | |
| RTIE302 | Intensive care equipment (1) | 1 | 2 | 2 | 0 | 3 | |
| RTHS303 | Environmental hygiene and safety | 1 | 2 | 2 | 0 | 3 | |
| RTFE304 | First aid and emergency care | 1 | 2 | 2 | 0 | 3 | |
| RTTH305 | Therapeutics | 1 | 2 | 2 | 0 | 3 | RTPH203 |
| RTMV311 | Mechanical ventilation | 1 | 2 | 2 | 0 | 3 | |
| RTIE312 | Intensive care equipment (2) | 1 | 2 | 2 | 0 | 3 | |
| RTPM313 | Patient monitoring and instrument in ICU(2) | 1 | 2 | 2 | 4 | 4 | |
| RTPS314 | Patient safety | 1 | 2 | 2 | 0 | 3 | |
| RTEL315 | Ethics and legal issue | 1 | 0 | 2 | 0 | 2 | |
| EFR04 | Elective Faculty requirements | | | | | 1 | |
| RTNI401 | Nutrition In Intensive care | 1 | 2 | 2 | 0 | 3 | RTNM213 |
| RTEC402 | Essentials of critical medicine | 1 | 2 | 2 | 0 | 3 | |
| RTPD403 | Pulmonary diseases (1) | 1 | 2 | 2 | 0 | 3 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **RTTC404** | **Transfusion in critical care** | **1** | **2** | **0** | **0** | **2** | |
| **RTPS405** | **Related psychiatric problems** | **1** | **2** | **0** | **0** | **2** | |
| **RTME406** | **Maintenance of Medical Equipment** | **1** | **2** | **0** | **0** | **2** | |
| **RTPS411** | **Problem solving and decision making in critical care** | **2** | **2** | **2** | **0** | **4** | |
| **RTAS412** | **Advanced life support** | **1** | **4** | **0** | **0** | **3** | **RTFE304** |
| **RTPR413** | **Pulmonary rehabilitation and physiotherapy** | **1** | **2** | **0** | **4** | **3** | |
| **RTPD414** | **Pulmonary diseases (2)** | **2** | **2** | **2** | **0** | **4** | |

## Second level - The First Semester
## (Technology of Respiratory Therapy Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | BSME200 | Mechatronics Engineering | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 2 | RTSA201 | Systemic anatomy | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | RTSP202 | Systemic physiology | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | RTPH203 | Pharmacology for respiratory therapist | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 5 | RTGP204 | General pathology respiratory therapist | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 6 | OFRSR002 | Basics of Scientific Research | 0.5 | 0 | 0.5 | 0 | 0.5 | 0 | 1 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 7 | EFR01 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 16 | - |

## Second level – The Second Semester
## (Technology of Respiratory Therapy Program)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | RTMI211 | Microbiology for Respiratory Therapist | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 2 | RTSP212 | Systemic pathology for Respiratory Therapist | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | RTNM213 | Basic nutrition and metabolism | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | RTPA214 | Principles of airway management | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 5 | RTBS215 | Biostatistics | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| Total marks | | | | | | | | | | | | | | _ | 700 |
| 6 | EFR02 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 15 | - |

## Third level - The First Semester
## (Technology of Respiratory TherapyProgram)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | RTPM301 | Patient monitoring and instrument in ICU (1) | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 2 | RTIE302 | Intensive care equipment (1) | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | RTHS303 | Environmental hygiene and safety | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | RTFE304 | First aid and emergency care | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 5 | RTTH305 | Therapeutics | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 6 | OFRIS003 | Infection Control and Occupational Safety | 0.5 | 0.5 | 0 | 0 | 0.5 | 1 | 0 | 0 | 20 | 20 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | _ | 800 |
| 7 | EFR03 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 17 | - |

## Third level – The Second Semester
## (Technology of Respiratory TherapyProgram)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | RTMV311 | Mechanical ventilation | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 2 | RTIE312 | Intensive care equipment (2) | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | RTPM313 | Patient monitoring and instrument in ICU(2) | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 80 | 80 | 40 | 4 | 200 |
| 4 | RTPS314 | Patient safety | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 5 | RTEL315 | Ethics and legal issues | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 80 | 0 | 20 | 2 | 100 |
| Total marks | | | | | | | | | | | | | | _ | 750 |
| 6 | EFR04 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 16 | - |

## Fourth level - The First Semester
## (Technology of Respiratory TherapyProgram)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | RTNI401 | Nutrition In Intensive care | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 2 | RTEC402 | Essentials of critical medicine | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | RTPD403 | Pulmonary diseases (1) | 1 | 1 | 1 | 0 | 1 | 2 | 2 | 0 | 60 | 60 | 30 | 3 | 150 |
| 4 | RTTC404 | Transfusion in critical care | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 5 | RTPS405 | Related psychiatric problems | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 6 | RTME406 | Maintenance of Medical Equipment | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 40 | 40 | 20 | 2 | 100 |
| 5 | OFRHM004 | Hospital management | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 40 | 0 | 10 | 1 | 50 |
| Total marks | | | | | | | | | | | | | | _ | 800 |
| 8 | EFR05 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 17 | - |

## Fourth level - The Second Semester
## (Technology of Respiratory TherapyProgram)

| A Series | Course Code | Course | Credit Hours | | | | Contact Hours | | | | Marks | | | Credit Hours | Course marks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | practical | Tutorial | Field | Lecture | practical | Tutorial | Field | Written exam | practical | Activities | | |
| 1 | RTPS411 | Problem solving and decision making in critical care | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| 2 | RTAS412 | Advanced life support | 1 | 2 | 0 | 0 | 1 | 4 | 0 | 0 | 60 | 60 | 30 | 3 | 150 |
| 3 | RTPR413 | Pulmonary rehabilitation and physiotherapy | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 60 | 60 | 30 | 3 | 150 |
| 4 | RTPD414 | Pulmonary diseases (2) | 2 | 1 | 1 | 0 | 2 | 2 | 2 | 0 | 80 | 80 | 40 | 4 | 200 |
| Total marks | | | | | | | | | | | | | | _ | 700 |
| 5 | EC06 | Elective Faculty Requirements | | | | | | | | | | | | 1 | 50 |
| Total credit hours | | | | | | | | | | | | | | 15 | - |

# Appendix (2)

## Course Description

# متطلبات كلية اجبارية
# (Obligatory Faculty Requirement)

**Hours are demonstrated in credit hours**
**L (Lecture), P (practical), T ( tutorial, F (field)**

**OFRET101 English Language &Terminology (L=1, T=1):**

**The study of Scientific English will focus on appropriate grammatical structures and verb tenses and presents an extensive practice in conversation and writing. The common medical and engineering terms in practice are declared using medical and engineering topics and journal articles. Report writing and abstract writing using accurate grammar and vocabulary are to be focused upon.**

**OFRPY102 Basic physics (L=1, T=1):**

**This course provides the student with the basic concepts of physics needed for their future studies and their applications in the health science fields. The laboratory sessions deal with the basic physical laws and phenomena concerning heat, electricity, magnetism and properties of matter.**

**OFRMA103 Mathematics (L=1, T=1):**

**An introductory course designed to provide a review of fundamental operations in mathematics. Topics include elementary algebra and functions; intermediate algebra and functions; geometry and measurement; and data analysis, statistics, and probability.**

**OFREE104 Introduction to electrical engineering (L=2, P=1):**

**Electrical circuit constants and variables - Electrical circuit elements – Simple resistance circuit - Electrical circuit analysis – Transformation between electrical sources – Electrical network theories – Steady state sinusoidal AC current circuit – Time vector representation – Power and power factor – Resonance circuit**

**OFRCS105 Basic Computer Skills (L=1, P=1):**

**This course gives a brief introduction to the construction of the computer as CPU, storage devices, output and input devices, different types of drives. It Introduces student to concepts and terminologies of spread sheet, database, database management systems, and the concept of hypertext markup language (HTML). It practice some computer applications in the laboratories such as Microsoft excel, Microsoft access, etc…**

**OFRME106 Mechanics (L=1, T=1):**

**This course is an introduction to the physical concepts and mathematical methods of continuum mechanics with the aim of preparing the student for further studies to understand the subsequent courses related to instruments, machines and equipment in different programs.**

**OFREC111 Electronic circuits and device (L=2, P=1):**

**Semiconductor physics – Semiconductors – Diffusion current in pn junction Biasing of pn junction Different types of pn - junctions – Electron ballistics – Semiconductor diodes application – Zener diodes and other elements - Bipolar Junction Transistor fundamentals - Bipolar Junction Transistor Characteristics - Bipolar transistor Circuits - Small Signal Bipolar Transistor Equivalent Circuit - Single Stage Bipolar Transistor Amplifier - Multi stages amplifier .**

**Practical part: Measuring the properties of the p -n junction and its estimated resistance - Halve wave rectifier – Full wave rectifier – Measuring the properties of bipolar transistor - Study methods of connection and transistor biasing - Bipolar Transistor Amplifier.**

**OFRAH112 General Anatomy and histology for technologists (L=1, P=1,T=1):**

**This course deals with general anatomy and histology of human body where basic knowledge helps to clarify and is of importance to an understanding of the clinical disorders that may arise. The course comprises a brief anatomical and histological knowledge about the surface anatomy, the musculo-skeletal system, the limbs, the abdomen, the pelvis, the chest, the circulation and the nervous system.**

**OFRGP113 General Physiology For Technologists (L=1, P=1,T=1):**

**This course deals with human physiology in relation to the normal cell physiology. Each system is reviewed with reference to function and its role in body homeostasis.**

**OFRGM 114 General Microbiology (L=1, P=1,T=1):**

**This course consists of general microbiology and brief introduction about principles of immunology. The course describes the structure, classification and growth of the microorganisms of medical importance. Identification of common microorganisms by staining and culture characteristics and biochemical reactions.**

**OFRGC115 General Chemistry (L=1, P=1,T=1):**

**An introduction to the fundamental concepts of general chemistry (physical, organic inorganic and analytical chemistry). Focus areas include scientific measurement and analysis, atomic structure, chemical nomenclature, balancing equations, stoichiometry, and energy dynamics. Moreover, focus areas include intermolecular forces and solution dynamics, valence electron shell pair repulsion and molecular geometry, organic structure, naming, and basic chemical reactions.**

**OFRME200 Mechatronics Engineering (L=1, P=1):**

**Mechatronics is a multidisciplinary engineering field that combines systems design, computer, electronic, mechanical, and control engineering. Students will work with pneumatics, hydraulics, electricity and manufacturing of mechanical parts.**

**OFRCP001 Effective communication and presentation skills: (L=0.5, T=0.5)**

**This course is designed to good communication skills with patient giving opportunity to practice communication skills and the presentation. Help students to adopt the ethics of practice in medic al field when dealing with patients and colleagues and to**

**explore technique to prepare and deliver presentation and how to use presentation technology.**

**OFRSR002 Basics of scientific research (L=0.5, T=0.5)**

**This course introduces the student to methods of scientific research in the health professions by studying common experimental designs and critically analyzing published research articles. The student will also design appropriate research paradigms, search the literature, and prepare a preliminary research proposal.**

**OFRIS003 Infection control and occupational safety (L=0.5, P=0.5)**

**To provide students with sufficient knowledge, skills and attitudes essential for safe practice and proper infection prevention and control procedures in different types of healthcare organizations and services.**

**OFRHM004 Hospital management (L=1)**

**This course is designed to provide a range of applicable skills and a solid foundation of hospital management knowledge. To promote awareness among functionaries involved in health and hospital management. Research in the field of health and hospital management. The health care delivery systems. The development of high quality hospital services and community health care. Operation management and operation management skills. Healthcare institutions' performance evaluation. Accountability in health organization. Financial considerations for cost effectiveness will be also outlined.**

# Program Requirements

**Hours are demonstrated in credit hours**
**L (Lecture), P (practical), T ( tutorial, F (field)**

## 1- Technology of Medical Laboratory
## 1- برنامج تكنولوجيا المختبرات الطبية

**MLBC201 Biochemistry for Technologists (1) (L=2, P=1,T=1):**

**Focus is put on structure and function of amino acids and proteins, carbohydrate; lipid and regulation of metabolism. Aspect of light absorption, the role of each component on a reaction mixture, the chemical basis of the technique used, the preparation of solutions, the biological and lab materials they require. Gaining experience in planning experiments, protocol formulation, preparation and handling of reagents, data analysis and presentation.**

**MLPA202/ MLPA303 Parasitology for Technologists (1&2) MLPA202 (L=1, P=1) MLPA303 (L=1, P=1, F=1) :**

**The life cycle of various parasitic helminthes and protozoa. Arthropods as gents and vectors of diseases. Examination of clinical specimens for protozoan and helminthes parasites. Brief description of the clinical manifestations of parasitic diseases with special emphasis on parasitic diseases endemic in the different areas of the Arab world. Host response to parasitic infestation. Practical part includes preparing the clinical samples of urine and stools with complete stool examination. The field training will be "in different Ministry of Health labs such as tropical and endemic diseases labs"**

**MLBA203 Bacteriology for technologists (L=2, P=1,T=1):**

**Students study and practice microbiology procedures such as detection, isolation,** and **identification of common microbial isolates and antimicrobial susceptibility testing through use of selected media, biochemical serological and microscopic techniques.** The preparation of different stains, reagents and culture media, quality assurance in the microbiology laboratory, proper disposal of specimens and cultures will be addressed and practiced. Automation in the microbiology laboratory will be addressed in an affiliated clinical facility

**MLHS204 Histology for laboratory Technologists (L=1, P=1):**

**This course is a basic course in human histology concerned in dealing with microscope, preparation of lab samples and different stains in adition to a broad idea about studying cells, tissues, organs and organ systems of the body under the microscope , for example classification of epithelial tissue, types of glands, connective tissue, neuro-epithelium, specialized tissues; blood, cartilage, muscle tissue.**

**MLMB211 Molecular Biology For Technologists(L=1, P=2,F=1):**

**The course focuses on the basic principles, human genome, nucleic acids probes, hybridization, thermal cyclers, DNA sequencers. In-vitro amplification reaction (PCR), molecular diagnostics, infections, genetic diseases and malignancy. Practical part contain DNA extraction. RNA extraction steps of PCR –gel electrophoresis Real time PCR ,reverse &Transcription.**

**MLHE212 Hematology For Technologists (1) (L=2, P=1, T=1):**

**The course gives an overview of hematopoiesis and normal hemostasis. It includes basic knowledge about routine manual procedures in hematology such as such as complete blood count, erythrocyte sedimentation rate, reticulocyte count, prothrombin and partial thromboplastin times, ESR and reticulocyte count. Emphasis on reagent preparation, blood film preparation and staining, test performance. For the blood film examination, the student will master morphological identification of normal cells and be able to recognize any deviation from normal to be referred to the qualified medical doctor**

**MLSP213 Systemic physiology For lab Technologists (L=2, P=1,T=1):**

**This course includes general concepts related to normal function of different body systems e.g. Gastrointestinal, respiratory, renal, endocrine glands, blood and reproduction.**

**MLGP214 General Pathology for lab Technologists (L=1, P=1,F=1):**

**This course gives the students general principles of disease processes including inflammation, cell injury, hemodynamic disorders, infections and neoplasia. Types of specimens and methods for specimen collection, fixation, processing, routine, special staining, cytological preparations and immunohistchemical techniques are also outlined.**

**MLLI301 laboratory Instrumentation for technologists (1) (L=1, P=1,T=1):**

**Study of the principles, uses, operation and maintenance of laboratory equipment, photometry, spectrometry, PH meter, centrifuges, atomic absorption spectrophotometry, light and electro microscopy**

**MLEH302 Enzymology& Hormones For Technologists(L=2, P=1,T=1):**

**This course will cover a wide range of subjects such as vitamins and coenzyme, classification of enzyme, mechanism and kinetics of enzyme catalyzed reaction.**

**The final part will deal with the production, extraction, purification, characterization and application of enzymes and Introduction to understanding of the structural and classification of hormones, the functional properties and the use of hormonal determination for functional testing of the endocrine glands. The role of hormones in control of metabolism is to be emphasized. The different methods of laboratory determination of hormones are to be stressed upon.**

**MLSP304 Systemic pathology for technologists (L=1, P=1,F=1):**

**In this course, the students will be able to apply concepts of pathology on the diseases of the main organs in the human body with especial emphasis on the gross pathology. Frequently received surgical specimens such as breast, thyroid, gastrointestinal tract, lymphoid organs, soft tissues, female and male organs. In the practical part, students will be able to prepare specimens for cut up of the main organs.**

**MLBC311 Biochemistry For Technologists (2) (L=1, P=1,T=1,F =1:**

**This course aims at providing the students extensively with the principles and techniques of renal function, liver function tests, tumor markers, acid-base balance and blood gas analysis, electrolyte determination.**

**MLBI312 Basic immunology(L=2, P=1):**

**The course focuses on the innate immunity and adaptive "cellular, humoral" immunity and antigens, immunoglobulins, complement system, and immune response. Immunization, hypersensitivity reactions, cytokines.**

**MLLQ313 Laboratory Quality Management (1) (L=2, P=1, T1):**

**Quality control professionals ensure that manufactured products meet safety standards and company specifications. All aspects of quality management from reagent evaluation, method verification, assuring quality control planning and implementation, external quality control, documentation…etc will be addressed. Student will be able to report imperfections and make recommendations for improvements.**

**MLLI314 Laboratory Instrumentation for technologists (2) (L=2, P=1,F=1):**

**Study of the principles , uses, operation and maintenance of laboratory equipments, fluorimetry, nephlometry, turbidimetry, electrophoresis, ion selective electrodes, osmometry, chromatography, high performance liquid chromatography (HPLC), mass spectrometry, radiation counters, immunochemistry analyzers. Auto-analyzers in clinical chemistry, hematology and microbiology.**

**MLBC401 Biochemistry for Technologists(3) (L=1, P=1,F=1):**

**This course aims at providing the students extensively with the principles and techniques of diabetic, lipid profile, body fluid analysis. The body fluid include urine, semen & cerebrospinal fluids.**

**MLVM402 Virology and mycology for technologists (L=1, P=1,T=1):**

**Virus and fungal isolation and a number of methods for detection of viral antigens, nucleic acids, and antibodies detection techniques used in a diagnostic virology laboratory. The understanding of the genetic changes in the viral genome. Essential equipment for virology and mycology laboratory. Common viral and mycotic diseases.**

**MLHE403 Hematology for Technologists (2) (L=2, P=1,F=1):**

**The course gives an overview of the disorders of red cells, white cells, platelets and coagulation factors. The general classification of the disorders both quantitative and qualitative. It will cover automated complete blood picture, automated coagulation tests on autoanalyzers together with other tests such as osmotic fragility, G6PD assay, lupus anticoagulants, hemoglobin separation …etc. The principle of the assays, quality control, limitations and interferences will be fully studied. For the equipment, operation, maintenance and troubleshooting will be addressed and practiced particularly in the field training.**

**MLBB404 Blood Banking for Technologists (L=2, P=1,F=1):**

**The course will cover blood group systems particularly ABO, Rh and other clinically significant systems, donor selection, blood collection, component preparation and storage, blood grouping and screening for infectious diseases, compatibility tests, antibody screening. Besides training in the laboratory, the course includes field training in the blood bank of an affiliated clinical facility where students will participate in all activities related to blood banking with emphasis on equipment management, documentation and medico-legal aspects**

**MLLI411 Laboratory immunology and serology (L=2, P=1,F=1):**

**This course focuses on factors affecting the immunity. Diseases related to immunity deficiency and autoimmune diseases and related lab investigations. Practical include agglutination, ELISA, Immunofluorescence, immunoblotting, principles, sampling, reagents, procedures, quality control , troubleshootings.**

**MLAI412 Age & pregnancy Related Investigation(L=2, P=1,T=1):**

**The course focuses on variation in common laboratory tests (neonatal, pediatric; geriatric) as well as the changes associated with normal pregnancy &tests that can help the monitoring pregnancy or help predict fetal abnormalities. Practical part includes: amniotic fluid analysis. STORCH test, ABG analysis, point of care testing, basic metabolic panel, screening for hereditary and genetic diseases**

**MLLQ413 Laboratory Quality management (2) (L=1, P=1,F=1):**

**This course includes sample collection and logistic process, pre-analytical and post-analytical process, segmentation of the client and analytical services.**

**Practical part of the course includes: sample collection requirements, sample labelling, sample rejection, sample storage, sample retention, sample referral, sample disposal, tracking system, and proper documentation of examination procedures. Proper management of the laboratory information system and potential outcomes of errors.**

**MLFT414 Forensic chemistry and Toxicology for Technologists (L=2, P=1,T=1):**

**Laboratory tests for poisoned patients. Monitoring of therapeutic drugs. Detection of alcohol in clinical specimens. Doping tests for substance addiction. DNA finger printing and the application of molecular biology in medical legal cases**

# 2-Technology of Radiology and Medical Imaging
# 2-برنامج تكنولوجيا علوم الأشعة والتصوير الطبى

**RIBR201 Basic Radiation Technique (1) (L=1, P=1,F=1):**

**This course includes the profession's policies and regulations. In addition, the history of ionizing radiation and it's interactions with the matter. To provide student with theoretical knowledge and practical experience to perform radiographic examinations of parts of the body Under guidance in radiography unit's. Student will practice on patient regarding the part positioning of skull, vertebrae, upper limb, lower limb, convention radiology of female genital system and urinary tract .**

**RIRP202 Radiation Physics & Instrumentation(1) (L=1, T=1):**

**This course is designed to provide student with theoretical knowledge and practical experience about the radiation physics, its applications in different radiological branches, dose calculations and the effect of radiation on staff, patients and environment.**

**RIDR203 Dark Room Techniques (L=1, P=1):**

**This course is designed to understand how to operate different process of film developing in dark room whatever manual or automatic, how to prepare fixer and developer, to know different kind of films.**

**RIAA204 Applied Anatomy for Technologists (1) (L=1, P=1):**

**The course provide the student human anatomy in a cross-sectional image format. Student will build on their knowledge of human anatomy and physiology using different position of the human body. Identify anatomical parts through x-ray images, bony and soft tissue for patient positioning.**

**RIRP:205 Radiographic pathology for technologists (L=2, P=1):**

**This course gives the students basic knowledge of general principles of disease processes including inflammation, cell injury, hemodynamic disorders, infections and neoplasia. Radiographic appilications for the main pathologic related lesions are also outlined.**

**RIBR 211 Basic radiation technique (2) (L=1, P=1,F=1):**

**This course is designed to provide student with theoretical knowledge and practical experience to perform radiographic examinations of parts of the body Under**

**guidance in radiography unit's student will practice on patient regarding the part positioning for routine and additional projections, equipment handling, selecting exposure factors and all other parameters and completing the procedure by exposure and processing exposed film. Convention radiology for gastrointestinal tract, chest, mammogram, dental radiology and word radiology.**

**RIRP212 Radiation Physics & Instrumentation (2) (L=2, T=1):**

**The gamma camera: performance, image quality, quality control digital computers in nuclear medicine. Single photon emission CT (SPECT) principles, cameras, quality. PET CT principles, cameras, quality, radiation dosimetry and biology. Basic principles of radiation physics and modern physics used radiotherapy.**

**RIRP213 Radiobiology and radiation protection (L=1, P=1,T=1):**

**Provide students with basic knowledge to the radiobiological effects of ionizing radiation on cellular and tissue level, acute and chronic effects of radiation on tissues radio sensitivity of cells and specific organs and general principles of radiation protection.**

**RIAA214 Applied anatomy for technologists (2) (L=1, P=1,T=1):**

**Study a three dimensional object onto a two-dimensional image. Study the different overlying tissues and know that tissues have different attenuation properties, depending on physical density and anatomic dimensions. Knowing high density (e.g. Bone) & low density body tissues (e.g. lung).**
**Study the gross anatomical structures of the human body, Systems covered include the central, peripheral nervous systems, special senses, skeletal, muscular, cardiovascular, respiratory, lymphatic, digestive, endocrine, urinary and reproductive systems**

**RIBN215 Basic nuclear medicine technology and protection (L=1, P=1,T=1):**

**Basic nuclear medicine physics, nuclear equipment technology (gamma camera, PET CT), design of nuclear medicine unit, methods of radiation protection and hot lab precautions and principles of waste disposal in nuclear medicine unit.**

**RICP301 Computed Tomography Physics (L=1, T=1):**

**Study a three dimensional object onto a two-dimensional image. Study the different overlying tissues and know that tissues have different attenuation properties, depending on physical density and anatomic dimensions. Knowing high density (e.g. Bone) & low density body tissues(e.g. lung).**

**RICA302 Computed Tomography Anatomy for Technologists (L=1, P=1,T=1):**

**Study the orientation and provides the student the human anatomy using different CT imaged sections of the human body.**

**RICT303 Principles of Computed Tomography techniques (L=1, P=1,F=1):**

**The course includes, CT imaging requirements and this includes covering the CT physical principles, quality assurance and the technique of CT examinations of the (neurovascular system, abdomen, pelvic) and patient manipulation for body systems.**

**RIAN304 Basics of Angiography for technologists (L=1, P=1,F=1):**

**To understand and manipulate ultrasound, CT and MR imaging and catheter angiography, understanding of indications and factors determining appropriate investigation for a patient with vascular disease, apply a constant and integrated approach to critical analysis, evaluation and synthesis of new and complex ideas, information and issues.**

**RISN305 Systemic Nuclear Medicine Technology (L=1, P=1,T=1):**

**Study radioactive substances used for diagnosis of different disease, advantages and disadvantages of different radiotracers and different imaging techniques, patient instructions and precautions.**

**RISC311 Special Computed Tomography Technique (L=1, P=1,F=1):**

**Study CT techniques in different parts and or guns of the body. Study different positions for patients and when he needs intravenous injection of contrast medium or anaesthesia. Examples, CT of thorax, abdomen, pelvis.**

**RIUP312 Ultrasound Physics (L=2,T=1):**

**Study the characteristics of sound, longitudinal waves velocity of sound , compressibility, density, intensity, transducers, characteristics of piezoelectric crystals, characteristics of an ultrasound beam, interaction, quarter- wave matching, ultrasound display.**

**RIUA313 Ultrasound Anatomy& Techniques (L=1, P=1,F=1):**

**Study different parts of the body and learn the gross and cross-sectional anatomy. The course focus on applying Ultrasound as a diagnostic tool for evolution different body systems.**

**RIRP314 General radiotherapy physics and equipment (L=1, P=1,F=1):**

**know the basic principles of radiotherapy physics (classification of radiation, production of X-ray, interactions of radiation, photon beam parameters, electron beam parameters, physics of radiation dosimeters), treatment equipment technology (teletherapy and linear accelerator) and basic principles of radiation protection in radiotherapy units.**

**RIRP315 Contrast media and Radio Pharmaceutics For Imaging (L=1, P=1,T=1):**

**To describe different types of contrast media, explain their adverse effects, contrast media used in imaging of GIT and drugs used in preparation of GIT case. Radio pharmaceutical preparation for diagnostic use to include quality control. Chemical, physical and biological properties of radiopharmaceuticals will be examined. Analytical separation-techniques. Radionuclides nature of production to include radionuclide generators. Chemistry of technetium and other commonly used radio pharmaceuticals (Iodin, FDG, Gallum) as applied to labelling radiopharmaceuticals, up-take and bio-distribution.**

**RIMP401 MRI Physics (L=1,T=1):**

**This course provides the student with the theoretical knowledge of the MRI physics, machine components and its role to perform an accurate MRI examination for different body organs and system also provides the students with the theoretical knowledge of MRI sequences, safety and quality assurance in MRI examination units**

**RIMA402 MRI Anatomy for technologists (L=1, P=1,T=1):**

**Students will build on their knowledge of human anatomy using transverse, coronal and sagittal MRI section of the human body. Study MRI in different anatomical parts of the human body.**

**RIPM403 Principles of (MRI) techniques (L=1, P=1,T=1):**

**The course includes covering the application of quality assurance in MRI unit and the using of different MRI techniques in medical problems and also provides the theoretical knowledge and practical experience to perform the MRI examinations of (brain, spine, abdomen, Knee , pelvic, MRA and MRV) and teaches the students to beneficially use what they had learned in the previous MRI courses.**

**RIPC404 Patient Care in Radiography (L=1, P=1,F=1):**

**List the general responsibilities of the radiographer. Explain the concepts of medical & surgical asepsis. Identify methods for determining the correct patient for a given procedure. Explain the use of various communication devices and systems. Explain specific aspects immobilization techniques for various types of procedures and patient conditions, specific patient safety measures and concerns, methods to evaluate patient physical status & vital signs. Identify symptoms related to specific emergency situations, specific types of tubes, lines, catheter and collection devices. Patient preparation for contrast studies.**

**RIGR405 General radiotherapy technology (L=1, P=1,F=1):**

**Radiotherapy team members and role of radiotherapist and dosimetrist, general steps in Treatment planning process in radiotherapy including:1) positioning and immobilization using suitable immobilization devices and to know their different types, advantages and disadvantages and how to construct. 2) simulation including**

**general knowledge of conventional and CT simulator technology and patient marking. 3) organ at risk contouring. 4) dosimetry technology including types of treatment fields and general rules for field arrangement. 5)principles of treatment delivery and patients care.**

**RISM411 Special (MRI) techniques (L=1, P=1,F=1):**

**This course is designed to provide the students with the theoretical knowledge and practical experience to perform the MRI techniques of the joints (Shoulder, FMRI, MRIP, ankle, wrist, elbow and the hip), and apply the practical considerations in the related unit with considering the additional projections, equipment handling, and all other parameters and completing the procedure will record the lab work in logbook.**

**RISR412 Systemic Radiotherapy Technology (L=1, P=2,F=1):**

**Adequate positioning and immobilization of the patient according to the treated site (head and neck, CNS, GIT, thorax, extremities, pelvis and breast). Ability to perform CT simulation procedure in different sites and explain the procedure for the patient. Orientation by planning strategies in different tumor sites. Knowing principles of patients care during simulation and treatment delivery based on the treated region.**

**RIBD413 Bone Densitometry(L=1, P=1,T=1):**

**The goal of this course is to provide the technologists with a cognitive base of entry-level education in the practice of bone densitometry including skeletal anatomy, densitometry techniques, radiation safety, quality control procedures, and various disease processes like osteoporosis. The technologists must often make decisions about the conduct of testing without immediate input from the physician.This curriculum focuses on the bone density technology known as dual-energy X-ray absorptiometry or DXA.**

**RISU414 Special (U/S) Techniques (L=1, P=1,F=1):**

**This course provides the student with theoretical knowledge and practical experience to perform sonographic examinations of (salivary glands, scrotum, thyroid gland and pancreas), Doppler physics, and different Doppler protocols. And also introduced to pathological manifestation on the conventional ultrasound and Doppler images on these examinations and the technical variation required.**

**RIPR415 PACs & RIS in Radiology (L=1, P=1):**

**This course is designed to provide the students with theoretical knowledge and practical experience to the picture archiving and communication system (PACs) and radiological information system in radiology.**

# 3-Technology of Biomedical Equipment
# 3-برنامج تكنولوجيا الاجهزة الطبية الحيوية

**BEBM201 Biomaterial (L=1, P=1):**

**This course focuses on mechanical properties of biomaterials such as composite minerals, polymers, viscoelastic. Plastics, ceramics, porous structures, composite material. Mechanical testing, friction, wear and lubrication properties of biological materials. Biocombust ability. Bending, fatigue properties. Standard specifications. Implant materials. It focuses also on synthetic replacement, and methods of linking the orthopedic organs with tissue and bone inside the body.**

**BEDC202 Digital Circuits & Systems (L=2, P=1):**

**Boolean algebra and truth table. Combinational logic circuits. Sequential logic circuits, multiplexers, and read/ write memories. Analog – to- digital convertor (A/D) and applications. Digital – to- analog convertor (D/A) and applications. Address decoding hardware. Digital arithmetic's**

**BECP203 Computer programming 1 (L=2, P=1):**

**Techniques of engineering problems- solution in communication engineering- field of information systems-development of planned programs using c++ language- improving, translation, and correction of programs.**

**BEME204 Medical electronics (L=2, P=1,F=1):**

**Fundamental knowledge of electronics. Sensors and physiological signals will be explained. Patient safety and regulations will be emphasized.**

**BEBE211 Introduction to biomedical engineering (L=2,T=1):**

**Study a brief introduction to the field of biomedical engineering, different fields that the biomedical engineers involved in and focusing on their duties as a clinical engineers, Introduce Medical Equipment technology, Medical Equipment Classification and An overview of medical equipment used in the hospital and other medical environments to diagnose and treat patients in various hospital departments.**

**BEBR212 Biomechanics &rehabilitation (L=1, P=1,T=1):**

**This course is designed to introduce purpose for studying biomechanics, basic biomechanical principles, biomechanics of human body bones and joints and human skeletal muscles. Walking gait. It also include hydrotherapy, heat therapy, electrotherapy equipments, types of electrostimulation equipment , indication &**

**contraindication of electrostimulation, The orthotics of upper & lower limbs and spinal orthosis . Full description of the prosthetic apparatus for upper & lower limbs.**

**BEME213 Technical principles of medical Instruments (L=2, P=1,T=1):**

**This course provides an introduction to medical instrumentation systems and its technical principals, modes of operation, constraints, classification. Study of various Physiological systems, related biopotentials and physiological parameters. The origin and significance of the physiological signals. Methods for measuring temperature, pressure, flow and volume. Study basic principles involved in sensors instrumentation, mechanisms of different sensors, their classification. Understanding of sensors to solve real world problems of medical device development, troubleshooting, interference, and modifying inputs. Study the importance and objectives of medical sensors in modern day medicine and Identify the underlying physics principles and relate them to mechanisms of a number of biomedical sensors. Need for bio-amplifier - single ended bio-amplifier, differential bio-amplifier, right leg driven ECG amplifier. Band pass filtering, isolation amplifiers. Precision, resolution, sensitivity, accuracy, uncertainty of Biomedical Instrumentation measurement.**

**BEEM214 Electrical machines and power electronics (L=2, P=1,T=1, F=1):**

**Transformers – Induction motors (single and three phases) – Direct current machines - Introduction to power diodes, Diac, SCR, and triac. - Firing ,protection, and switching circuits Description**

**BEAL301 Automation in clinical laboratories (L=2, T=1):**

**Dynamic system model building principles -Introduction, Differential equation, Laplace transform , Time response, Step and impulse responses - System transient response(steady state error and dynamics) Basics of system modeling, Mathematical models, Physical models, Parameter models, Balance equations - Application to thermal systems, chemical and mechanical process, Mechanical and electromechanical systems , Analogy between different systems - Characteristics of closed loop systems - Introduction to closed loop systems, Performance of control systems, Pole assignments - Stability of linear systems, Routh stability.**

**BECP302 Computer programming (2) (L=2, P=1,T=1):**

**Basics of data structure- Algorithms and data types – Data structure – Scheduling – sorting - graphic- Algorithms (processing, arrangement, searching), all structure and programming are performed using C++ language - Tree analysis and algorithms design - Algorithms efficiency - Training on using one of the visual programming language as an example of windows programming.**

**BETP303 Therapeutic & Prosthetic Devices (1 ) (L=2, P=1,F=1):**

**This course provides principle of operation and design of Therapeutic & Prosthetic Devices such as Hemodialysis and its associated water treatment unit in the hospital, Ventilators and its associated pipes system in the hospital, Baby incubators and anesthesia machines, diathermy and electrical surgical unit with covering some biological systems physiology and diseases that need to the intervention by these devices**

**BEPC304 Programmable Logic Controller (L=1, P=1,T=1):**

**Introduction to programmable controllers (Conceptual design of the PLC & Principles of operation) - PLC Hardware (Processor - Power supply - Memory organization) - Programming devices - PLC programming Language (Ladder diagram)- Lab./Practical Applications.**

**Practical part includes Simple Ladder Logic Program, Examples Simple Start/Stop Ladder, Logic Relay Single Push Button On/Off Ladder Logic, Ladder Logic Examples with Timers, PLC Program Example with On Delay Timer, PLC Program Example with Off Delay Timer, PLC Program Example with Retentive Timer**

**BEIE311 Instrument and electrical measurement (L=2, P=1):**

**Introduction to Measurement systems – Measurement errors –Direct and alternating current indicating instruments – DC bridges – AC bridges – Error detection in cables – Sensors - Electrodes, and Transducers Practical part: Errors in Measurement and Basic Statistical Sampling - DC Current and Voltage Measurement - Resistor Description Characteristics and Ohms Law - Oscilloscope - Oscilloscope - Measurement Using DC Bridges - Measurement Using AC Bridges - Measurement of Semiconductor Devices with Multimeter - Thermistor Characteristics and Temperature Controlled Circuits**

**BEMC312/BEMC402 Microcontrollers 1&2 BEMC312 (L=2, P=1,T=1) BEMC402 (L=1, P=1,T=1):**

1. **Introduction and review • Logic design 2. Introduction and review • Microcomputer architecture 3. Memory • program memory • data memory • external memory 4. Arithmetic logic unit • Control unit • time control • timers • interrupt 5. PIN/PORT operation • Ports operation • Pin operation 6. Programming • assembly • language • Basic language 7. interfacing methods • Digital interface • Protection. • keypad 8. Applications • Connecting opto-couplers, transistors, relays. • LED-7segment-LCD. • Timer • Real time clock • ADC • PWM • Flash memory**

**BETP313 Therapeutic & Prosthetic Devices (2) (L=2, P=1,F=1):**

**This course provides the principle of operation and design of Therapeutic & Prosthetic Devices used for the heart such as defibrillators, cardioversion, Automatic External Defibrillator (AED), implantable cardioversion defibrillator**

**(ICDs), pacemakers, left ventricular assisted device (LVADs), watchman device, Amplatzer Cardiac Plug (ACP) and Amulet Device , LARIAT Device, AtriClip device, heart lung machines and syringe pump with covering some biological systems physiology and diseases that need to the intervention by these devices to prevent or treatment of these biomedical problems.**

**BEPS314 Physiologic signal instrumentation (L=2, P=1,F=1):**

**Biomedical recording systems: Basic Recording systems, General consideration for signal conditioners, Electrocardiograph, Electroencephalograph, Electromyography, Other biomedical recorders, Biofeedback instrumentation, Electrostatic and Electromagnetic coupling to AC signals, Proper grounding, Patient isolation and accident prevention. Patient Monitoring Systems: System concepts, Cardiac monitor, selection of system parameters, Bedside monitors, Central monitors, Blood pressure and flow measurement, Heart rate meter, Pulse rate meter, Holter monitor and Cardiac stress test, Cardiac cauterization instrumentation, Organization and equipments used in ICCU & ITU.**

**BECL401 Clinical Laboratory instrumentation(L=2, P=1):**

**But it should cover Clinical Laboratory Instrumentation that Responsible for analyzing patient specimens to provide information to aid in diagnosis of disease or to evaluate effectiveness of therapy such as Spectrophotometer, Automated Chemical Analyzers (Autoanalyzer), Centrifuge, Electrophoresis and Coulter Counter, Autoclave/ sterilizers, lab microscope, lab refrigerator.**

**BEBM403 Biomedical Modeling and simulation (L=2, P=1,T=1):**

**Model definition- Performance Evaluation Techniques- Development of Systems Simulation- Designing and Implementing a Discrete-Event Simulation Framework.**

**BEBI 404/ BEBI412 Biomedical Imaging equipment 1 &2 : BEBI 404 (L=2, P=1,F=1), BEBI412 (L=1, P=1,T=1):**

**This course will cover some X-Ray Machines such as conventional x-ray and fluoroscopic machines that includes, a brief introduction of Electromagnetic radiation, Production of X Rays and how it interacts with matters, x-ray tube design, different types of X ray tube Generators, exposure Factors determining the diagnostic quality of the image. X-rays, filters, how to control scatter radiation through beam restrictors, grids and air gap technique and how to qualify the performance of some components through Quality assurance tests, the conventional film and Cassette with Intensifying screen. also cover Fluoroscopic machines generations, types, component and operation, Patient and technologist protection procedures, common x-ray tube faults. This course will also cover X-ray Tube Rating Charts and cooling mechanisms, the advancement in X-ray tubes that can used in CT scanners, this covers, metal ceramics x-ray tubes, Aquilion X-ray Tube, New Straton Tube, Computed tomography (CT) scanners, tomographic principles, machine component including gantry, filters, collimators, detectors types,**

**characteristics and generations, data types and image component, The Hounsfield unit, windowing, image control and reconstruction methods. Introduction for other imaging techniques such as ultrasound and magnetic resonance imaging (MRI).**

**BEBO411 Biomedical optics (L=2, P=1,T=1):**

**This course is to designed to covers principles and applications of the emerging optical technology for high-resolution, three-dimensional imaging, optical coherence tomography (OCT). It provides the basic technology of endoscopy, surgical microscopy and ophthalmic instruments like Slitlamp ……**

**BEFD413 Fault detection &preventive maintenance program (L=1, P=1,T=1):**

**This course is designed to provide students with basic problem solving skills, and to track down and identify problem frequently encountered with medical instrumentation .Emphasis is placed on developing logical troubleshooting techniques using technical manuals, flowcharts, and schematics, to diagnose equipment faults. Upon completion, students should be able to logically diagnose and isolate faults, and perform repairs to meet manufacturer specification It introduces the printed circuits boards, different design of electronic circuit, troubleshooting. Instruments control program, preventive maintenance, failure reporting and recall, instrument selection and evaluation criteria, risk management techniques and resources, part inventory and control, equipment's planning for medical facilities, application of computers in** maintenance managements.

**BECE414 Calibration of biomedical Equipment (L=1, P=1,T=1):**

**This course is defining calibration and qualification of different medical equipment for improving its accuracy. It includes purpose and importance, procedures used for equipment quality control check, reference standard, performance verification and action after calibration.**

**BEGP415 Graduation project (2 Credit hour)**

**Students undertake a major project as part of the program. The aim of the project is to provide the students, who work in groups, with an opportunity to implement appropriate concepts and techniques to a particular design. Students are required to select and research the expected project to be designed and implemented. A dissertation on the project is submitted on which the student is examined orally.**

# 4 Technology of Dental Prostheses Manufacture
# 4-برنامج تكنولوجيا صناعة تركيبات الأسنان

## DPHD201 Human dentition (1) (L=1, P=1):

This course is designed to provide students with basics of the normal anatomy of different Permanent teeth, and their normal physiology as well as different teeth numbering systems and dental formula of both permanent and deciduous teeth. This is important for teeth identification and fabrication of different teeth restorations in the future.

## DPDB202 Dental Biomaterials (1) (L=1, P=1,T=1, F=1)

Dental biomaterials are specially fabricated materials. Designed for use in dentistry. This course include different types of dental materials and their characteristics vary according to their intended purpose. Also their biocompatibility to be used in the oral cavity without changing normal oral environment e.g. temporary dressing, dental restoration (fillings, crown, bridge, endodontic materials, impression materials, prosthetic materials and implant.

## DPOP203 Basic oral physiology for technologists (L=1, P=1, T=1):

This course is designed to provide students with basics of the normal anatomy and physiology of different parts of the oral cavity. It provides knowledge about temporomandibular joint anatomy and function as well as muscles of mastication. This is important for proper understanding of the dynamics of the oral cavity functions and accurate fabrication of different prosthetic construction.

## DPDC204 Technology of complete denture construction (1) (L=1, P=1, T=1),

By the end of this course students should be able to Recognize the anatomy that directly affects the construction of complete dentures. Observe the areas of edentulous maxillary and mandibular casts that correspond to the anatomical structures associated with the support of complete dentures. List the factors affecting stability and retention of complete dentures. Recognize the various methods used in fabricating special tray for secondary impression. Recognize the various methods used in boxing and pouring master cast. Recognize the various methods used in fabricating base plates and occlusion rims and identify their

## DPHD211 Human dentition (2) (L=1, P=1,T=1):

**This course is designed to provide students with basics of the normal anatomy of different deciduous teeth, and their normal physiology as well as differences between permanent and deciduous teeth. It provides basic knowledge about physiology of the teeth and supporting structures as well as different occlusal relations and centric occlusion of teeth. This is important for fabrication of different teeth restorations and prosthetic construction in the future.**

**advantages and disadvantages.**

## DPDB212 Dental Biomaterials (2): (L=1, P=1, T=1):

**Dental biomaterials are specially fabricated materials. Designed for use in dentistry. This course include different types of dental metals & alloys, corrosion, gold alloys, cobalt-chromium alloy, titanium, wrought dental alloys, joining of metals and ceramics**

## DPDC213 Technology of complete denture construction (2) (L=1, P=2, T=1)

**By the end of this course students should be able to list the steps of arranging denture teeth to articulate. Review the ability to wax-up denture base contour including palatal contours. State denture flasking, washing up and curing of the denture. State finishing and polishing techniques for complete dentures prior to delivery. Describe the repair of complete dentures. Locate the differences in the laboratory procedures of processing complete dentures. Name the different materials, instruments and devices involved in the construction of complete denture as well as their uses.**

**The practical skills include: Application of all the laboratory procedures related to construction of complete denture. Choosing between different materials used in complete construction. Solving laboratory problems faced during work.**

## DPHA214 Head &Neck Anatomy For Technologists (L=1, P=1, T=1):

**This course includes the study of the anatomy of the head and neck including maxilla and mandible and TMJ joint. Anatomy and function of the components of the masticatory system.**

## DPRD301 Removable partial denture construction(1) (L=2, P=2, F=1):

**This course is concerned with restoration and maintenance of oral function by replacement of missing teeth and surrounding structure by artificial device used with partially edentulous patients. By the end of this course, the students should be able to: 1. Implement sound knowledge of the biological and technical aspects of removable partial denture and their integration with the clinical procedures which will be taught in the succeeding clinical Prosthodontic courses. 2. Full knowledge of**

terminology, classifications of partially edentulous arches, components of RPD, Dental surveyors, Denture bases, Direct retainers, rest and rest seats

## DPFP302 Fixed prosthodontics fabrications 1:(L=2, P=2, F=1):

This course concerned with cemented dental prosthesis (crowns, bridges, inlays, onlays, veneers and implants). Technologist should be able to 1. Implement sound knowledge of the biological and technical importance of fixed prosthodontics. 2. Fabrication of wax framework for single restorations.

## DPTO303 Technology of occlusion (L=1, P=2):

Studying the dynamic interplay of various components, including the teeth, their supporting tissues, jaw, muscles, temporomandibular joint, the central pattern generator and other associated cortical interaction.

## DPOP304 Oral pathology for technologists(L=1, P=1):

This course gives the students basic knowledge of general principles of disease processes including inflammation, cell injury, hemodynamic disorders, infections and neoplasia and pathologic picture of diseases affecting the oral and maxillofacial region such as inflammations, cysts, developmental abnormalities and tumors.

## DPMP311 Technology of Maxillofacial prosthesis (L=1, P=2):

This course deals with the specialist rehabilitation of patients requiring treatment after a traumatic injury, cancer surgery or defect from birth causing malformation. Technologist should be able to fabricate different types of prosthesis, helps the patient to rehabilitate the defect in the maxillofacial area.

## DPOP312 Orthodontics and pedodontics appliances (1) (L=1, P=1, T=1):

The theoretical component of the of the orthodontic/ pedodontics technology 1 course is concerned with introducing the student to the basic orthodontic fundamentals of; ideal occlusion, malocclusion, orthodontic terminology, orthodontic tooth movements and their biological backgrounds, orthodontic laboratory materials, instruments and devices, soldering and welding as well as the major 3 categories of the orthodontic appliances; removable, fixed and functional. The clinical component of this course will make sure that the student has developed the following clinical skills; differentiation and dealing with the various orthodontic laboratory devices, instruments and materials, proper dental impression handling, disinfection and orthodontic model fabrication and trimming, proper handling of the instruments and mastering the various wire straightening and bending techniques, fabrication of loops, helices and clasps as well as mastering soldering and welding techniques.

## DPRD313 Removable partial denture construction (2) : (L=2, P=2, F=1)

**This course is concerned with restoration and maintenance of oral function by replacement of missing teeth and surrounding structure by artificial device used with partially edentulous patients. By the end of this course, the students should be able to: 1. Implement sound knowledge of the biological and technical aspects of removable partial denture and their integration with the procedures which will be taught in the succeeding clinical prosthodontic courses. 2. Full knowledge of, indirect retainers, stress breakers, Major and minor connectors, master cast modifications, lab procedures, and acrylic partial dentures.**

## DPFP314/ Fixed prosthodontics fabrications 2:(L=2, P=2, F=1):

**Technologist should be able to 1. Fabrication of wax framework for multiple fixed restorations. 2. Fabrication of metallic restorations (lost wax technique) either single or multiple restorations.**

## DPDE401 Dental Lab Equipment (L=1, P=1):

**This course helps the students to be familiar with all equipment and medical devices used in dental lab. It teaches the basic principles of how these devices are working, and how the common malfunctions can be early detected and managed.**

## DPAD402 Technology of advanced denture (L=2, P=2, T=1):

**By the end of the course, the student should be aware about the recent materials and techniques that are recently introduced in the field of removable prosthodontics to overcome limitations associated with old materials and techniques.**

## DPFP403 Fixed prosthodontics fabrications 1:(L=2, P=2, F=1):

**Technologist should be able to 1. Fabrication of metal fused porcelain. 2. Fabrication of interim restorations either single or multiple restorations.**

## DPNT404 Nanotechnology in dental lab (L=1, P=1, T=1):

**This course outlines the definition, classification, morphology and composition based on chemical, physical and chemical properties (crystalline structure – water solubility – optical properties – mechanical properties. This course also outlines the uses of nanomaterial in dental labs (graphene – graphene/zinc oxide nanocomopsite – hydroxy apatite nanoparticles – iron oxide nanoparticles – zirconia (zro2) nanoparticles – alumina/zirconia nanocomposite – silica nanoparticles – titania nanoparticles – silica/titania nanoparticles – silver compounds nanoparticles. Commercial dental nanomaterials, root filling materials, bioceramics and associated dental prosthesis and coating materials for dental implants.**

**DPDI 411 Technology of dental implant (L=1, P=1, T=1):**

**This course includes components of the dental implant, different types of implant and how to fabricate method of attachments of the crowns to the implant.**

## DPFP412 Fixed prosthodontics fabrications 2:(L=2, P=2, F=1):

**Technologist should be able to 1. Fabrication of all ceramic restoration with different techniques and materials available in the field of fixed prosthodontics including fixed removable prosthesis 2. Repair of fractured restorations of different dental materials. 3. Review all recent materials and techniques in the fixed prosthodontics field.**

**DPOP413 Orthodontics and pedodontics appliances (2) (L=1, P=1, T=1):**

**The theoretical component of the of the orthodontic/ pedodontic technology 2 course is concerned with deeply engaging the student in the study of the various orthodontic and pedodontics appliances through detailed study of the common; removable, fixed, myofunctional, retaining, habit breaking and space maintaining appliances. The objective is to make the student familiar with the history, uses, indications, contraindications and design characteristics of every appliance. This course also will introduce the student to the digital orthodontic technology.The clinical component of this course will make sure the student is able to; design a well-retentive, functioning and biologically-compatible orthodontic/ pedodontics appliance, properly interpret the lab prescription sheet sent by the orthodontist and properly fabricate and assemble every orthodontic appliance to its finished form ready for delivery. During the course, the student is required to fabricate all the components of the common designs of the early-mentioned appliances, assemble them and finish them to the delivery form.**

**DPDP414 Digital prosthodontics technology (L=1, P=1, T=1):**

**This course deals with patients treated with digital solutions benefitting from the combination of efficient processes. Such as replacing impression by intra oral camera and replacing manual prosthesis fabrication with CAD CAM systems and three d printing.**

# 5- Technology of optics
# 5- برنامج تكنولوجيا البصريات

**OPAN201 Ocular Anatomy and Physiology (L=2, P=1,T=1):**

**In this course the eye ad nervous system, gross anatomy, histology and terminology pertaining to structural and functional relationships of ocular tissues and related adnexa including osteology of the skull and orbit are discussed. Orbital contents including: fascia, tendons, muscles, fat, glands, nerves, vessels, lids and lacrimal system are studied. The globe is further studied as sclera, cornea, uvea, retina, and crystalline lens, anterior, posterior, and vitreous chambers. Laboratory includes dissection of a mammalian eye and histology with emphasis on clinical significance.**

**OPOS202 Optometric statistics (L=1, T=1):**

**In this course students are required to understand and gain proficiency in the application of the following: literature survey and study design, descriptive statistics, basic probability concepts, probability distributions, simple linear regression and correlation, the Chi-square distribution and the analysis of frequencies, non-parametric and distribution-free statistics. Use of computer software to aid in the collation and analysis of data is imperative in both sections of this course.**

**OPOL203 Optics and light (L=2, T=1):**

**This is an introductory course in geometrical optics. Introduction to light and optics, wavelength, frequency, speed of light, index of refraction, and optical length will be discussed. Image formation by plane mirrors and their properties, Image formation by spherical convex mirrors, concave mirrors, properties of the image and magnification, Refraction through plane surfaces, image deviation, real and apparent depth, Prisms, ophthalmic prisms, image deviation, minimum deviation, Introduction curvature and spherical surfaces, sag formula, calculation of power, radius of curvature, Refraction through spherical surfaces, convex surfaces, concave surfaces, image formation, magnification, focal length, surface power. Thin lenses, types, power, focal lengths, surface power, thin lenses, lens formula, Thick lenses, thick lens formula, focal lengths, thick lens power, sphero-cylidrical lenses, focal planes, power.**

**OPBO204 Biomaterials in ophthalmology (L=1, P=1, T=1):**

**Important component of the procedures that are used to improve and maintain vision . materials that make up normal structures of eye & those used for replacement eg visceoelastic solutions , intraocular lenses , contact lenses.**

**OPAO211 Adult Optometry (L=2, P=1, T=1):**

**This course provides the basis of adult optometry including ocular problems unique to this age group population including corneal, lens and retina disorders that affect vision. Principles of optometric examination.**

**OPOE212 Optical electronics (L=2, P=1):**

**The course is an introduction to the fundamentals of optoelectronics and principles of the optoelectronic devices operation. This course provides the background in optoelectronics, help students meet the demand of growing semiconductor optoelectronic industry and prepares them to advanced study and research in the semiconductor optics and optoelectronics devices. Topics include basic concepts of electromagnetic theory, optical waveguides, and introduction to the light emitting devices, detectors, and modulators. Course also covers the basic optical and electro-optical properties of semiconductors and low-dimensional semiconductor structures.**

**OPMI213 Ocular microbiology and infection control for optometrists (L=1, P=1, T=1):**

**This course is designed to provide students with causes of the most common infectious agents affecting eye, classifications, clinical manifestation.**

**OPER214 Errors of refractions (L=2, P=1, T=1):**

**Error of Refraction In this course, a review of optical properties of the eye, schematic and reduced eyes, optics of the cycloplegic eye, measurement of parameters of the eye, accommodation, refractive errors, myopia, hypermetropia, astigmatism, visual axes, anisometropia, emmetropia, presbyopia, trial lens set, prisms, IPD, Phoropters, pinhole, Maddox rod , stenopic slit..etc.**

**OPCL301 Contact lenses (1) (L=2, P=1, T=1):**

**The course aims at providing knowledge of different contact lens types, indications and contraindications for wearing contact lenses, fitting contact lenses and different contact lens accessories. In this first of a two course series, the history of contact lens development is discussed leading to current lens materials, soft lens design and manufacturing techniques. Parameters such as DK, DK/l, wetting angle, water content, thickness, edge, diameter, monocurve versus multicurve design and sagittal depth will be discussed. Fitting considerations of soft lenses for optimal physiological function; sag, movement on blink; evaluation of VA, OR,**

**OK, slit-lamp examination and vertex calculations. Criteria for patient selection and training as well as discussion of contact lens care systems.**

**OPSP302 Spectacles (L=2, P=1, T=1):**

**This course will cover ophthalmic materials of spectacle lenses, optical and physical characteristics of ophthalmic lenses, prisms and decentration, spherical and aspheric lenses, multifocal lenses, lens power measurement methods, lens power-thickness relationships and aberration theory and its application to lens design.**

**OPPO303 Pediatric Optometry (L=2, P=1):**

**This course provides the basis of pediatric optometry including ocular problems unique to the pediatric age group including congenital ocular problems, corneal, lens and retina disorders that affect vision. Principles of optometric examination.**

**OPOI304/ OPOI314 Optometric instruments (1&2) (L=1, P=1, T=1, F=1):**

**This course provides the basic technology of ophthalmic instruments like Slitlamp principles, Goldman Applanation tonometer calibration, Shoitz calibration, Tonopen, Airpuff tonometer, Auto refractometer, Optical Keratometer and Autokeratometer, chart Projectors, direct and indirect ophthalmoscopes principles, retinoscope, lensmeter …etc. Surgical microscopes principles, BIOM and other accessories principles, Phaco machines principles, Vitrectomy machine principles will be also covered.**

**OPLV311 Low vision& low vision aids (L=2, P=1, T=1):**

**This course provides the basics of etiology, epidemiology, course and sequelae of low vision problems. Techniques used in assessment and management of the low vision patient will be discussed, including the environmental and optical aids, and problems of rehabilitation. Interdisciplinary rehabilitation resources, agencies, laws, public and social assistance for the partially sighted and the blind will also be covered.**

**OPBV312 Binocular vision (L=2, P=1, T=1):**

**This course introduces the student to Accommodation, binocular muscular coordination and anomalies, binocular vision, It provides the basic knowledge of extra ocular muscle anatomy and innervation, heterotropias, microtropias, amblyopia, Aphakia, incomitant strabismus, A and V patterns, neurogenic disorders, mechanical paralytic strabismus, Myogenic disorders, nystagmus, intranuclear and Supranuclear disorders. The management of each of the binocular vision anomalies discussed in this course.**

**OPCL313 Contact lens (2) (L=2, P=1, T=1):**

**This second course will discuss topics pertaining to fitting rigid lenses. rigid lens design, materials, care regimens, insertion and removal. Fitting techniques and lacrimal lens, fluorescein patterns and alignment, flat and steep fits as well as bearing area and intra-palpebral fit, over-refraction as well as lacrimal lens calculations and correlations. Patient selection and adaptation will also be discussed. Special lens designs and fitting of toric hard and soft lenses, bifocal lenses, aphakic lenses, prism ballast, truncation, fenestration, lens carriers, extended wear and fitting keratoconic patients will be discussed.**

**OPOR401 Orthoptics (L=2, P=1):**

This course is designed to provide students with basic principles of dealing with management of the binocular vision anomalies.

**OPFE402 First aid and emergency (L=2, P=1, F=1):**

**It includes cuts, scratches, objects in the eye, Burns, chemical exposure & lilient injuries to the eye on eye lid. Certain eye infections & other medical conditions eg liload clots on glaucoma.**

**OPLO403 Laser in ophthalmology (L=1, P=1, T=1)**

**This course explains the ophthalmic lasers currently commercially available including the technology used during the different procedures. The course helps the students to understand how these devices are working, how to identify any malfunction and when to expect complications. This course also provide the basic principles of recognition, evaluation, and control of potential hazards. It will review laser operations, the associated potential hazards, responsibilities of the laser user community, and the services provided by the radiation safety program to help in the safe use of laser radiation.**

**OPOI404/ OPOI414 Ocular imaging techniques (1&2) (L=2, P=1, F=1):**

**This course introduces the basic techniques of ophthalmic imaging, OCT (Optical Coherence Tomography) ophthalmic photography (Fundus and Slit Lamp) and FA (Fluorescein Angiography), FAF (Fundus Autofluorescence). It also includes other types of imaging used in Ophthalmology (CT, MRI, CCT, HRT, Ultrasound, and External Photography). A and B scan ultrasonography, optical biometry, ICG, VEP and ERG, dacryocyntegraphy, Pentacam imaging, ORA, Corvis …etc**

**OPME411 Maintenance of optometric equipment (L=1, P=1,T=1, F=1):**

**This course provides the students with the principles of different equipment and medical devices related to optometry. Students will gain basic knowledge and practice monitoring, vault detection and reporting any malfunction.**

**OPAE412 Artificial Eye Technology (L=1, P=1, T=1):**

**The technology of making artificial eyes is a staple part of the optical technology student's training. The course provides the basics of this technology regarding indications, types of devices used, and possible complications.**

**OPEO413 Environmental optometry (L=2, T=1):**

**This course is designed to give an idea about the relation between vision and environment including home, work, recreation and transportation. Protecting the eye from injury, maximizing visual performance, industrial ophthalmic performance and requirement for motor vehicle and machinery licens.**

# 6-Technology of Respiratory therapy)
# 6-برنامج تكنولوجيا الرعاية التنفسية

**RTSA201 Systemic anatomy (L=1, P=1,T=1):**

**Introduction anatomy of musculoskeletal system, respiratory, digestive, female genital, male genital, urinary, lymphatic and central nervous system.**

**RTSP202 Systemic Physiology for M (L=1,P=1, T=1):**

**Neuromuscular transmission, functions of the liver and liver function tests, hypo and hyper function of some endocrine glands, thyroid, parathyroid, suprarenal glands and pancreas, physiological changes during pregnancy and fetus, acid base balance, water and electrolyte balance, body temperature and its regulation.**

**RTPH203 Pharmacology for Respiratory Therapists (L=1, P=1, T=1):**

**General pharmacology : forms of drugs and methods of drug administration. CNS depressants: sedatives, hypnotics, analgesics , addiction, anticonvulsants, anti-epileptics , muscle relaxants, drugs acting on autonomic nervous system , Sympathomimetic, adrenergic blockers, Para-sympathomimetic, Disinfectants, IV fluids.**

**RTGP204 General Pathology for Respiratory Therapist (L=2, P=1):**

**Study of the nature of the disease including its different aspects that may be influenced by the genetic, cytological and biochemical changes. And describes the specific pathological changes in different tissues and organs of body systems and the concept of diagnostic cytology for various organs.**

**RTMI211 Microbiology for Respiratory Therapist (L=1, P=1):**

**This course teaches the students basic knowledge about microscopic organisms (Microbes) and how some of these organisms are essential for human life while others can cause diseases. It focuses on classification and growth of microorganisms with medical importance and applications of method used to prevent and control them.**

**RTSP212 Systemic pathology for Respiratory Therapist (L=1, P=1, T=1):**

**This course describes the specific pathological changes in different tissues and organs of body systems and the concept of diagnostic cytology for various organs.**

**RTNM213 Basic nutrition and metabolism (L=2, P=1):**

**This course aims to give the students good information about the major components of food namely carbohydrates, proteins, lipids, vitamins, minerals and water with emphasis on daily requirements for normal subject and the nutritional restrictions in certain diseases. Medical problems related to nutrition as obesity, cachexia and nutritional deficiency diseases are to be emphasized. It also includes an overview**

**of the nutritional consequences and metabolic challenges posed by acute and chronic diseases.**

**RTPA214 Principle of airway management (L=1, P=1,F=1):**

**Basic airway management, Advance airway management, Orotracheal intubation indications and technique, Nasotracheal intubation indications and technique ,Perform sellick maneuver ,Complications of intubation procedures.**

**RTBS215 Biostatistics (L=1, P=1, T=1):**

**Population census, registration, descriptive statistics, dispersion, probability, t test , sampling.**

**RTPM301 Patient monitoring and instrumentation in ICU (1) (L=1, P=1, F=1):**

**International system for units, Conversion from one system to another, Measurement and monitoring pulse, blood pressure, CVP, Pulmonary artery pressure, temperature, ventilation, blood gases arterial PH, ECG and ECG interpretation, Monitoring neuromuscular function, Calculation of blood loss during surgery.**

**RTIE302 Intensive care equipment ( 1) (L=1, P=1, T=1):**

**This course is designed to Identify and use the different tools and equipment that used daily. Able to maintain and use different tools and equipment used in intensive care. Able to know the principles, usage, checkout, and maintenance, cleaning and sterilization of different instruments. Ventilators, laryngoscopes, facemasks, tubes and filters. Supply of gases, Accessory apparatus for the airway, Suction apparatus.**

**RTHS303 Environmental hygiene and safety (L=1, P=1, T=1):**

**Basic epidemiologic concept (determinant of health, pattern of disease in populations, measure of morbidity and mortality, design of research). Biological, physical pollution. Different disinfectant, Sterilization and different methods dry heat, moist heat, filtration, radiation, chemical fluids and gas. Fire and explosions inside the suite Dangers of electricity. Regulation of temperature, illumination, humidity. Care of tools and equipment after use, Quality assurance and risk management.**

**RTFE304 First Aid and Emergency Care (L=1, P=1, T=1):**

**Recognize emergencies, and make appropriate decisions for first aid care. It teaches skills that students need to know in order to provide immediate care for a suddenly ill or injured person until more advanced medical care arrives to take over. Basic life support to recognize several life-threatening emergencies, provide CPR, use an AED, and relieve choking in a safe, timely and effective manner.**

**RTTH305 Therapeutics (L=1, P=1, T=1):**

**Drugs acting on CVS, antiarrhythmic drugs , drugs for myocardial ischemia, Drugs acting on respiratory system ; drugs treating cough and expectorants, drugs**

**treating bronchial asthma, respiratory stimulants, corticosteroids, antiemetics antacids ,Hypoglycemic drugs, drug abuse , drug interaction**

**RTMV311 Mechanical ventilation (L=1, P=1, T=1):**

**Learning the terminology, physical principles and physiologic concepts associated with the application of mechanical ventilation. Equipment, function and troubleshooting will be investigated in the lab and clinical setting. Study different ways for artificial ventilation where mechanical means is used to assist or replace spontaneous breathing**

**RTIE312 Intensive care equipment (2) (L=1, P=1, T=1):**

**Tracheal tube and associated equipment, Lung isolation device, Device for managing the difficult airway, Gas monitoring ,Airway volumes, flows and pressure ,Temperature control equipment, Equipment checkout and maintenance .Cleaning and sterilization of equipment.**

**RTPM313 Patient monitoring and instrumentation in ICU (2) (L=1, P=1, T=1, F=1):**

**Interpret the capnogram, Medical gases, Monitor continuous cardiac output Monitor the control breathing, Peripheral neuromuscular function monitoring Arterial blood gas monitoring,Acid base assessment, Pulse oximetry, Transcutenous oxygen monitoring , Monitoring of mixed venous oxygenation, Gut mucosal PH monitoring, Transcutaneous monitoring of co2 tension and control of breathing, Non -invasive monitoring of ventilation , monitoring the use of tracheal tubes, Pulmonary artery catheterization interpretation and pressure recording, hemodynamic profile interpretation, Continuous cardiac assist devices, bispectral index, Monitoring and interpreting intracranial pressure, Peripheral neuromuscular function monitoring, patient monitoring during transportation, standard monitoring.**

**RTPS314 Patient safety (L=1, P=1, T=1):**

**Science of safety , errors and adverse events in health care, models of safety and change, culture of safety, detection and reporting of injuries and errors, investigative methods, disclosure of adverse events, improvements of clinical systems, policy intervention**

**RTEL315 Ethical and Legal Issues in Health Fields (L=1, T=1):**

**The course introduces to the legal aspects that determine the rights of patients receiving the health care services and that of the medical personnel giving or sharing in health care services. Medical ethics focuses on the study of principles of right and wrong conduct for the health professionals and provides the standard for professional behavior.**

**RTNI401 Nutrition in Intensive care (L=1, P=1, F=1):**

**The basics of nutritional support for the patients in the critical care units especially those with respiratory problems, cardiac ….. It also focuses on the procedures performed to achieve this goal. This includes oral, enteral and parenteral nutritional support.**

**RTEC402 Essentials of critical medicine (L=1, P=1, T=1):**

**Design ICU , types of ICU and their duties, burn unit, equipment in different ICU and their uses, drugs available in ICU, their preparation, oxygen deficiency oxygen administration , types of hypoxia and their management , oxygen toxicity prevention and management. Care of comatose patient, method of sample collection, ARDS and other respiratory emergencies, hypertensive emergences, cardiac pacing and defibrillation.**

**RTPD403 Pulmonary diseases (1) (L=1, P=1, T=1):**

**The purpose of this course is for students to gain knowledge and to understand the incidence, etiology, clinical manifestations, pathophysiology, and differential diagnosis of pathologies in acute lung diseases. While studying each individual disease, the evidence-based treatment and prevention strategies, including pharmacology, will be examined.**

**RTTC404 Transfusion practice in critical care (L=1, P=1):**

**Study the different technique for blood transfusion and ways to keep blood fresh and a way from any damage and transfusion of different fluid.**

**RTPS405 Related psychiatric problems (L=1, P=1):**

**Concept and introduction about common psychiatric diseases. Psychiatric problems after long term admission in the intensive care early detection and assist in management under supervision.**

**RTMM406 Maintenance of Medical Equipment (L=1, P=1):**

**This course provides the students with the principles of different equipment and medical devices those related to their specialties. Students will gain basic knowledge about how these devices are working, how to monitor, detect and report any malfunction.**

**RTPS411 Problem solving and decision making in critical care (L=2, P=1, T=1):**

**Premedication of adults, premedication of children, tracheal intubation, difficult airway unrecognized can't ventilate, can't intubate. Monitoring in hypoxemia, decreased inspired oxygen concentration, increased peak airway pressure, response to low pressure alarm, the full stomach patient, elderly patient, renal insufficiency, , diabetes mellitus, obesity, asthma, wheezing, chronic obstructive**

**pulmonary disease. Know and suspect tuberculosis, pulmonary hypertension, restrictive lung disease, cardiac artery disease. Prevention and control principles with emphasis on indwelling device care, hand hygiene and multi-drug resistant organisms among heath care personnel. Common complication in intensive care e.g. fever and urinary tract infection.**

**RTAS412 Advanced life support (L=1, P=2):**

**Skills in the treatment of the adult victim of a cardiac arrest or other cardiopulmonary emergencies. IT emphasizes the importance of basic life support to patient survival; the integration of effective basic life support with advanced cardiovascular life support interventions; and the importance of effective team interaction and communication during resuscitation.**

**RTRD413 Pulmonary rehabilitation and physiotherapy (L=1, P=1, F=1):**

**Assistance of management and health maintenance of patients with chronic disability who remain symptomatic. E.g. Chest physiotherapy, health education and behavior intervention to improve how well people with chronic lung disease can function in daily life and to enhance their quality of life.**

**RTPD414 Pulmonary diseases (2) (L=2, P=1, T=1):**

**The purpose of this course is for students to gain knowledge and to understand the incidence, etiology, clinical manifestations, pathophysiology, and differential diagnosis of pathologies in chronic lung diseases. While studying each individual disease, the evidence-based treatment and prevention strategies, including pharmacology, will be examined.**

# متطلبات جامعة المنوفية

**مدخل الجودة**

يشمل هذا المقرر تعريف ضمان الجوده واهميته في تحسين موارد الامم و كيف انه يتطلب تعليما متطورا ذو جوده عاليه عن طريق اكساب الطالب القدره علي التعلم والابداع واستخدام النكنولوجيا بحيث تركز علي تنميه المهارات مع متطلبات سوق العمل. وفوائد تطبيق نظم الجوده في تخريج خريجا متميزا وسط الاف الخريجين ويجعل سوق العمل تتهاتف علي توظيفه. مميزات الطلاب الخريجين من الجامعات التي تطبق نظم الجوده.

**حقوق الانسان ومحاربة الفساد**

تعرييف الحقوق التي يتمتع بها الانسان لمجرد كونه انسان. تعدد حقوق الانسان تبعا لنظم كل دوله ودستورها علي مدار التاريخ. امثلة لتعرض هذه الحقوق للعدوان علي مدار التاريخ. حقوق الانسان اليوم قضيه عالميه غير منحصره في ميدان معين وكيف اصبحت في الوقت الراهن رمزا للتطور والتتقدم والارتقاء. الاعلان العالمي لحقوق الانسان والحد من تعسف السلطه العامه مساسا بهذه الحقوق. تعريف الفساد وامثلته وسبل محاربتة .