لائحة برنامج Pharm D

وحدة ضمان الجودة

كلية:الصيدلة فرع:القنطرة

اللائحة الداخلية

لبرنامج

درجة بكالوريوس الصيدلة

(فارم دي PharmD)

طبقا لنظام الساعات المعتمدة

كلية الصيدلة - جامعة سيناء

(العريش - القنطرة)

٢٠١٩

المحتوى

مقدمة:
أنشأت كلية الصيدلة والتصنيع الدوائي بجامعة سيناء عام ٢٠٠٦ لتكون أول مؤسسة تعليمية بشبه جزيرة سيناء تقدم برنامج دراسى متميز يؤدى للحصول على درجة البكالوريوس فى الصيدلة بالإضافة الى إجراء البحوث والخدمات التي تخدم المجتمع المحلي والاقليمى والعالمي.
وفى عام ٢٠١٩ يتم تحديث البرنامج الدراسى لتصبح الدرجة العلمية "بكالوريوس الصيدلة (فارم دي PharmD) وتكون مدة الدراسة ستة سنوات لتشمل خمسة سنوات دراسة بالكلية والسنة السادسة سنة تدريبيه (امتياز) فى مجال الصيدلة

رؤية الكلية:
تسعى كلية الصيدلة إلى تبؤ مكانة عالية ومتميزة بين كافة كليات الصيدلة المصرية والعالمية وذلك عن طريق الارتقاء بمستوى البرامج التعليمية والبحث العلمي بالكلية بالإضافة الى تقديم الخدمات للمجتمع المحلى.

رسالة الكلية:
تهدف كلية الصيدلة إلى تخريج صيادلة لديهم معلومات ومهارات وخبرات قيمة تؤهلهم للنهوض بالاحتياجات الصيدلية وتقديم الرعاية العلاجية المتميزة للمجتمع. كما تهدف الكلية إلى الارتقاء بالصحة العامة وذلك عن طريق تطوير أدوية جديدة وزيادة فاعلية الأدوية المستخدمة إلى جانب تطوير الخدمات الصيدلية. كما تتطلع الكلية إلى تنمية تكنولوجية صيدلية متقدمة لدعم الاقتصاد الوطني المصري.

أهداف الكلية:
- تطوير برنامج قائم على المعرفة والمهارات اللازمة للمساهمة في منظومة الرعاية الصحية الجيدة للبلد.
- تخريج صيدلى يتمتع بالفضول الفكري والتنوع من خلال اكتساب مهارات مميزة فى التعليم الصيدلى.
- تسهيل اكتساب المعرفة والمهارات والسلوك من خلال تعزيز أساليب التعلم الذاتي واستبدال المحاضرات التقليدية بالمناقشات والمناظرات والندوات والمشاريع.
- إعداد أخصائيين وخبراء في مجال الأدوية يكونون بمثابة رابط فعال بين الأطباء والمرضى ، وقادرين على إحداث تطوير فى صناعة الأدوية والمستحضرات الصيدلية.
- خلق تجربة تعليمية جذابة للطلاب وأعضاء هيئة التدريس.

أقسام الكلية:

Pharmaceutical Chemistry	PC	١- قسم الكيمياء الصيدلية
Pharmacognosy	PG	٢- قسم العقاقير
Pharmaceutics	PT	٣- قسم الصيدلانيات
Microbiology and Immunology	PM	٤- قسم الميكروبيولوجي والمناعة
Pharmacology and Toxicology	PO	٥- قسم الأدوية والسموم
Biochemistry	PB	٦- قسم الكيمياء الحيوية
Pharmacy Practice	PP	٧- قسم الممارسة الصيدلية

مواد اللائحة

مادة (١) :

رؤية البرنامج

التميز العلمي والتطوير المستمر لخدمة المنظومة الصحية العلاجية و الصناعة الدوائية و تحقيق التنمية المستدامة من أجل الوصول لمكانة مرموقة عالميا في مجال الصيدلة .

رسالة البرنامج

إعداد صيادلة يتحلون بأخلاق المهنة و مؤهلين بأحدث المفاهيم الصيدلية والرعاية العلاجية التى تمكنهم المساهمة في تطوير الصناعات الدوائية و الرعاية الصيدلية على المستوى المحلي والإقليمي في المستشفيات و الصيدليات الاهلية من خلال تقديم الخدمات الصيدلية بمستوى منظومة كفاءة رفع مهاري محترف بالصيدليات العامة والخاصة ومصانع وشركات الأدوية ومعامل الرقابة الدوائية وتحليل الأغذية بالإضافة إلى العمل في مجال الإعلام والتسويق الدوائي والمشاركة بفاعلية في البحث العلمي من خلال مراكز البحوث والجامعات لخدمة المجتمع.

أهداف البرنامج

- تخريج صيدلي متميز مؤهل للعمل بالصيدليات العامة والخاصة ومصانع وشركات الأدوية ومعامل الرقابة الدوائية وتحليل الأغذية والعمل في مجال الاعلام والتسويق والبحوث والجامعات.
- التركيز على دور الصيدلي في تقديم الرعاية الصحية المناسبة للمريض بداخل المستشفيات وخارجها من خلال تثقيف وتقديم المشورة للأفراد والمجتمعات لتحسين النتائج العلاجية والحد من الإصابة بالامراض مع مراعاة أن يمارس المهنة بمسؤولياتها وسلطاتها محترماً قوانينها وأخلاقياتها، واحترام حقوق المرضى.
- إعداد صيدلي يستخدم البيانات التى تستند على الدلائل لتقديم المستحضرات الصيدلية المعاصرة والخدمات الصيدلية بالإضافة الى ان يكون متمكنا من مهارات التواصل الفعال والقيادة والإدارة وريادة الأعمال.
- تخريج صيدلي يعمل كمتعلم مدى الحياة بهدف التنمية المهنية المستدامة و يظهر القدرة على مهارات تقييم الأداء والتقييم الذاتي.
- زيادة القدرة التنافسية لخريجي البرنامج على المستوى الإقليمي من خلال البرامج الدراسية والتدريبية.
- المشاركة في خدمة المجتمع وتنمية البيئة وتوفير عائد إقتصادي ملموس من خلال ترشيد إستخدام الأدوية في المستشفيات.
- الإلتزام بتحقيق معايير الجودة في التعليم الصيدلي من خلال التعليم التفاعلي والإهتمام بالتعلم الذاتي.

مادة (٢) :

الدرجة العلمية التي تمنح للخريجين

يمنح مجلس الجامعة بناءً على طلب مجلس كلية الصيدلة درجة بكالوريوس الصيدلة (فارم دي PharmD) بنظام الساعات المعتمدة.

مادة (٣) :

التأهيل للدرجات الأكاديمية الأعلى:

درجة بكالوريوس الصيدلة (فارم دي PharmD) هى الدرجة الجامعية الأولى فى مجال الصيدلة اللازمة للحصول على ترخيص ممارسة المهنة فى جميع المجالات الصيدلية المتاحة ، كما تؤهل الخريج للتسجيل لدرجة الماجستير فى أى من الأقسام العلمية فى الكلية.

مادة (٤) :

نظـام الدراسـة

مدة الدراسة بالبرنامج خمس سنوات دراسية (خمس مستويات على عشر فصول دراسية) طبقا لنظام الساعات المعتمدة وسنة تدريب متقدم (امتياز) في مواقع العمل (٥+١). بالإضافة إلى **عدد ١٠٠ ساعة** تدريب ميدانى فعلية فى الصيدليات الأهلية والحكومية وصيدليات المستشفيات تتم خلال الأجازات الصيفية لسنوات الدراسة بعد نهاية المستوى الثالث و قبل البدء فى سنة الامتياز.

ينقسم كل مستوى (عام) دراسي إلى فصلين دراسيين (الخريف والربيع) ومدة كل فصل دراسي خمسة عشر أسبوعا. ويجوز طرح بعض المقررات في فصل دراسي صيفي مدته من ستة إلى ثمانية أسابيع من الدراسة المكثفة.

الساعة المعتمدة هي وحدة قياس دراسية وتعادل ساعة دراسية أسبوعية نظرية أو درساً عملياً لا تقل مدته عن ساعتين أسبوعياً وتدرس على مدى فصل دراسي واحد.

مادة (٥) :

تصميم البرنامج الدراسي

يتم تصميم البرنامج الدراسي بحيث يكون التعلم عن طريق المحاضرات النظرية وحلقات النقاش والدروس العملية و ورش العمل والتدريبات الميدانية و إجراء بحوث و تقديم العروض بالإضافة إلى التعاون مع المجتمع المحيط بالجامعة.

مادة (٦) :

التسجيل

تحدد الكلية لكل مجموعة من الطلاب مرشداً أكاديمياً من أعضاء هيئة التدريس يقوم بمهام الرعاية والإرشاد ويكون مسئولاً عن الطالب في الشئون العلمية والإجتماعية والنفسية وتوجيهه في كل ما يتعلق بحياته الجامعية ويقوم بمساعدة الطلاب في اختيار المقررات من قائمة المقررات التي تطرحها الكلية في كل فصل دراسي.

وعلى كل طالب أن يقوم شخصياً بتسجيل المقررات التي يرغب في دراستها في كل فصل دراسي مع ضرورة أن يتم اختيار المقررات وعدد الساعات المعتمدة بالتشاور والاتفاق مع المرشد الأكاديمي.

ويشترط لتسجيل المقرر أن يكون الطالب قد اجتاز بنجاح متطلب التسجيل لهذا المقرر.

ويجوز لمجلس الكلية في حالات الضرورة القصوى للطالب بتسجيل بعض المقررات بالتوازي مع متطلباتها التي لم يجتازها الطالب بنجاح إذا قل العبء الدراسي المتاح للطالب عن ١٢ ساعة معتمدة (أنظر التالي – فقرة أ – العبء الدراسي) ، على أن يتم كتابة إقرار بمعرفة ولي أمر الطالب بأنه لن يتم اعتماد نجاحه في هذا المقرر إلا بعد اجتياز متطلبه الذي سمح له بالتسجيل فيه بالتوازي.

وينبغى أن يملأ الطالب نموذج تسجيل المقررات في الأوقات المحددة حسب التقويم الجامعي المعلن لكل فصل دراسي ولا يجوز الانتظام في الدراسة إلا بعد انتهاء عملية التسجيل.

لا يسمح للطالب بالتسجيل المتأخر عن الأوقات المحددة إلا بعذر قهري يقبله مجلس الكلية وعلى ألا تزيد مدة التأخير عن أسبوع من نهاية فترة التسجيل.

أ) العـبء الدراســي :

العبء الدراسي هو عدد الساعات المعتمدة التي يقوم الطالب بتسجيلها في الفصل الدراسي الواحد ويجب مراعاة ألا يقل العبء الدراسي المسجل للطالب في أي فصل دراسي عن ١٢ ساعة معتمدة وألا يزيد عن ٢٠ ساعة معتمدة و على الا يزيد العبء الدراسي للطالب المتعثر عن ١٢ ساعة معتمدة (أنظر مادة ١٢) .

العبء الدراسي خلال الفصل الصيفي بحد أقصى ٩ ساعات معتمدة.

ويجوز لمجلس الكلية السماح للطالب في أخر فصلين دراسيين بزيادة العبء الدراسي عن الحد الأقصى وبما لا يتجاوز عدد ٣ ساعات معتمدة (يستفيد منها الطالب لمرة واحدة)، كما يجوز لمجلس الكلية السماح للطالب المتعثر (أنظر مادة ١٢ - التعثرالأكاديمي) بزيادة العبء الدراسي عن الحد الأقصى خلال الفصل الصيفي وبما لا يتجاوز عدد ٢ ساعة معتمدة.

ب) الإضافة والحذف والانسحاب :

يجوز للطالب بعد إستكمال إجراءات التسجيل أن يضيف أو يحذف إلى ساعاته المعتمدة مقرراً أو أكثر في أي فصل دراسي على أن يكون ذلك في خلال الفترات المحددة حسب التقويم الجامعي المعلن لكل فصل دراسي مع مراعاة الحد الأدنى والحد الأقصى للعبء الدراسي.

كما يجوز للطالب بعد تسجيله الإنسحاب من مقرر أو أكثر في أي فصل دراسي دون أن يعتبر راسباً في هذا المقرر وذلك إذا تقدم بطلب الانسحاب خلال الفترات المحددة حسب التقويم الجامعي المعلن لكل فصل دراسي. ومن ينسحب بعد هذه الفترة المحددة يعتبر راسباً.

مادة (٧) :

أ) المواظــبة

على الطالب أن يواظب على حضور المحاضرات النظرية وحلقات النقاش والدروس العملية والتدريبات الميدانية و التكليفات، ولمجلس الكلية بناءً على طلب مجالس الأقسام العلمية المختصة أن يحرم الطالب من التقدم للامتحان التحريري النهائي إذا تجاوزت نسبة غيابه ٢٥% من إجمالي الساعات المعتمدة لكل مقرر.

ب) حضور الامتحانات والتغيب عنها والإخلال بنظامها

يجب على الطالب أداء الامتحانات التحريرية النهائية في المواعيد المقررة لها حسب التقويم الجامعي المعلن لكل فصل دراسي ، ويعتبر الطالب المتغيب عن الامتحان التحريري النهائي راسبا في المقررات التي تغيب عن أداء الامتحان فيها. لا يعتبر الطالب راسبا في حالة التغيب بعذر قهري يقبله مجلس الكلية.

مادة (٨) :

لغــة الدراســة

الدراسة في البرنامج باللغة الانجليزية. ويجوز مع ذلك تدريس بعض المقررات باللغة العربية بناءً على توصية القسم العلمي المختص وموافقة مجلسي الكلية والجامعة.

مادة (٩) :

التدريــب الميداني الاولى و التدريب الميدانى المتقدم (سنة الامتياز)

أ-التدريب الميدانى الأولى :

على الطالب أن يكمل فترة تدريب ميداني أولى بإجمالي عدد ١٠٠ ساعة تدريب فعلية فى الصيدليات الأهلية والحكومية وصيدليات المستشفيات التي يقرها مجلس الكلية وذلك تحت إشراف عضو هيئة تدريس و يتم التدريب خلال الأجازات الصيفية لسنوات الدراسة بعد نهاية المستوى الثالث وقبل البدء فى سنة الامتياز.

ب- التدريب الميدانى المتقدم (سنة الامتياز):

- على الطالب أن يكمل سنة الامتياز (سنة أكاديمية بمعنى ٩ اشهر) بعد الانتهاء من السنوات الدراسية بالتدريب فى شركات ومصانع الأدوية البشرية والبيطرية - شركات ومصانع: المستلزمات والأجهزة الطبية ومستحضرات التجميل والمكملات الغذائية والأعشاب والنباتات الطبية والمطهرات والمبيدات - شركات التوزيع ومخازن الأدوية - مراكز وهيئات الرقابة والمتابعة الدوائية المحلية والعالمية (MOH-CAPA-NODCAR-…;WHO,FDA,EMA..etc) - مراكز البحوث الصيدلية والطبية والإتاحة الحيوية والدراسات السريرية (CROs)- الأعلام والتسويق الدوائى..... إلخ ، بالإضافة إلى المستشفيات والصيدليات الخاصة والحكومية .ويمكن لمن يرغب فى التخصص فى المجال

الأكاديمى (التدريس والبحث) قضاء فترة تدريبية فى كليات الصيدلة اومراكز البحوث . ويجب أن يشمل برنامج التدريب دورة تدريبية واحدة من دورات التدريب الإكلينيكى.

(يتم إعداد لائحة تفصيلية خاصة ببرنامج تدريب سنة الامتياز).

مادة (١٠) :

شروط القبول

يشترط فيمن يتقدم للالتحاق بالبرنامج أن يستوفي كافة الشروط التي يحددها المجلس الأعلى للجامعات.

يجوز قبول تحويل الطلاب المقيدين ببرنامج مماثل في إحدى كليات الصيدلة بالجامعات المصرية أو الأجنبية بشرط استيفاء الطالب لمتطلبات القبول بالكلية وتحتسب للطالب المقررات التي درسها في الكلية المحول منها وفقاً للقواعد التي يحددها مجلس الكلية.

مادة (١١) :

نظـــام التقييـــم

تتكون الدرجة النهائية للمقرر من مجموع درجات الأعمال الفصلية والعملية والتحريرية والشفهية كما هو موضح بجداول الخطة الدراسية.

الحد الأدنى للنجاح في أي مقرر هو ٦٠% من مجموع درجات هذا المقرر، ولا يكون الطالب ناجحاً في أي مقرر إلا إذا حصل على ٣٠% من درجة الامتحان التحريري النهائي، وتكون النسبة المئوية للدرجات النهائية والتقديرات كما هو مبين بالجدول التالي.

نظـام التقيـــيم

النقاط	النسبة المئوية	التعريف	التقدير
4.0	٩٥% أو أكثر	ممتاز	A+
3.8	من ٩٠% و حتي أقل من ٩٥%		A
3.6	من ٨٥% و حتي أقل من ٩٠%		A-
3.3	من ٨٠% وحتي أقل من ٨٥%	جيد جدا	B+
3.0	من٧٥% و حتي أقل من ٨٠%		B
2.7	من ٧٠% و حتي أقل من ٧٥%	جيد	C+
2.4	من ٦٥% و حتي أقل من ٧٠%		C
2	من ٦٠% و حتي أقل من ٦٥%	مقبول	D
0	أقل من ٦٠%	راسب	F

منسحب	**-**	**W**	**منسحب**
غير مكتمل	**-**	**I***	**غير مكتمل**
غائب	**-**	**Abs E****	**غائب**

*I: يحصل الطالب على هذا الرمز إذا كانت نسبة الحضور مستوفاة وتعذر عليه دخول الإمتحان التحريري النهائي والشفهي (إن وجد) لمقرر دراسي أو أكثر في ذات الفصل الدراسي لأسباب قهرية يقبلها مجلس الكلية ، وعليه أداء الإمتحان التحريري النهائي والشفهي (إن وجد) فقط في موعد أقصاه الأسبوع الثاني من الفصل الدراسي التالي مع الإحتفاظ بالتقدير.

**Abs E : يحصل الطالب على هذا الرمز إذا لم يتمكن من دخول الإمتحان التحريري النهائي والشفهي (إن وجد) في الموعد السالف ذكره في الفقرة السابقة (I) لعدم زوال السبب القهري ويتحتم على الطالب التسجيل في هذا المقرر عند طرحه مرة أخرى ودراسته كاملاً مع الاحتفاظ بالتقدير.

توجد رموز أخرى للتقييم لا تقابلها نقاط – تستخدم في بعض متطلبات التخرج - وهي:

S: مستوى مرضي
U: مستوى غير مرضي
T: درجات حصل عليها طالب محول من كلية صيدلة أخرى

يتم حساب المعدل الفصلي للطالب (GPA) والمعدل التراكمي (cGPA) على النحو التالي:

أ- يتم ضرب قيمة تقدير كل مقرر دراسي (النقاط الموضحة في الجدول السابق) في عدد الساعات المعتمدة لهذا المقرر لنحصل على عدد النقاط الخاصة بكل مقرر في الفصل الدراسي.

ب- يتم جمع نقاط كافة المقررات الدراسية التي سجل فيها الطالب في الفصل الدراسي الواحد.

ج- يتم قسمة مجموع نقاط كافة المقررات الدراسية على إجمالي الساعات المعتمدة المسجلة للطالب فى الفصل الدراسى الواحد وذلك بغرض الحصول على المعدل الفصلي كما يلي:

$$\text{المعدل الفصلي (GPA)} = \frac{\text{مجموع نقاط كافة المقررات الدراسية في الفصل الدراسي الواحد}}{\text{إجمالى الساعات المعتمدة المسجلة في الفصل الدراسي الواحد}}$$

ويتم حساب المعدل التراكمي كما يلي:

$$\text{المعدل التراكمي (cGPA)} = \frac{\text{مجموع نقاط كافة المقررات الدراسية لكافة الفصول الدراسية}}{\text{إجمالى الساعات المعتمدة المسجلة لكافة الفصول الدراسية}}$$

مادة (١٢) :

الرسـوب في المقـررات

- في حالة تغيب الطالب بدون عذر يقبله مجلس الكلية عن أداء الامتحان التحريري النهائي.

- إذا حصل الطالب على أقل من ٣٠% من درجة الامتحان التحريري النهائي.

- عدم تحقيق ٦٠ % على الأقل من مجموع درجات المقرر.

- إذا رسب الطالب في أي مقرر إجباري في أي فصل دراسي فعليه دراسة ذات المقرر والامتحان فيه عند طرحه مرة أخرى ، أما إذا رسب في مقرر اختياري فبإمكانه إعادة دراسته أو دراسة مقرر اختياري آخر بديل لإكمال متطلبات التخرج ، وذلك بعد موافقة المرشد الأكاديمي واعتماد مجلس الكلية .

مادة (١٣) :

التعثر الأكاديمي

يعتبر الطالب متعثر اكاديميا إذا حصل على معدل فصلي (GPA) أقل من "٢".

الطالب الذي يحصل على معدل فصلي (GPA) أقل من "٢" لمدة ستة فصول دراسية متصلة أو في عشرة فصول دراسية غير متصلة يفصل من الكلية وذلك بعد العرض والموافقة من مجلس الكلية ولا يؤخذ في الإعتبار الفصول الصيفية إن وجدت.

يسمح للطالب المتعثر أن يعيد دراسة المقررات التي اجتازها بتقدير D وذلك لتحسين المعدل التراكمي وتحتسب الدرجة الأعلى التي يحصل عليها الطالب.

مادة (١٤) :

الانقطاع عن الدراسة

يعتبر الطالب منقطعاً عن الدراسة إذا لم يسجل في فصل دراسى أو انسحب من الفصل سواء ذلك بعذر أو بدون عذر.

ويجوز أن ينقطع الطالب فصلين دراسيين متتاليين أو ثلاثة فصول دراسية غير متتالية كحد أقصى بشرط الحصول على موافقة مجلس الكلية ، وفي حالة انقطاعه مدة أطول من ذلك بدون عذر يقبله مجلس الكلية ويوافق عليه مجلس الجامعة يطبق عليه النصوص الواردة باللائحة التنفيذية لقانون تنظيم الجامعات.

مادة (١٥) :

متطلبات الحصول على درجة بكالوريوس الصيدلة (فارم دي PharmD)

يتطلب الحصول على درجة بكالوريوس الصيدلة (فارم دي PharmD) طبقا لنظام الساعات المعتمدة او ما يعادله ما يلي:

أولا : دراسة واجتياز عدد الساعات المعتمدة وعددها ١٧٨ ساعة معتمدة موزعة على عشرة فصول دراسية وتشمل **متطلبات الكلية الإجبارية** وعددها ١٧٣ ساعة معتمدة (وتشمل عدد ٨ ساعات معتمدة مقررات الكلية الاختيارية) , **بالإضافة الى متطلبات الجامعة الإجبارية** وعددها ٥ ساعات معتمدة لا تضاف الي المجموع الكلي على ألا يقل المعدل التراكمي عن اثنان.

ثانيا: إجتياز فترة تدريب ميداني أولى بإجمالي عدد ١٠٠ ساعة تدريب فعلية فى الصيدليات الأهلية والحكومية وصيدليات المستشفيات التي يقرها مجلس الكلية وذلك تحت إشراف عضو هيئة تدريس و يتم التدريب خلال الأجازات الصيفية لسنوات الدراسة بعد نهاية المستوى الثالث وأن يكمل سنة الامتياز (عام أكاديمي- ٩ أشهر) بعد الأنتهاء من سنوات الدراسة ، **طبقا للائحة التفصيلية الخاصة ببرنامج تدريب سنة الامتياز والتى تشمل مشروع التخرج فى إحدى التخصصات المطروحة.**

ثالثا : اجتياز ما قد تقرره الجامعة من متطلبات للتخرج على ألا يتضمنها حساب المعدل الفصلي أو التراكمي للطالب.

مادة (١٦) :

نظام تأديب الطلاب

الطلاب المقيدون بالبرنامج خاضعون للنظام التأديبى المبين في قانون تنظيم الجامعات المصرية ولائحته التنفيذية.

مادة (١٧) :

كود الأقسام ومتطلبات البرنامج الدراسي (أنظر مرفق رقم ١)

مادة (١٨) :

الخطة الدراسية (مرفق ٢)

مادة (١٩) :

محتوى المقررات الدراسية (أنظر مرفق ٣)

مادة (٢٠) :

تحديث المقررات الدراسية

يجوز تحديث نسبة لا تتجاوز ٢٠% من محتوى المقررات الدراسية بناء على أقتراح مجلس القسم العلمى المختص وموافقة مجلس الكلية واعتماد مجلس الجامعة بعد إبداء المبررات اللازمة .

مادة (٢١) :

برنامج التدريب لسنة الإمتياز:

يتم وضع برنامج مفصل للتدريب للسنة النهائية (سنة الأمتياز) فى شكل دورات تناوبيه فى ملحق به لائحة برنامج التدريب التناوبى بصورة ممنهجة تفصيلية.

مرفق ١

خاص بالمادة (١٧)

كود الأقسام ومتطلبات الجامعة والكلية والمقررات الإختيارية

١ـ كود الأقسام

Key for Course Abbreviations

MS	Mathematics
PB	Biochemistry
PC	Pharmaceutical Chemistry
PG	Pharmacognosy
PM	Microbiology and Immunology
PO	Pharmacology and Toxicology
PP	Pharmacy Practice
PT	Pharmaceutics
MD	Medical Courses
NP	Non professional

1. The letter ‘P’ means that the courses are offered to students of Pharmacy only.
2. The first digit represents the semester number.
3. The second and third digits represent the course number.

٢- متطلبات الجامعة (University Requirements)

وتشمل ٥ ساعات معتمدة لا تضاف الي المجموع الكلي:

Course Code*	Course Title	Credit Hours*		
		L	P/T	Total
LNG1001	English	1	2	3
PHI1001	Scientific Thinking	1	--	1
HST1001	Sinai History	1	--	1
Total		3	2	5

*L= lecture, P/T= practical/tutorial

* **Sinai University requirements course Code:**

Sinai University has its own coding scheme which consists of 7 characters (3 letters and 4 digits (numbers)). The code is divided into two main parts: The first part (the left part) consists of three unique characters (letters) identifying the academic department offering the course. The second part (the right part) consists of four digits (numbers) defined from left to right as follows:

Course Level: A single digit (1-5) identifying the level of the course.

Area of Knowledge: A single digit (0-9) defining the area of knowledge within the academic department.

Course Serial Number: A two-digit number (01-99) within the area of knowledge that specifies a certain course.

٣- متطلبات الكلية

Faculty Requirements: See programme curriculum (Appendix 2)

٤- مقررات اختيارية

Elective Courses:

The Faculty of Pharmacy offers elective courses from which the students are free to select eight credit hours.

Course Code	Course Title	Credit Hours		
		L	P/T	Total
PC E12	Advanced Pharmaceutical Analysis - Spectroscopy	1	1	2
PG E07	Alternative Medicinal Therapies	1	1	2
PG E08	Production and Manufacture of Medicinal plants	1	1	2
PG E09	Chromatography and Separation Techniques	1	1	2
PT E12	Applied Industrial Pharmacy	1	1	2
PT E13	Cosmetic Preparations	1	1	2
PT E14	Quality Assurances and GMP	1	1	2
PO E07	Biological Standardization	1	1	2
PO E08	Veterinary Pharmacology	1	1	2
PM E 07	Gene regulation and epigenetics	1	1	2
PM E 08	Antimicrobial stewardship	1	1	2
PM E 09	Infection Control	1	1	2
PM E 10	Bioinformatics	1	1	2
PB E05	Clinical nutrition	1	1	2

L: Lecture
P: Practical
T: Tutorial

- لمجلس الكلية طرح المقررات الإختيارية من الامثلة المذكورة بالجدول السابق في كل مستوى/فصل دراسي وذلك بعد أخذ رأي مجالس الأقسام العلمية المختصة ويمكن للكلية إضافة مقررات إختيارية أخرى يشترط موافقة مجلس الجامعة بعد إبداء المبررات اللازمة.

مرفق رقم ٢

خاص بالمادة رقم (١٨)

Programme Curriculum **الخطة الدراسية**

Level 1

Semester (1)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Pharmaceutical Analytical Chemistry I	**PC 101**	**2**	**1**	**3**	**Registration**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmaceutical Organic Chemistry I	**PC 102**	**2**	**1**	**3**	**Registration**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmacy Orientation	**PT 101**	**1**	**-**	**1**	**Registration**	**20**	**--**	**80**	**--**	**100**	**1**
English	**LNG1001**	**1**	**2**	**3**	**Registration**	**15**	**25**	**50**	**10**	**100**	**1**
Medicinal Plants	**PG 101**	**2**	**1**	**3**	**Registration**	**15**	**25**	**50**	**10**	**100**	**2**
Information Technology	**NP 101 INT1001**	**2**	**1**	**3**	**Registration**	**15**	**25**	**60**	**---**	**100**	**2**
Mathematics	**MS 101**	**1**	**---**	**1**	**Registration**	**20**	**--**	**80**	**--**	**100**	**1**
Human Rights and Fighting Corruption	**NP 102 HUR1001**	**1**	**---**	**1**	**Registration**	**20**	**--**	**80**	**--**	**100**	**1**
Total		**12**	**6**	**18**						**800**	

❍ ***Lect.*** = Lecture , ***Period.*** = Periodical Exam, ***Pract./ Tut.*** = Practical / Tutorial, ***Wr.*** = Written Exam

- **Level 1**

Semester (2)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Pharmaceutical Analytical Chemistry II	PC 203	2	1	3	Pharmaceutical Analytical Chemistry I	15	25	50	10	100	2
Pharmaceutical Organic Chemistry II	PC 204	2	1	3	Pharmaceutical Organic Chemistry-I	15	25	50	10	100	2
Cell Biology	MD 201	1	1	2	Registration	15	25	50	10	100	1
Medical Terminology	MD 202	1	-	1	Registration	20	--	80	--	100	1
Anatomy& Histology	MD 203	2	1	3	Registration	15	25	60	-	100	2
Physical Pharmacy	PT 202	2	1	3	Pharmaceutical Analytical Chemistry I	15	25	50	10	100	2
Pharmacognosy I	PG 202	2	1	3	Medicinal Plants	15	25	50	10	100	2
Psychology	MD 204	1	-	1	Registration	20	--	80	--	100	1
Total		13	6	19						800	

- ***Lect.*** = Lecture
- ***Period.*** = Periodical Exam
- ***Pract./ Tut.*** = Practical / Tutorial
- ***Wr.*** = Written Exam

Level 2

Semester (3)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Pharmaceutical Analytical Chemistry III	**PC 305**	**1**	**1**	**2**	Pharmaceutical Analytical Chemistry-II	**15**	**25**	**50**	**10**	**100**	**1**
Pharmaceutical Organic Chemistry III	**PC 306**	**2**	**1**	**3**	Pharmaceutical Organic Chemistry-II	**15**	**25**	**50**	**10**	**100**	**2**
Pharmacognosy II	**PG 303**	**2**	**1**	**3**	Pharmacognosy I	**15**	**25**	**50**	**10**	**100**	**2**
Physiology and Pathophysiology	**MD 305**	**2**	**1**	**3**	Anatomy and Histology	**15**	**25**	**50**	**10**	**100**	**2**
Pharmaceutics I	**PT 303**	**2**	**1**	**3**	Physical Pharmacy	**15**	**25**	**50**	**10**	**100**	**2**
Scientific Writing	**NP 303**	**1**	**1**	**2**	Registration	**15**	**25**	**60**		**100**	**1**
Scientific Thinking	**PHI3001**	**1**	**-**	**1**	Information Technology	**20**	**--**	**80**	**---**	**100**	**1**
Sinai History	**HST3001**	**1**	--	**1**	Registration	**20**	**--**	**80**	**--**	**100**	**1**
Total		**12**	**6**	**18**						**800**	

❍ ***Lect.*** = Lecture, ***Period.*** = Periodical, ***Pract./ Tut.*** = Practical / Tutorial, ***Wr.*** = Written

Level 2
Semester (4)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Biochemistry I	**PB 402**	**2**	**1**	**3**	**Organic chemistry III**	**15**	**25**	**50**	**10**	**100**	**2**
General Microbiology and Immunology	**PM 401**	**2**	**1**	**3**	**Registration**	**15**	**25**	**50**	**10**	**100**	**2**
Instrumental Analysis	**PC 407**	**2**	**1**	**3**	**Pharmaceutical Analytical Chemistry-III**	**15**	**25**	**50**	**10**	**100**	**2**
Pathology	**MD 406**	**1**	**1**	**2**	**Physiology and Pathophysiology**	**15**	**25**	**50**	**10**	**100**	**1**
Pharmaceutics II	**PT 404**	**2**	**1**	**3**	**Pharmaceutics I**	**15**	**25**	**50**	**10**	**100**	**2**
Presentation & Communication skills	**NP 404 PHI4002**	**1**	**1**	**2**	**Information Technology**	**15**	**25**	**60**	**---**	**100**	**1**
Biostatistics	**PO 401**	**1**	**-**	**1**	**Registration**	**20**	**--**	**80**	**--**	**100**	**1**
Total		**11**	**6**	**17**						**700**	

- ***Lect.*** = Lecture
- ***Period.*** = Periodical
- ***Pract./ Tut.*** = Practical / Tutorial
- ***Wr.*** = Written

Level 3

Semester (5)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Biochemistry II	**PB 503**	**2**	**1**	**3**	**Biochemistry-I**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmaceutical Microbiology	**PM 502**	**2**	**1**	**3**	**General Microbiology and Immunology**	**15**	**25**	**50**	**10**	**100**	**2**
Phytochemistry	**PG 504**	**2**	**1**	**3**	**Pharmacognosy II**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmaceutics III	**PT 505**	**2**	**1**	**3**	**Pharmaceutics II**	**15**	**25**	**50**	**10**	**100**	**2**
Medicinal Chemistry I	**PC 508**	**2**	**1**	**3**	**Pharmaceutical organic III**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmacology I	**PO 502**	**2**	**1**	**3**	**Physiology & Pathophysiology**	**15**	**25**	**50**	**10**	**100**	**2**
Total		**12**	**6**	**18**						**600**	

- ***Lect.*** = Lecture
- ***Period.*** = Periodical
- ***Pract./ Tut.*** = Practical / Tutorial
- ***Wr.*** = Written

Level 3

Semester (6)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Parasitology	**PM 603**	**2**	**1**	**3**	**Registration**	**15**	**25**	**50**	**10**	**100**	**2**
Biopharmaceutics & Pharmacokinetics	**PT 606**	**2**	**1**	**3**	**Pharmaceutics III**	**15**	**25**	**50**	**10**	**100**	**2**
Applied and Forensic Pharmacognosy	**PG 605**	**1**	**1**	**2**	**Phytochemistry**	**15**	**25**	**50**	**10**	**100**	**1**
Pharmaceutics IV	**PT 607**	**2**	**1**	**3**	**Pharmaceutics III**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmacology II	**PO 603**	**2**	**1**	**3**	**Pharmacology 1**	**15**	**25**	**50**	**10**	**100**	**2**
Medicinal Chemistry II	**PC 609**	**2**	**1**	**3**	**Medicinal Chemistry I**	**15**	**25**	**50**	**10**	**100**	**2**
Total		**11**	**6**	**17**						**600**	

- ***Lect.*** = Lecture
- ***Period.*** = Periodical
- ***Pract./ Tut.*** = Practical / Tutorial
- ***Wr.*** = Written

Level 4

Semester (7)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Medical Microbiology	**PM 704**	**2**	**1**	**3**	**Pharmaceutical Microbiology**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmacology III	**PO 704**	**2**	**1**	**3**	**Pharmacology II**	**15**	**25**	**50**	**10**	**100**	**2**
Drug Design	**PC 710**	**1**	**1**	**2**	**Medicinal Chemistry II**	**15**	**25**	**50**	**10**	**100**	**1**
Clinical Biochemistry	**PB 704**	**2**	**1**	**3**	**Biochemistry II**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmaceutical Technology I	**PT 708**	**2**	**1**	**3**	**Pharmaceutics IV**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmaceutical Legislations & Professional Ethics	**NP 705**	**1**	**-**	**1**	**Registration**	**20**	**--**	**80**	**--**	**100**	**1**
Elective	**PE---**	**1**	**1**	**2**	**Registration**	**15**	**25**	**60**	**---**	**100**	**1**
Total		**11**	**6**	**17**						**700**	

- ***Lect.*** = Lecture
- ***Period.*** = Periodical
- ***Pract./ Tut.*** = Practical / Tutorial
- ***Wr.*** = Written

Level 4

Semester (8)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Clinical Pharmacokinetics	**PP 801**	**2**	**1**	**3**	**Biopharmaceutics and Pharmacokinetics**	**15**	**25**	**50**	**10**	**100**	**2**
Drug Information	**PO 805**	**1**	**1**	**2**	**Pharmacology III**	**15**	**25**	**50**	**10**	**100**	**1**
Toxicology & Forensic Chemistry	**PO 806**	**2**	**1**	**3**	**Pharmacology III**	**15**	**25**	**50**	**10**	**100**	**2**
Hospital Pharmacy	**PP 802**	**1**	**1**	**2**	**Pharmacology III**	**15**	**25**	**50**	**10**	**100**	**1**
Pharmaceutical Technology II	**PT 809**	**2**	**1**	**3**	**Pharmaceutical Technology I**	**15**	**25**	**50**	**10**	**100**	**2**
Clinical pharmacy and Pharmacotherapeutics I	**PP 803**	**2**	**1**	**3**	**Pharmacology III**	**15**	**25**	**50**	**10**	**100**	**2**
Elective	**PE ---**	**1**	**1**	**2**	**Registration**	**15**	**25**	**60**	**---**	**100**	**1**
Total		**11**	**7**	**18**							

- ***Lect.*** = Lecture
- ***Period.*** = Periodical
- ***Pract./ Tut.*** = Practical / Tutorial
- ***Wr.*** = Written

Level 5

Semester (9)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Biotechnology	**PM 905**	**2**	**1**	**3**	**General Microbiology & Immunology**	**15**	**25**	**50**	**10**	**100**	**2**
Community Pharmacy Practice	**PP 904**	**2**	**1**	**3**	**Pharmacology III**	**15**	**25**	**50**	**10**	**100**	**2**
Public Health	**PM 906**	**2**	**-**	**2**	**Medical Microbiology**	**25**	**---**	**75**	**---**	**100**	**2**
Phytotherapy and Aromatherapy	**PG 906**	**2**	**--**	**2**	**Phytochemistry**	**15**	**---**	**75**	**10**	**100**	**2**
Good Manufacturing Practice	**PT 910**	**1**	**1**	**2**	**Pharmaceutical Technology II**	**15**	**25**	**50**	**10**	**100**	**1**
Marketing & Pharmacoeconomics	**NP 906**	**2**	**--**	**2**	**Registration**	**25**	**---**	**75**	**---**	**100**	**2**
Clinical pharmacy and Pharmacotherapeutics II	**PP905**	**2**	**1**	**3**	**Clinical Pharmacy and Pharmacotherapeutics I**	**15**	**25**	**50**	**10**	**100**	**2**
Elective	**PE ---**	**1**	**1**	**2**	**Registration**	**15**	**25**	**60**	**---**	**100**	**1**
Total		**14**	**5**	**19**						**800**	

- ***Lect.*** = Lecture
- ***Period.*** = Periodical
- ***Pract./ Tut.*** = Practical / Tutorial
- ***Wr.*** = Written

Level 5
Semester (10)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Quality Control of Pharmaceuticals	**PC 011**	**2**	**1**	**3**	**- Pharmaceutical Analytical ChemistryIII**	**15**	**25**	**50**	**10**	**100**	**2**
First Aid	**MD 007**	**1**	**--**	**1**	**Pharmacology III**	**20**	**--**	**80**	**--**	**100**	**1**
Drug interaction	**PP 006**	**1**	**1**	**2**	**PharmacologyIII**	**15**	**25**	**50**	**10**	**100**	**1**
Advanced Drug Delivery Systems	**PT 011**	**1**	**1**	**2**	**Pharmaceutics IV**	**15**	**25**	**50**	**10**	**100**	**1**
Clinical pharmacy and Pharmacotherapeutics III	**PP 007**	**2**	**1**	**3**	**Clinical Pharmacy and Pharmacotherapeutics I**	**15**	**25**	**50**	**10**	**100**	**2**
Entrepreneurship	**NP 007**	**1**	**1**	**2**	**Marketing & Pharmacoeconomics**	**15**	**25**	**50**	**10**	**100**	**1**
Clinical Research, Pharmacoepidemiology & Pharmacovigilance	**PP 008**	**1**	**1**	**2**	**- Biostatistics**	**15**	**25**	**50**	**10**	**100**	**1**
Elective	**PE ---**	**1**	**1**	**2**	**Registration**	**15**	**25**	**60**	**---**	**100**	**1**
Total		**10**	**7**	**17**						**800**	

Lect. = Lecture, ***Period.*** = Periodical, ***Pract./ Tut.*** = Practical / Tutorial, ***Wr.*** = Written

Courses Offered by the Departments

1- Department of Pharmaceutical Chemistry

Course Code*	Course Title	Credit Hours		
		L	P/T	Total
PC 101	Pharmaceutical Analytical Chemistry I	2	1	3
PC 102	Pharmaceutical Organic Chemistry I	2	1	3
PC 203	Pharmaceutical Analytical Chemistry II	2	1	3
PC 204	Pharmaceutical Organic Chemistry II	2	1	3
PC 305	Pharmaceutical Analytical Chemistry III	1	1	2
PC 306	Pharmaceutical Organic Chemistry III	2	1	3
PC 407	Instrumental Analysis	2	1	3
PC 508	Medicinal Chemistry I	2	1	3
PC 609	Medicinal Chemistry II	2	1	3
PC 710	Drug Design	1	1	2
PC 011	Quality Control of Pharmaceuticals	2	1	3
PC E12	Advanced Pharmaceutical Analysis - Spectroscopy	1	1	2
Total				33

2- Department of Pharmacognosy

Course Code	**Course Title**	**Credit Hours**		
		L	**P/T**	**Total**
PG 101	Medicinal plants	2	1	3
PG 202	Pharmacognosy I	2	1	3
PG 303	Pharmacognosy II	2	1	3
PG 504	Phytochemistry	2	1	3
PG 605	Applied and Forensic Pharmacognosy	1	1	2
PG 906	Phytotherapy and Aromatherapy	2	-	2
PG E07	Alternative Medicinal Therapies	1	1	2
PG E08	Production and Manufacture of Medicinal plants	1	1	2
PG E09	Chromatography and Separation Techniques	1	1	2
Total				22

3- Department of Pharmaceutics

Course Code	Course Title	Credit Hours		
		L	P/T	Total
PT 101	Pharmacy Orientation	1	--	1
PT 202	Physical Pharmacy	2	1	3
PT 303	Pharmaceutics I	2	1	3
PT 404	Pharmaceutics II	2	1	3
PT 505	Pharmaceutics III	2	1	3
PT 606	Biopharmaceutics & Pharmacokinetics	2	1	3
PT 607	Pharmaceutics IV	2	1	3
PT 708	Pharmaceutical Technology I	2	1	3
PT 809	Pharmaceutical Technology II	2	1	3
PT 910	Good Manufacturing Practice	1	1	2
PT 011	Advanced Drug Delivery Systems	1	1	2
PT E12	Applied Industrial Pharmacy	1	1	2
PT E13	Cosmetic Preparations	1	1	2
PT E14	Quality Assurances and GMP	1	1	2
MS 101	Mathematics	1	-	1
Total				36

4- Department of Microbiology and Immunology

Course Code	Course Title	Credit Hours		
		L	P/T	Total
MD 201	Cell Biology	1	1	2
PM 401	General Microbiology and Immunology	2	1	3
PM 502	Pharmaceutical Microbiology	2	1	3
PM 603	Parasitology	2	1	3
PM 704	Medical Microbiology	2	1	3
PM 905	Biotechnology	2	1	3
PM 906	Public Health	2	-	2

PM E 07	Gene regulation and epigenetics	1	1	2
PM E 08	Antimicrobial stewardship	1	1	2
PM E 09	Infection Control	1	1	2
PM E 010	Bioinformatics	1	1	2
Total				25

5- Department of Pharmacology and Toxicology

Course Code	Course Title	Credit Hours		
		L	P/T	Total
PO 401	Biostatistics	1	--	1
PO 502	Pharmacology I	2	1	3
PO 603	Pharmacology II	2	1	3
PO 704	Pharmacology III	2	1	3
PO 805	Drug Information	1	1	2
PO 806	Toxicology & Forensic Chemistry	2	1	3
PO E07	Biological Standardization	1	1	2
PO E08	Veterinary Pharmacology	1	1	2
MD 202	Medical Terminology	1	-	1
MD 203	Anatomy& Histology	2	1	3
MD 204	Psychology	1	-	1
MD 305	Physiology and Pathophysiology	2	1	3
MD 406	Pathology	1	1	2
MD 007	First Aid	1	-	1
Total				30

6- Department of Biochemistry

Course Code	Course Title	Credit Hours		
		L	P/T	Total
MD 201	Cell Biology	1	1	2
PB 402	Biochemistry I	2	1	3
PB 503	Biochemistry II	2	1	3
PB 704	Clinical Biochemistry	2	1	3
PB E04	Clinical nutrition	1	1	2
Total				13

7- Department of Pharmacy Practice

Course Code	Course Title	Credit Hours		
		L	P/T	Total
PP 801	Clinical Pharmacokinetics	2	1	3
PP 802	Hospital Pharmacy	1	1	2
PP 803	Clinical pharmacy and Pharmacotherapeutics I	2	1	3
PP 904	Community Pharmacy Practice	2	1	3
PP905	Clinical pharmacy and Pharmacotherapeutics II	2	1	3
PP 006	Drug interaction	1	1	2
PP 007	Clinical pharmacy and Pharmacotherapeutics III	2	1	3
PP 008	Clinical Research, Pharmacoepidemiology & Pharmacovigilance	1	1	2
NP 101 INT 1001	Information Technology	2	1	3
NP 102 HUR1001	Human Rights and Fighting Corruption	1	--	1
NP 303	Scientific Writing	1	1	2
NP 404 PHI 4002	Presentation & Communication skills	1	1	2
NP 705	Pharmaceutical Legislations, Regulatory Affairs and Professional Ethics	1	--	1
NP 906	Marketing & Pharmacoeconomics	2	--	2
NP 007	Entrepreneurship	1	1	2
Total				34

مرفق ٣

خاص بالمادة (١٩)

محتوى المقررات الدراسية

Course Content

PC 101 Pharmaceutical Analytical Chemistry I (2+1)

Chemical Kinetics, rate of reaction, first Order reaction, rate law , Second order and third order of reaction, molecularity , Chemical equilibrium, Theories of reaction rate, activation energy and catalysis , Photochemistry, absorbed energy, quantum yield and chemical equilibrium.
Introduction to general chemistry, Types of chemical reactions – calculations of concentrations of substances. Analysis of anions – Analysis of cations – Analysis of mixture of anions and cations.

PC 102 Pharmaceutical Organic Chemistry I (2+1)

The objective of this course is to provide students with the basic knowledge in pharmaceutical organic chemistry, which will serve as fundamentals for other courses offered during subsequent semesters. This course involves Electronic structure of atom, alkanes [nomenclature, synthesis and reactions (free radical reactions)], and cycloakanes. Stereochemistry (Optical isomers, racemic modification, nomenclature of configurations). Alkenes, alkadienes and alkynes. Alkyl halides (nomenclature, preparation and chemical reactions (S N 1, S N 2, E 1 , E 2). Arenes and aromatic compounds (Kekule structure, Huckel rule, Electrophilic aromatic substitution and orientation). The practical sessions of this course help students gain skills required to identify organic compounds of different classes.

PC 203 Pharmaceutical Analytical Chemistry II (2+1)

Acid-Base theory, titration curves, indicators, applications. Titrations in non-aqueous media, classification of solvents, theory, applications. Precipitimetric titrations: solubility product principle, titration curves, Mohr's method. Volhard's method, Fajans' method, pharmaceutical application. Complexometric reactions, theory, reaction with EDTA, indicators, applications.

PC 204 Pharmaceutical Organic Chemistry II (2+1)

This course involves different classes of organic compounds: aryl halides, Alcohols, Phenols, ethers & epoxides, aldehydes, ketones, carboxylic acid & acid derivatives, sulphonic acids, and nitrogenous compounds. Carbohydrates, amino acids & peptides, The practical sessions of this course help students gain skills required for identification of carbohydrates, separation, identification, and purification of organic mixtures.

PC 305 Pharmaceutical Analytical Chemistry III (1+1)

Redox titrations, theory, oxidation potentials, Nernest equation, titration curves, redox indicators, selected oxidants and reductants, applications of redox titrations. The course also covers applied pharmaceutical analysis such as water analysis (water hardness, analysis of chloride, chlorine, iron, oxidizable matter, in water.
Electrochemical methods, electrode potential, reference electrodes, indicator electrode, applications. Conductomertric titration: ionic conductance, definition of cell constant, conductance, applications.

polarography: Ilkovic equation, dropping mercury electrodes, diffusion current, applications, derivatization polarography.

PC 306 Pharmaceutical Organic Chemistry III (2+1)

This course involves polynuclear and heterocyclic chemistry. In addition, it provides an introduction about the use of different spectroscopic tools, including UV, infrared (IR), nuclear magnetic resonance (NMR) and mass spectrometry (MS) for the structural elucidation of organic compounds.
The tutorial sessions of this course: students gain skills for solving problems of structural elucidation of organic compounds.

PC 407 Instrumental Analysis (2+1)

Spectroscopic methods of analysis which include uv/vis spectroscopy, principal, instrumentation, factors affecting absorption and applications in pharmaceutical analysis. Fluorimetric methods, principal instrumentation, factors affecting fluorescence intensity and applications in pharmaceutical analysis. Atomic spectroscopy; principal and instrumentation. Chromatographic methods for analytical chemistry which includes: TLC, gel chromatography, column chromatography, HPLC, UPLC, TLC, gas chromatography, capillary electrophoresis.

PC 508 Medicinal Chemistry I (2+1)

This course involves an Introduction to pharmaceutical and medicinal chemistry, endocrine-related drugs (diabetes, thyroid and calcium-regulating agents), steroidal hormones, antihistamines (H1, H2 blockers and anti-ulcer PPIs), different classes of antibiotics and antimicrobials (natural and synthetic), beside other synthetic chemotherapeutic agents (including antivirals, antifungals and antiparasitics). Additionally, various anticancer therapies and related drugs are also covered.

PC 609 Medicinal Chemistry II (2+1)

The course is tailored to assist the students to gain the drugs affecting the autonomic nervous system (ANS), drugs acting on the cardiovascular system (CVS), CNS**.** neurodegenerative disorders. Moreover, drugs controlling pain and inflammation (NSAIDs, local anaesthetics and narcotics) are also handled.

PC 710 Drug Design (1+1)

The prime objective of this course is to prepare the students for professional practice by understanding the essentials of Medicinal Chemistry, and how the drugs, biological and toxicological activities are strongly correlated to their chemical structures (Structure-activity relationship; SAR), physicochemical properties and metabolic pathways. Focusing on patient-directed clinical care, the molecular aspects governing drugs' pharmacokinetics (ADME), pharmacodynamics, optimization of drug action, possible side effects, in addition to understanding drug interactions are targeted. In terms of chemistry, SAR, mechanism of action and side effects. The course is also designed to familiarize the students with drug design and molecular modelling covering structure-based and ligand-based drug design. This also includes the process of drug discovery and development from target identification until approval of a new drug. Much concern is given to lead structure identification, optimization and targeting certain receptors and enzymes active sites. Additionally, the course addresses the study of molecular docking, pharmacophore generation, and molecular modifications including prodrug design, stereochemistry alterations, isosteric replacement, drug metabolism and Quantitative Structure-activity relationship (QSAR).

PC 011 Quality Control of Pharmaceuticals (2+1)

I-Quality control & quality assurance of pharmaceuticals.

II-Good Analytical Practice and Sampling: Introduction, Sampling of pharmaceuticals and related materials, Type of sampling tools, Sampling plans.
III-Documentation
IV- Validation of analytical methods according to ICH Guidelines Q2 R1. Compendial testing , Validation of analytical methods, Data elements required for assay validation.
V- drug stability, stability studies and stability indicating methods Drug stability, Stability testing , Forced degradation studies , stability indicating assay methods for drugs according to ICH Q1 R2 Guidelines. Stress conditions for drug degradation according to ICH Q1 R2 Guidelines. Factors affecting drug degradation, Drug expiration, Drug withdrawal from the market. Pharmaceutical regulations according to FDA & EMA (European medicine agency) and ISO and BSI. Drug-excipient interactions and adduct formation; analytical techniques used to detect drug-excipient compatibility, mechanism of drug-excipient interactions, examples.
VI- Official methods of analysis applied to raw materials and end products.

PC E12 Advanced Pharmaceutical Analysis – Spectroscopy (1+1)

Applications of instrumental methods of analysis (ultraviolet and infrared spectroscopy; NMR; mass spectrometry; atomic absorption spectroscopy, GC-MS, X-ray spectroscopy) to pharmaceutical compounds.

MD 201 Cell Biology (1+1)

Department of Microbiology & Immunology

Cell theory and cell structure, structure and function of cell wall and plasma membrane, cell components (centrioles, chloroplasts, cytoskeleton, endoplasmic reticulum, lysosomes, Golgi apparatus, mitochondria, ribosomes), structure of the nucleus.

Department of Biochemistry

Cell growth, proliferation and regulation of cell number, apoptosis and cancer, exocytosis and endocytosis, transport of biological molecules across membranes, membrane function and signal transduction, cell signaling, quorum sensing.

PB 401 Biochemistry I (2+1)

- amino acids
- protein structure, biologically important peptides, protein folding and misfolding
- globular proteins: structure and function of hemoglobin/ myoglobin, types of hemoglobin
- fibrous proteins: structure, types, synthesis and degradation of collagen and elastin, collagenopathies
- Enzymes: nomenclature, properties, mechanism of action, factors affecting velocity, kinetics, inhibition, regulation, enzymes used in clinical diagnosis

- Bioenergetics and oxidative phosphorylation: free energy, electron transport chain, oxidative phosphorylation, reactive oxygen species
- DNA structure and replication:
  - Central dogma of molecular biology (gene to protein)
  - DNA structure
  - Prokaryotic DNA replication
  - Eukaryotic DNA replication / telomeres and telomerase
  - Eukaryotic DNA organization
  - RNA structure and synthesis
  - Eukaryotic transcription and post-transcriptional modification of RNA
  - Codons and the genetic code
- Carbohydrate structure and digestion
- Lipid structure and digestion

- Free radicals and antioxidants

PB 502 Biochemistry II (2+1)

- Metabolism of carbohydrates
- Metabolism of lipids and lipoprotein
- Nitrogen metabolism
- Conversion of amino acids to specialized products:
    - Catecholamines, histamine, serotonin, creatine, melanin
    - Inborn errors of metabolism
- Metabolic effects of insulin and glucagon
- Feed/ fast cycle.

PB 703 Clinical Biochemistry (2+1)

- Diabetes mellitus
- Obesity
- Hyperlipidemia
- Myocardial infarction / atherosclerosis / hypertension
- Porphyrin metabolism
- Liver diseases (hepatitis, fatty liver, cirrhosis) and liver function tests
- Hemoglobinopathies / hematology and complete blood picture
- Fluid and electrolyte balance
- Investigation of renal function
- Diagnosis and management of acid-base disorders
- Hormones actions, functions and imbalances
- Gastrointestinal diseases, tests and diagnosis
- DNA repair / chemical DNA mutagens / tumor markers
- Disorders of purine metabolism / gout
- Biochemistry of Cancer
- Bone and mineral metabolism
- Biochemistry in the elderly
- Functional food and nutraceuticals

PB E04 Clinical Nutrition (1+1)

The course focuses on the kinds and amounts of macronutrients (carbohydrates, fat, and proteins) and micronutrients (vitamins and minerals) that are needed to maintain optimal health and prevent chronic disease in adults.

PG 101 Medicinal Plants (2+1)

The aim of the course is to provide students with knowledge necessary to identify and prepare a crude drug from the farm to the firm. Students should acquire knowledge concerning dusting powders, plant cytology, physiology and medicinal leafy plants (according to their WHO monographs) and their taxonomy. In this course, the student will study: importance of natural products, preparation of natural products derived drugs including collection, storage, preservation and adulteration. The course will introduce the students to the different classes of secondary metabolites and will discuss and address the variability in occurrence of pharmacologically active substances in certain official medicinal

PG 202 Pharmacognosy I (2+1)

Based on the Egyptian flora and other florae of wild and cultivated medicinal plants that are used in the pharmaceutical, cosmetic and food industries in the global & Egyptian market. The course introduces students to some botanical drugs of leaves, flower, seeds, bark and wood origin. During the lectures and practical sessions, students learn to identify examples of these drugs in their entire and powdered forms. Student will learn about the major constituents, folk uses, clinically proven uses, benefits, and precautions of those medicinal plants, possible herbal-drug interactions of selected examples of these drugs and to have an overview over their phytopharmaceuticals available on the market specially the Egyptian market.

PG 303 Pharmacognosy II (2+1)

After completion of the course the student should have the knowledge and skills that enable him to differentiate between different organs of plants through their monographs. The course comprises the study and identification of different drugs (fruits,herbs, subterranean organs, unorganized drugs in addition to drugs of marine and animal origin) , including identification of their active constituents and adulterants, describe micro- and macro-morphological characteristics, benefits and precautions of their medicinal uses., side effects and contraindications and to have an overview over their Phytopharmaceuticals available on the market specially the Egyptian market.

PG 504 Phytochemistry (2+1)

Based on complementary medicine and Egyptian medicinal plants that can be used as natural extracts, bioactive raw materials and phytochemical standards to serve the pharmaceuticals, cosmetics and food industries in Egypt. The course aims to gain students the knowledge and skills that enable them to understand, describe and deal with the chemistry of volatile oils, resins, miscellaneous terpenoids, bitters, carbohydrates and glycosides, alkaloids, tannins and antioxidants of plant, fungi or animal origin, as well as different techniques used for their preparation, identification and determination. Also, the students should become aware of different plant constituents and their pharmacological actions and medicinal uses. The course focuses on the structure activity relationships (SAR) of these natural products derived compounds and their pharmacophoric features.

PG 605 Applied & Forensic Pharmacognosy (1+1)

The course aims to provide pharmacy students with sufficient knowledge concerning quality control from herbal aspects, sampling, structural, physical and analytical standards, purity, safety and adulteration of drugs and their detection. It also covers the modern chromatographic techniques employed for the evaluation of natural product and their products. It also provides the student with basic knowledge about the application of plant biotechnology for the production of pharmaceutically active materials.

The course also includes an overview on forensic Pharmacognosy including plants and their natural products that constitute health hazards, or intended for criminal uses to produce, abortion, loss of mental control, hallucination, heart arrest. Also it includes the study of drug dependents, narcotics, analgesics psych energetics, euphoric. mycotoxin as a serious threat to general health and safety of community, contamination of food material with poisonous fungi.

PG 906 Phytotherapy and Aromatherapy (2+0)

Upon successful completion of this course, the students should be able to know guidelines for prescribing herbal medicinal drugs on the basis of the pharmacological properties of these drugs including therapeutic uses, mechanism of action, dosage, adverse reactions, contraindications & drug interactions. The course also allows students understand pharmacotherapeutic principles applied to the treatment of different diseases, pharmacovigilance and rational use of drugs. Also the student should understand the basis of complementary and alternative medicine with emphasis on herbal remedies,

nutritional supplements, homeopathies, aromatherapy & their effect on maintaining optimum health and prevention of chronic diseases. It includes studying of medicinal plants portfolios in relation to Phytopharmaceuticals in Egyptian Market.

PG E07 Alternative Medicinal Therapies (1+1)

The study of herbal preparations, nutritional supplements, and homeopathies. The study of herbal preparations that are widely used by the general public as self-selected OTC (over-the-counter) products/NPDs (nonprescription drugs). Food items for therapeutic, disease prevention, or health promotion purposes. Emphasis will be placed on the role of the pharmacist to help clients make an informed choice and counsel them on the selection of useful and safe products.

PG E08 Productions and Manufacture of Medicinal Plants (1+1)

Commercial production of medicinal plants, cultivation, collection, drying, preservation, extraction, quality control, and final packing of entire or powdered forms or extracts.

PG E09 Chromatography and Separation Techniques (1+1)

Introduction and modes of separation, gel filtration and permeation, ion exchange chromatography, type properties, ion exchange and non-ion exchange manifestation and applications. High-pressure liquid chromatography, gas liquid chromatography and their applications.

PT 101 Pharmacy Orientation (1+0)

This is a course to acquaint the beginning pharmacy student with the multiple aspects of the profession of pharmacy, including the mission of pharmacy, role of pharmacist in society and pharmacy careers, classification of medications, interpretation of prescriptions and medication orders, general dispensing procedure and factors affecting drug dosage, sources of drugs, different dosage forms and various routes of administration. In addition to the history of pharmacy practice in various civilizations

PT 202 Physical Pharmacy (2+1)

This course provides students with knowledge of physiccchemical principles essential for the design and formulation of pharmaceutical products. Students are introduced to the fundamental concepts of states of matter, Phase equilibrium, colligative properties, isotonicity solubility, dissolution, partition coefficient, surface and interfacial phenomena, surface active agents, adsorption and its application in pharmacy and rheological behaviour of dosage forms

PT 303 Pharmaceutics I (2+1)

This course is a study of the system of weights, measures, mathematical expertise and pharmaceutical calculations requisite to the compounding, dispensing, and utilization of drugs in pharmacy practice. It is also concerned with all manufacturing formulations aspects, packaging, storage and stability of liquid dosage forms including solutions (aqueous and non-aqueous), suspensions, emulsions and colloids with emphasis on the technology and pharmaceutical rationale fundamental to their design and development. The incompatibilities occurring during dispensing are also considered

PT 404 Pharmaceutics II (2+1)

This course covers the structure and function of the skin, target area of treatment after topical application to skin, basic principles of diffusion through membranes and factors affecting percutaneous absorption, enhancement of skin penetration, transdermal drug delivery systems (TDDS). It also

describes the principles and techniques involved in the formulation and manufacturing of traditional dermatological semisolid dosage forms (creams, ointments, gels and pastes) and cosmetic products

PT 505 Pharmaceutics III (2+1)

The course introduces the students to the kinetics of drug decomposition including rate and order of the reaction, determination of the half-life, expiry date and shelf-life by different methods, stability testing, and in-vitro possible drug/excipients interactions . It also describes the principles and techniques involved in the formulation, and manufacturing of solid dosage forms including powders, granules, tablets, capsules and suppositories.

PT 606 Biopharmaceutics and Pharmacokinetics (2+1)

This course aims to provide students with an understanding of the relation between the physicochemical properties of the drug and its fate in the body. The course explores the principles of biopharmaceutics and strategies for enhancing drug delivery and bioavailability. Integration of knowledge gained from other courses is emphasized to design and assure the quality of drug products. Students will also be introduced to the principles of pharmacokinetics (absorption, distribution, metabolism and elimination). The concepts of bioequivalence, biowaivers and *in vitro-in vivo* correlations (IVIVC's) will be discussed along with different models of drug disposition. The course prepares students for their evolving role in utilizing pharmacokinetics to guide formulation, dosage-regimen design and optimizing drug usage.

PT 607 Pharmaceutics IV (2+1)

This course involves principles of formulation, development, sterilization, packaging and quality control testing of pharmaceutical sterile drug products. Principles for calculation and manipulation of parenterals, ophthalmic preparations, vaccines and blood products are emphasized. The course also covers the basic principles of formulation, sterilization, packaging and applications of radiopharmaceuticals in pharmacy and medicine. An in depth study on the formulation, manufacturing, quality control testing and applications of aerosols and other inhalation products is also accentuated.

PT 708 Pharmaceutical Technology I (2+1)

The course provides students with an introduction to industrial pharmacy. It deals with the principles of various unit operations such as heat transfer, evaporation, drying, distillation, filtration, centrifugation, crystallization and extraction. It focuses on the application of these unit operations in pharmaceutical industry with emphasis on the equipment and machines used during the production of different dosage forms.

PT 809 Pharmaceutical Technology II (2+1)

This course is a continuation of the study of the various unit operations in pharmaceutical industry with emphasis on size reduction, size separation, size analysis and size enlargement involved in the process development, scale-up and manufacturing of pharmaceutical drug products in industry (conventional / advanced nanotechnology based). In addition to the container/closure systems, some of the packaging processing methods are covered. Moreover, the vision about designing a quality product and its manufacturing process to consistently deliver the intended performance of the product to meet patient needs is discussed by applying Quality-by-Design principles.

PT 910 Good Manufacturing Practice (1+1)

This course involves the principles of the Current Good Manufacturing Practices (cGMP). It exposes students to all aspects of validation, calibration, inspection and the requirements for manufacturing

facilities. It also provides students with a review of the process engineering, technology transfer, personnel management, training and hygiene, premises and contamination control, documentation and auditing, process deviation with emphasis on risk management, complaint handling and product recall theory.

PT 011 Advanced Drug Delivery Systems (1+1)

The course aims to provide students with insights and competencies related to the principles of pharmaceutical pre-formulation as a gateway to dosage forms design and formulation. Emphasis is placed on developing formulations based on the physical and chemical properties of the drug substance and the intended use of the drug product. The course also introduces the students to the formulation principles and applications of novel and targeted drug delivery systems by transforming proteins, genes, and other biotechnology driven compounds into therapeutic products. In addition to formulation aspects of biotechnology derived pharmaceuticals, it also covers the application of polymers and excipients to solve problems/issues concerning the optimization of absorption, selective transport, and targeting.

PT E12Applied Industrial Pharmacy (1+1)

Good manufacturing practice regulations and quality assurance with emphasis on process validation and sampling techniques.

PT E13 Cosmetic Preparations (1+1)

The principles and methods used in the design, preparation and quality criteria for different categories of cosmetic products.

PT E14 Quality Assurances and GMP (1+1)

The Course Covers the Principles of Quality assurance documentation environment monitoring and control of raw materials, packaging systems quality testing laboratory quality control and instruments good laboratory practice and skills good industrial practice good manufacturing practice quality determination using statistics quality assurance in registration and licensing of pharmaceutical products.

PM 401 General Microbiology and Immunology (2+1)

The course provides students with a combination of laboratory and theoretical experience exploring the general aspects of microbiology. It includes knowledge of microorganisms, their morphology, diversity, cell structure and function, cultural characteristics, growth, metabolism, role of microorganisms in infectious diseases and microbial pathogenesis. It also clarifies different mechanisms of transport across bacterial cell membrane, metabolic pathways and physiology of bacteria. The course also covers the principles of genetic characters including DNA and RNA structures, replication, different forms of mutation and mutagenic agents. Furthermore, it explores the basic concepts of microbial growth, cultivation and reproduction.

Moreover the course introduces the modern concepts of medical immunology, with an emphasis onhost-pathogen relationship, non-specific and specific immunity and mechanisms of protective immunity. In addition, it explores molecular and cellular immunology concepts, including humoral immunity, antigen and antibody structure, function and their interaction. The course will also discuss different effector mechanisms, the complement system, together with cell mediated immunity. Active and passive immunization, types of hypersensitivity,*in vitro* antigen-antibody reactions, immuno-deficiency disorders, organ transplantation, autoimmunity and auto-immune disease will also be explained.

PM 502 Pharmaceutical Microbiology (2+1)

This course describes in detail the physical and chemical methods of bacterial eradication and how to effectively control microbial growth in the field of pharmaceutical industry/hospitals. It further describes the means of preservation of pharmaceutical products, as well as cosmetics, followed by the proper tests of quality control and sterility assurance. The course also includes sterilization methods, sterilization indicators, sterility testing, concept and design of aseptic area, methods to determine the microbiological quality of pharmaceuticals as well as validation methods of the sterilization processes. Furthermore, the course includes antibiotics, their classification and mechanism of action, antiviral and antifungal agents, new antibiotic categories and new approaches to overcome bacterial resistance and measures taken to reduce and control antibiotics clinical abuse.

Moreover, the course explains different groups of antimicrobials together with their mechanism of action and resistance of microbes to biocides. Microbiological evaluation of antiseptics, disinfectants and preservatives are also among the topics discussed.

PM 603 Parasitology (2 +1)

This course will focus on parasitic infections of humans with knowledge concerning biological, epidemiological and ecological aspects of parasites causing diseases to humans. It is also concerned with different parasitological related diseases in Egypt causing serious health problems.

The course will discuss medical helminthology, protozoology and entomology with emphasis on their morphological features, life cycle, pathogenesis, clinical manifestations, different diagnostic techniques, the most recent lines of treatment and prevention with control strategies for each parasitic infection.

PM 704 Medical Microbiology (2+1)

The course aims at studying microorganisms causing infectious disease in human beings. The course will explore various infectious diseases, their etiology and clinical manifestation, routes of transmission, treatment and techniques in detection and identification of pathogenic microorganisms caused by Gram positive cocci and bacilli, Gram negative cocci and bacilli and mycobacteria of major significance to public health.

The other part of the course will provide students with the essential knowledge to be able to recognize viral pathogens, their epidemiology, mechanisms of pathogenesis, clinical picture, methods of laboratory diagnosis, treatment, prevention and control measures of RNA, DNA and retro viral infections in humans.

PM 905 Biotechnology (2+1)

The course aims to provide students with the basics of biotechnology, its scope and applications through studying fermentation technology, upstream, downstream, and scaling up and down processes together with the use of molecular techniques for production of recombinant products and other major biotechnological products. The course also explores biotransformation, bioremediation, bioleaching, bioinsecticides, biosurfactants and biopolymer production. In addition, different up-to-date molecular techniques and tools currently applied in molecular biology are explained. An insight to stem cells and their principles and uses are also explored together with different types of medically important RNAs. Students are also exposed to the basics of gene therapy and their application in medicine.

PM 906 Public Health (2+0)

This course aims at understanding all scientific disciplines required for health education and health promotion directed to the community. It also explains how epidemiology acts as the bases of public health actions. Detailed scientific information and practice programs will be provided for control of

communicable and non-communicable diseases, improving mental, social, environmental, occupational, geriatric and family health, the use of sufficient and balanced food and nutrition, supplying safe drinking water, treating and disposing wastes as well as proper intervention during disasters.

PM E07Gene Regulation and Epigenetics (1+1)

The course will provide students with knowledge on the concept of epigenetics and control of gene regulation and expression. The course will also include knowledge on how changes in organisms can occur due to modification of gene expression. It will also highlight the effect of epigenetics on the response of individuals to diseases, explore DNA methylation processes, histone modifications, chromatin remodeling, non-coding RNAs and the factors that control and regulate these molecular processes.

PM E08 Antimicrobial Stewardship (1+1)

Factors affecting choice of antimicrobial agent, types of antimicrobial compounds, types of antibiotics and synthetic antimicrobial agents, clinical uses of antimicrobial drugs, manufacturing of antibiotics and other synthetic antimicrobial agents, principle methods of assaying antibiotics, mechanism of action of antibiotics, bacterial resistance to antibiotics, disinfection policy, evaluation of non-antibiotic antimicrobial agents and mode of action of non antibiotic antimicrobial agent.

PM E09 Infection Control (1+1)

This course includes infection prevention and practices to control the spread of infectious diseases. The course will discuss the chain of infection, transmission of infectious diseases, outbreak management, community and personal protection policies as well as strategies taken to prevent the spread of infection among healthcare workers, patients as well as community members.

PM E10 Bioinformatics (1+1)

The course focuses on current bioinformatics tools and databases, and application of bioinformatics in genomics and molecular biology

PO 401 Biostatistics (1+0)

This course provides basic concepts of biostatistics and data analysis.
It includes introduction to descriptive and inferential statistics, interpretation of estimates, confidence intervals and significance tests, elementary concepts of probability and sampling; binomial and normal distribution, basic concepts of hypothesis testing, estimation and confidence intervals, t-test and chi-square test, linear regression theory and the analysis of variance.

PO 502 Pharmacology I (2+1)

The general principles of pharmacology are presented; such as pharmacokinetics, pharmacodynamics, receptor theory, drug interaction and principle of therapeutics. This course integrates principles of pharmacology with conceptual knowledge of physiology and pathophysiology to disease processes regarding the autonomic, cardiovascular and neuromuscular disorders.

PO 603 Pharmacology-II (2+1)

This course integrates principles of pharmacology with conceptual knowledge of physiology and pathophysiology disease processes regarding autacoids and drugs acting on central nervous system, gastro-intestinal tract, pulmonary systems and hematologic disorders. Antihyperlipidemic drugs are also included.

PO 704 Pharmacology-III (2+1)

This course integrates principles of pharmacology with conceptual knowledge of physiology and pathophysiology disease processes regarding drugs acting on endocrine system. Chemotherapeutic drugs including antimicrobials, anticancer and immunosuppressant are within the scope of the course. Stem cell therapy is also included. The anti-inflammatory, analgesics as well as gout treatments are also included.

PO 705 Drug Information (1+1)

This course introduces the student to the concept and need of drug information, types of drug information resources (primary, secondary and tertiary literature), computerized and online drug information, literature evaluation and critical appraisal, retrieval of information. It also aims at providing the students with the professional skills required to effectively and accurately answer medication-related questions in a systematic and evidence based approach.

PO 806 Toxicology & Forensic Chemistry (2+1)

This course provides basics and concepts of toxicology including the carcinogenicity, mechanism of toxicity, target organ and treatment of toxicity. Toxic groups including heavy metals, toxic gases, animal, plant and marine poisons, pesticides and radiation hazards are covered. Environmental, occupational, reproductive and genetic toxicology as well as drug abuse are included. Postmortem sampling for detection of poisons, methods of detection, interpretation of results and writing of a report are also covered.

PO E07 Biological Standardization (1+1)

Assays of hormones, sera, vaccines, toxins, antitoxins, antibiotics and vitamins.

PO E08 Veterinary Pharmacology (1+1)

The commonly used veterinary biological and pharmaceutical preparations; general sanitary and management procedures for the prevention and control of livestock diseases; a brief review of infectious diseases and animal parasites.

MD 102 Medical Terminology (1+0)

Introduction to medical and pharmaceutical terminologies, medical abbreviations, medical idioms, suffixes and prefixes, medical terms pertaining to major body systems.

MD 203 Anatomy& Histology (2+1)

Histology:

Cytology, various tissues (epithelial, connective, muscular, and nervous), heart, blood vessels, lymphatic organs, skin and its appendages, systems (digestive and associated glands, respiratory, urinary, reproductive, and central nervous system), endocrine glands, and eye.

Anatomy:

Introduction to skeletal, muscular, and articular systems, fascia, nervous, cardiovascular, and lymphatic systems, digestive, respiratory, and urogenital systems, endocrine glands. Cytology: blood, liver, spleen, lung, kidney, lymph node, cardiac muscle, aorta, stomach, and intestine.

MD 204 Psychology (1+0)

The course introduces different principles, theories and vocabulary of psychology as a science. The course also aims to provide students with basic concepts of social psychology, medical sociology and interpersonal communication which relate to the pharmacy practice system that involves patients, pharmacists, physicians, nurses and other health care professionals.

MD 305 Physiology and Pathophysiology (2+1)

Physiology

Introduction to body water, homeostasis, transport of materials, nervous systems, neuron structure and function (reflex arc), cardiovascular system, blood, respiratory cycle, gastrointestinal, reproductive, and renal systems, endocrine glands and body temperature regulation.

Pathophysiology

Introduction to pathophysiology, cell injury, inflammation, autonomic nervous system, and endocrine disorders, fluid and electrolyte imbalance, vascular and haematological and urinary disorders.

MD 406 Pathology (1+1)

The main aim of Pathology course is to provide the second year student with knowledge and skills for common diseases affecting body organs and system (pancreatic disorders, pulmonary and digestive systems and CNS system). It helps the student to understand the causes **(etiology)** of disease, the mechanisms of its development **(pathogenesis)** and the associated alterations of structure **(morphologic changes)** and function **(clinical manifestations and complications)** to be able to **determine the most likely diagnosis** of the disease.

MD 007 First Aid (1+0)

The course covers topics of basic life support and medical emergency of different situations including bleeding, shock, poisoning, bone fractures, soft tissue injuries, rescue and transportation. It includes: introduction to first aid ABCs, medical emergencies, effect of temperature, transportation of an injured casualty & first aid kit, respiratory emergencies, fractures and dislocations, bleeding and surgical emergencies, burns and scalds, animal bites or stings and poisoning.

PP 801 Clinical Pharmacokinetics (2+1)

This course provides pharmacy students with the basic knowledge required to provide clinical pharmacokinetics service in clinical settings. It includes introduction to the sources of variability in pharmacokinetics that necessitates dosage adjustment like pharmacogenetics, age, obesity, organ failure and disease states. It also provides pharmacy students with the necessary knowledge and skills required to perform therapeutic drug monitoring for a list of narrow therapeutics index drugs and manage their toxicity. This includes interpretation of plasma drug levels based on concentration related efficacy and toxicity, utilization of pharmacokinetic principles and use of suitable pharmacokinetic equations based on the pharmacokinetic model and route of administration, to adjust drug dose, when necessary, in order to achieve target therapeutic levels.

PP 802 Hospital Pharmacy (1+1)

The course aims to introduce students to hospital pharmacy organization, structure, management and related activities on both technical and administrative levels in accordance with national and international established guidelines. Administrative services include the pharmacy, the pharmacy and therapeutic committee and policy making, the hospital formulary, medication purchasing, distribution and dispensing systems. The pharmaceutical (technical) services include drugs and poison information services, clinical pharmacokinetics service, centralized intravenous additive service (preparation of

Intravenous (IV) admixtures, total parenteral nutrition (TPN) fluids, renal dialysis fluids), ward pharmacy services and nuclear pharmacy.

PP 803 Clinical Pharmacy & Pharmacotherapeutics I (2+1)

The course aims to provide students with the knowledge and skills required for provision of pharmaceutical care in different clinical settings. It includes introduction to the concepts of clinical pharmacy and pharmaceutical care, Medication Therapy Management services, principles of special care populations (geriatric, pediatric, renal and hepatic patients, obesity &pregnancy& lactation) and qualification to become a clinical pharmacist. It also includes several skills required by clinical pharmacists like patient history taking, medication reconciliation, therapeutic planning, identification of drug-related problems, interpretation of clinical laboratory data and physical examination. The course also introduces the student to the principles of management and supportive care of oncological diseases, blood disorders and nutritional deficiencies.

PP 904 Community Pharmacy Practice (2+1)

The course provides students with competencies and knowledge for the provision of quality pharmaceutical care in a community pharmacy setting aiming at improving use of medicines and therapeutic outcomes. The course covers differentiation between minor and major ailments and responding to minor ailments with over-the-counter products. It also provides concepts of patient assessment, counselling, and monitoring in community pharmacy and in outpatient care settings and introduces students to pharmaceutical care services for chronic-diseased outpatients and to psychosocial aspects in patient care. In addition, the course provides the students with competencies to promote the public health role of pharmacist including health promotion and disease prevention activities

PP 905 Clinical Pharmacy & Pharmacotherapeutics II (2+1)

The course introduces the student to the principles of pharmacotherapeutics & management of cardiovascular, gastrointestinal, respiratory and endocrine disorders.

PP 006 Drug interaction (1+1)

The course is shared between 2 departments; Pharmacology & Pharmacy Practice
The course is designed to familiarize students with the major types of drug interactions (Pharmacokinetic, pharmacodynamic and pharmacogentic interactions) in the clinical setting. It provides the knowledge and skills enabling students to develop professional competencies in the recognition and discussion of the pharmacological aspects of interaction of drugs belonging to various pharmacological classes with drugs, chemicals, herbs, food and disease. It also enables them to evaluation the clinical significance of drug interactions and make rational recommendations to manage them to minimize their risk.

PP 007 Clinical Pharmacy & Pharmacotherapeutics III (2+1)

The course introduces the student to the principles of pharmacotherapeutics & management of Infectious, rheumatic, obstetrics and gynecological, renal, CNS disorders.

PP 008 Clinical research, Pharmacoepidemiology and Pharmacovigilance (1+1)

This course introduces the student to the basic principles of clinical research, design of research studies, types of research studies, clinical trials, statistical presentation of research data and ethical guidelines in drug research. This course addresses a range of study designs and analytic techniques for observational

studies on the utilization, safety, and effectiveness of pharmaceuticals. Students will develop an understanding of how to plan, implement, analyse, and criticize pharmacoepidemiological studies. This course also provides the students with understanding of pharmacovigilance importance, concept, processes, systems, global safety standards and regulations and reporting systems.

MS 102 Mathematics (1+0)

Functions and graphs, limits and continuity, differentiation, exponential, logarithmic, and trigonometric functions, integration, basic differential equations, functions of several variables and problems related to them, probability and random variables, and hypothesis testing.

NP 101 Information Technology (2+1)

This course tends to provide students of all university's faculties with a brief introduction to the world of computers and the concept of information technology including: number systems and data representation, computer system components: hardware & software, storage and input/output systems, Operating systems and Utility Systems, software applications. Also it gives an overview about computer networks and internet: data communication, transmission modes, transmission media, computer networks, internet protocol, and internet services. It practices some computer applications in the laboratory such as Internet Access, word processing and power point. It gives students a practical experience on developing projects related to the specialty of each faculty.

NP 102 Human Rights and Fighting Corruption (1 + 0)

يغطي هذا المقررالموضوعات التالية: حقوق الإنسان في القانون الجنائى, حق الإنسان فى تغيير جنسيته أو التخلى عن إحدى جنسياته, المواثيق الدولية المتعلقة بحماية حقوق الإنسان, علاقة العولمة والتنمية بالحقوق الاقتصادية والاجتماعية والثقافية, الحقوق الاقتصادية والاجتماعيةوالثقافية للإنسان, حقوق الإنسان فى الشريعة الإسلامية, حقوق المرأةفى قانونى العمل والتأمين الاجتماعى, حقوق الإنسان فى التقاضى, الحقوق المدنية والسياسية للإنسان

NP 303 Scientific Writing (1 + 1)

This course is designed to introduce students to the principles of good scientific writing, to be familiar with basic structure of scientific reports and research articles. It covers methods of paraphrasing, common mistakes in scientific writing, different writing styles, how to write a scientific report, proposal and manuscript, appropriate use of tables and figures in data presentation and evaluation of literature and information sources.

NP 404 Presentation and Communication skills (1+1)

The course will help students develop necessary written and oral communication and presentation skills to improve inter- and intra-professional collaboration and communication with patients and other health care providers

NP 705 Pharmaceutical Legislations, Regulatory Affairs and Professional Ethics (1+0)

A detailed presentation of law that governs and affects the practice of pharmacy, legal principles for non-controlled and controlled prescriptions, OTC drug requirements, opening new pharmacies, opening medical stores, opening factories, opening scientific offices, medicine registration, pharmacies and medicine stores management. Pharmacist duties and responsibilities, pharmacist-patient relationship, patient's rights and ethical principles and moral rules.

Professional ethics provides general principles and history of pharmacy ethics, general principles of medical ethics, conflicts of interests and its management, pharmacists' relationship with society and family, ethics in disaster, medication error, research ethics and animal ethics.

NP 906 Marketing & Pharmacoeconomics (2 + 0)

Pharmacoeconomics

the basic concepts of health economics, learning basic terms of health economics and understand key principles. Topics cover the economic mechanisms of health care markets as market failures, and government intervention. The course covers the key components of health care financing, and some methods of how to contain health care expenditure. Alongside the major definitions in health technology assessment. Students should have an overview about different types of economic studies, budget impact analysis and their uses. Moreover, students should get familiar with different methods of pricing, among which, value-based pricing.

Marketing

The objective of this course is to introduce students to the concepts, analyses, and activities that comprise marketing management, and to provide practice in assessing and solving marketing problems. The course is also a foundation for advanced electives in Marketing as well as other business/social disciplines. Topics include marketing strategy, customer behavior, segmentation, market research, product management, pricing, promotion, sales force management and competitive analysis.

NP 907 Entrepreneurship (1+1)

This course is designed to enhance a student's knowledge in leadership, business, and financial skills in pharmacy practice while learning the traits of an entrepreneur, current topics in entrepreneurship with a specific focus on pharmacy practice and patient care programs. This course will teach the participants a comprehensive set of critical skills needed to develop a profitable business project. This course is designed to provide the students the personal and business tools including risk-taking, strategic planning, marketing, competitiveness, and social responsibility to make the transition from the academic environment to the daily practice of pharmacy now and in the future, with an emphasis on entrepreneurship.