كلية الصيدلة **جامعة الزقازيق**

اللائحة الداخلية

كلية الصيدلة – جامعة الزقازيق

برنامج

بكالوريوس الصيدلة (فارم دى – Pharm D)

(صيدلة اكلينيكية)

Pharm D (Clinical Pharmacy)

طبقا لنظام الساعات المعتمدة

٢٠١٩

المحتوى

الأقسام العلمية:

تتكون الكلية من الأقسام الآتية :

١.	قسم الصيدلانيات	Pharmaceutics Department
٢.	قسم العقاقير	Pharmacognosy Department
٣.	قسم الكيمياء الدوائية	Medicinal Chemistry Department
٤.	قسم علم الأدوية والسموم	Pharmacology and Toxicology Department
٥.	قسم الكيمياء التحليلية	Pharmaceutical Analytical Chemistry Department
٦.	قسم الكيمياء العضوية الصيدلية	Pharmaceutical Organic Chemistry Department
٧.	قسم الكيمياء الحيوية	Biochemistry Department
٨.	قسم الميكروبيولوجي والمناعة	Microbiology and Immunology Department
٩.	قسم الممارسة الصيدلية	Pharmacy Practice Department

مواد اللائحة

مادة (١) :

رؤية البرنامج

التميز العلمي و تنمية الفكر الابداعى من أجل تحسين منظومة الرعايةالصحيةوالوصول الى مكانة مرموقة علي المستوى المحلي والاقليمي في مجال الصيدلة الإكلينيكية.

رسالة البرنامج

تطوير التعليم الصيدلي و رفع كفاءة الممارسة الصيدلية، البحث العلمى، خدمة المجتمع من خلال: إعداد صيادلة يتحلون بأخلاق المهنة مؤهلين بأحدث المفاهيم الصيدلية والطبية قادرين علي المنافسة علي المستوى المحلي و الاقليمى. لديهم القدرة على العمل ضمن الفريق الطبي العلاجي. و كذلك التواصل مع المرضى بمستوى مهاري محترف لتقديم المشورة اللازمة. كما أن خريج البرنامج قادر علي العمل في صيدليات المستشفيات العامة والخاصة ومراكز البحث العلمي والأكاديمي، الاعلام و التسويق الدوائى و تصنيع الدواء و تطويره .

أهداف البرنامج

- التركيز على دور الصيدلي في تقديم الرعاية الصحية المناسبة للمريض بداخل المستشفيات كعضو فى الفريق الطبى وخارجها من خلال متابعة النظام الدوائي له ودراسة مبادئ حركية الدواء الإكلينيكية وتطبيقاتها في العلاج في الحالات المرضية المختلفة وإيجاد الأنظمة العلاجية المناسبة وذلك بالتعاون مع الطبيب المعالج مما ينتج عنه تحسين الرعاية الصحية للمرضى و الحد من الأخطاء الدوائية.
- تخريج صيدلي متميز مؤهل للعمل بالصيدليات العامة والخاصة ومعامل الرقابة الدوائية والعمل في مجال الاعلام والتسويق والبحوث والجامعات و كذلك التصنيع الدوائي.
- نشر ثقافة الاستخدام الأمثل للدواء و كذلك الوعى الصحى بين المرضى
- 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 القائم على تنمية الجدارات/ المهارات والإهتمام بالتعلم الذاتي.
- دعم ممارسة المهنة بمسؤولياتها و قوانينها وأخلاقياتها، واحترام حقوق المرضى
- الاهتمام بمهارات التواصل الفعال والقيادة والإدارة وريادة الأعمال

مادة (٢) :

الدرجة العلمية التي تمنح للخريجين

يمنح مجلس الجامعة بناءً على طلب مجلس كلية الصيدلة درجة بكالوريوس الصيدلة (فارم دى- Pharm D) (صيدلة اكلينيكية) طبقا لنظام الساعات المعتمدة.

مادة (٣) :

التأهيل للدرجات الأكاديمية الأعلى:

درجة بكالوريوس الصيدلة (فارم دى- Pharm D) (صيدلة إكلينيكية) هى الدرجة الجامعية الأولى فى مجال الصيدلة اللازمة للحصول على ترخيص ممارسة المهنة فى جميع المجالات الصيدلية المتاحة ، كما تؤهل الخريج للتسجيل للدراسات العليا 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) فى 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 بعد موافقة لجنة البرنامج 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 الإكلينيكية و ورش العمل والتدريبات الميدانية و إجراء بحوث و تقديم العروض بالإضافة إلى التعاون مع المجتمع المحيط بالجامعة.

و يتم تصميم البرنامج الدراسي بحيث:

أولا : عدد الساعات المعتمدة **176** ساعة معتمدة ، بالإضافة إلى متطلبات الجامعة بحد أقصى ٦ ساعات معتمدة.

ثانيا : عدد المقررات الإختيارية أربعة مقررات (٨ ساعات معتمدة) يتم اختيارها من القائمة المرفقة. هذا بالإضافة إلى ١٠٠ ساعة فعلية تدريب صيفى يبدأ بنهاية المستوى الثالث قبل البدء فى سنة الإمتياز.

ثالثا: المقررات الاختيارية للطالب في المستويين الآخرين يجب ان تحقق له جدارات و مهارات تساعده على التوجيه المهني والتخصص. وأن يكون أحد المقررات الإختيارية فى أحدى المجالات الصيدلية (التصنيع الدوائى- الرقابة الدوائية...إلخ)

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 وبعد موافقة اللجنة المختصة بالاشراف على البرنامج السماح للطالب بتسجيل بعض المقررات بالتوازي مع متطلباتها التي لم يجتازها الطالب بنجاح إذا قل العبء الدراسي المتاح للطالب عن ١٢ ساعة معتمدة أو يكون متطلب تخرج (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 عميد الكلية على ألا تزيد مدة التأخير عن أسبوعين من نهاية فترة التسجيل.

أ) العـبء الدراسـي :

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 ٢٢ ساعة معتمدة على الا يزيد العبء الدراسي للطالب المتعثر عن ١٢ ساعة معتمدة **(أنظر مادة ١٣) .**

العبء الدراسي خلال الفصل الصيفي بحد أقصى ١٠ ساعات معتمدة.

ويجوز لمجلس الكلية بعد موافقة اللجنة المختصة بالإشراف على البرنامج السماح للطالب في أخر فصلين دراسيين بزيادة العبء الدراسي عن الحد الأقصى وبما لا يتجاوز عدد ٣ ساعات معتمدة (يستفيد منها الطالب لمرة واحدة)،.

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) المواظـبة

على الطالب أن يواظب على حضور المحاضرات النظرية وحلقات النقاش والدروس العملية والتدريبات الميدانية والإكلينيكية ، 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) :

لغـة الدراسـة

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) :

التدريـب الميداني الأولى وسنة الأمتياز (التدريب الميدانى المتقدم)

- على الطالب أن يكمل فترة **تدريب ميدانى** فى الصيدليات الأهلية والحكومية وصيدليات المستشفيات تتم خلال الأجازات الصيفية لسنوات الدراسة بعد نهاية المستوى الثالث بواقع عدد **١٠٠ ساعة** ، بالإضافة إلى العام السادس من الدراسة ويمثل سنة الامتياز (عام أكاديمي) و تنقسم الى ست دورات تدريبية بواقع أربع دورات على الأقل داخل

- مستشفيات تقوم بتطبيق الممارسة الصيدلية الإكلينيكية ، وتخصص دورة واحدة للتدريب فى المجال الدوائى (التصنيع -الرقابة الدوائية- ...الخ) ،كما يوضح فى البرنامج التدريبي الذى يشمل برنامج تدريبى متكامل وممنهج بطريقة دورية تناوبية مسجلة بالساعات والمهام التدريبية وتحت إشراف دقيق من الكلية وجهة التدريب.

- كما يقدم مشروع تخرج فى تخصص معين يساهم فى تمهيد وإعداد الطالب للتوجه لهذا التخصص. ويمكن للخريج العمل فى هذا المجال لمدة سنتين ليصبح بعدها صيدليا متخصصا قادرا على تقديم خدمات صيدلية إكلينيكية أو الممارسات الصيدلية المختلفة .

يتم تصميم البرنامج التدريبى فى تخصصات إكلينيكية مختلفة (مثل: امراض القلب – السرطان – الامراض النفسية و العصبية – التغذية – العناية الفائقة – وحدة معلومات الدواء - اقتصاديات الدواء - والأبحاث السريرية.....) حسب إمكانات الجامعة واحتياج المجتمع فى نطاق الجامعة .

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

النسبة المئوية	عدد النقاط	الرمز	التقدير
٩٥ فأكثر	٤	A^+	ممتاز
٩٠ لأقل من ٩٥	٣,٨٥	A	
٨٥ لأقل من ٩٠	٣,٧	A^-	
٨٢,٥ لأقل من ٨٥	٣,٣	B^+	جيد جدا
٧٧,٥ لأقل من ٨٢,٥	٣	B	
٧٥ لأقل من ٧٧.٥	٢,٧	B^-	
٧٢,٥ لأقل من ٧٥	٢,٣	C^+	جيد
٦٧,٥ لأقل من ٧٢,٥	٢	C	
٦٥ لأقل من ٦٧,٥	١.٧	C^-	
٦٢,٥ لأقل من ٦٥	١,٣	D^+	مقبول
٦٠ لأقل من ٦٢,٥	١	D	
أقل من ٦٠	٠,٠٠	F	راسب
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 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:

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

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 دراسى فعليه دراسة ذات المقرروالالتزام بالمواظبة على الحضوروالامتحان فيه عند طرحه مرة أخرى ، أما إذا رسب في مقرر إختياري فبإمكانه إعادة دراسته أو دراسة مقرر إختياري آخر بديل لإكمال متطلبات التخرج ، وذلك بعد موافقة المرشد الأكاديمي واعتماد لجنة الإشراف.

-يحسب للطالب التقديرD بعد رسوبه و دخوله مرة ثانية

-الفصل الدراسي الصيفي هو فصل إختياري للطالب و الكلية علي حد سواء

مادة (١٣) :

التعثر الأكاديمي

يعتبر الطالب متعثر اكاديميا إذا حصل على معدل فصلي (GPA) أقل من "١".

الطالب الذي يحصل على معدل فصلي (GPA) أقل من "١" 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 دى- Pharm D) (الصيدلة الإكلينيكية)

يتطلب الحصول على درجة بكالوريوس الصيدلة (فارم دى- Pharm D) (الصيدلة الإكلينيكية) طبقا لنظام الساعات المعتمدة اومايعادله ما يلي:

أولا : دراسة واجتياز إجمالى عدد الساعات المعتمدة 176موزعة على عشرة فصول دراسية تشمل متطلبات الكلية الاختيارية وهي ٨ ساعات معتمدة ، على ألا يقل المعدل التراكمي عن اثنين.

ثانيا : اجتياز فترة تدريب ميداني أولى باجمالي عدد ١٠٠ ساعة تدريب فعلية فى الصيدليات الأهلية والحكومية وصيدليات المستشفيات التي يقرها مجلس الكلية وذلك تحت إشراف عضو هيئة تدريس ويتم التدريب خلال الأجازات الصيفية لسنوات الدراسة بعد نهاية المستوى الثالث وأن يكمل سنة الأمتياز (عام أكاديمى- 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 (أنظر مرفق ٢)

مادة (١٩) :

محتوى المقررات الدراسية (أنظر مرفق ٣)

مادة (٢٠) :

تحديث المقررات الدراسية

يجوز لمجلس الجامعة الموافقة على تحديث نسبة لا تتجاوز ٢٠% من محتوى المقررات الدراسية بناء على أقتراح مجلس الكلية وذلك بعد موافقة اللجنة المختصة بالإشراف على البرنامج ومجلس القسم العلمي المعني وبعد إبداء المبررات اللازمة.

مادة (٢١):

برنامج التدريب لسنة الأمتياز

مرفق ١

خاص بالمادة (١٧)

كود الأقسام ومتطلبات الجامعة والكلية والمقررات الإختيارية

١- كود الأقسام

1-Key for Course Abbreviations

PB	Biochemistry
PA	Pharmaceutical Analytical Chemistry
PR	Pharmaceutical Organic Chemistry
PC	Medicinal Chemistry
PG	Pharmacognosy
PM	Microbiology and Immunology
PO	Pharmacology and Toxicology
PP	Pharmacy Practice
PT	Pharmaceutics
MD	Medical Courses
NP	Non professional
UR	University requirement

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 Requirement Courses (UR): مقررات لا تضاف للمجموع

Course code	Course title	Credit Hour
UR 101	Human Rights and Fighting of Corruption	1 (1+0)
UR 102	English Language-I	1 (1+0)
UR 203	Psychology	1 (1+0)
UR 204	English Language-II	1 (1+0)
UR 405	Principles of Quality Assurance	1 (1+0)
UR 906	Entrepreneurship	1 (1+0)
Total		**6 hrs**

Non Professional Courses (NP)

Course code	Course title	Credit hours	Under supervision
NP 101	Information Technology	2 (1+1)	Pharmacy Practice
NP 102	Mathematics	1 (1+0)	Faculty of Science
NP 403	Scientific Writing and Communication Skills	1(1+1)	Pharmacy Practice
NP 404	Pharmacy Legislation and Practice Ethics	1(1+0)	Pharmaceutics
NP 905	Drug Marketing & Pharmacoeconomics	1(1+0)	Pharmacy Practice

٣- متطلبات الكلية

3. Faculty Requirements: See programme curriculum (Appendix 2)

Courses of Pharmaceutical Analytical Chemistry Department

Course code	Course title	Credit Hours
PA 101	Pharmaceutical Analytical Chemistry I	2+1
PA 202	Pharmaceutical Analytical Chemistry II	2+1
PA 403	Instrumental Analysis	1+1
PA 704	Quality Control of Pharmaceuticals	1+1
Total		10 hrs

Courses of Pharmaceutical Organic Chemistry Department

Course code	Course title	Credit Hours
PR 101	Pharmaceutical Organic Chemistry I	2+1
PR 202	Pharmaceutical Organic Chemistry II	2+1
PR 303	Pharmaceutical Organic Chemistry III	2+1
Total		9 hrs

Courses of Medicinal Chemistry Department

Course code	Course title	Credit Hours
PC 701	Medicinal Chemistry I	2+1
PC 802	Medicinal Chemistry II	2+1
PC 903	Medicinal Chemistry III	2+1
Total		9 hrs

Courses of Biochemistry Department

Course code	Course title	Credit Hours
PB 201	Cell Biology	1+1
PB 302	Biochemistry I	2+1
PB 403	Biochemistry II	2+1
PB 804	Clinical Biochemistry	2+1
Total		11 hrs

Courses of Pharmacognosy Department

Course code	Course title	Credit Hours
PG 101	Medicinal Plants	2+1
PG 202	Pharmacognosy I	2+1
PG 303	Pharmacognosy II	2+1
PG 504	Phytochemistry I	2+1
PG 605	Phytochemistry II	2+1
PG 906	Phytotherapy	2+1
Total		18 hrs

Courses of Microbiology and Immunology Department

Course code	Course title	Credit Hours
PM 301	General Microbiology and Immunology	2+1
PM 402	Pharmaceutical Microbiology	2+1
PM 503	Parasitology & Virology	2+1
PM 704	Medical Microbiology	2+1
PM 805	Public Health and Preventive Medicine	2+0
PM 906	Biotechnology & Molecular Biology	2+1
Total		17 hrs

Courses of Pharmacology and toxicology Department

Course code	Course title	Credit Hours
PO 401	Pharmacology I	2+1
PO 502	Pharmacology II	2+1
PO 603	Pharmacology III	2+1
PO 704	Drug Information	1+0
PO 705	Pharmacology IV	1+1
PO 906	Basic & Clinical Toxicology	2+1
PO 007	Biostatistics	1+0
Total		16 hrs

Courses of Pharmaceutics Department

Course code	Course title	Credit Hours
PT 101	Pharmacy Orientation	1+0
PT 202	Physical Pharmacy	2+1
PT 303	Pharmaceutics I	2+1
PT 404	Pharmaceutics II	2+1
PT 505	Pharmaceutics III	2+1
PT 606	Pharmaceutical Technology	2+1
PT 707	Advanced Drug Delivery System	2+0
PT 708	Biopharmaceutics and Pharmacokinetics	2+1
Total		21 hrs

Courses of Pharmacy Practice Department

Course code	Course title	Credit Hours
PP 501	Community Pharmacy Practice	2+1
PP 602	Hospital Pharmacy	2+1
PP 603	Clinical Pharmacy Practice	2+1
PP 804	Pharmacotherapy of Endocrine and Renal Diseases	2+1
PP 805	Pharmacotherapy of Oncological Diseases and Radiotherapy	2+1
PP 806	Clinical Pharmacokinetics	2+1
PP 907	Pharmacotherapy of Neuropsychatric Diseases	1+1
PP 008	Pharmacotherapy of Critical Care Patients	1+1
PP 009	Pharmacotherapy of Dermatological, Reproductive and Musculoskeletal Diseases	2+1
PP 010	Pharmacotherapy of pediatric diseases	1+1
PP 011	Pharmacotherapy of cardiovascular diseases	1+1
PP 012	Pharmacotherapy of Gastrointestinal Diseases	1+1
PP 013	Pharmacotherapy of Respiratory Diseases	1+1
PP 014	Clinical Research and Pharmacovigilance	1+0
PP 015	Professional Practice	1+1
Total		36 hrs

Medical Courses

Course code	Course title	Credit Hours	Department
MD 101	Medical Terminology	1+0	**Pharmacology**
MD 202	Anatomy and Histology*	2+1	**Faculty of Medicine**
MD 303	Biophysics	1+1	**Biochemistry Department**
MD 304	Physiology& Pathophysiology	2+1	**Pharmacology and Toxicology Department**
MD 505	Pathology	1+1	**Microbiology**
MD 606	First Aid and Basic Life Support**	1+1	**Faculty of Medicine**
MD 007	Bioinformatics	1+0	**Pharmacy Practice**

***تحت اشراف قسم علم الادوية والسموم**
****تحت إشراف قسم الممارسة الصيدلية**

٤ـ المقررات الاختيارية

4 -Elective courses

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

Course Code	Course Title	Prerequisite	Credit Hours		
			L	P/T	Total
PA E 05	Advanced Pharmaceutical Analysis – Spectroscopy	Instrumental Analysis	1	1	2
PG E 07	Quality Control of Natural Products	Phytochemistry II	1	1	2
PG E 08	Chromatography and Separation Techniques	Instrumental Analysis	1	1	2
PG E 09	Analysis of Food and Flavors	Phytochemistry II	1	1	2
PG E 10	Aromatherapy and Herbal Cosmetics	Phytotherapy	1	1	2
PG E 11	Biotechnology of Medicinal Plants	Phytochemistry II	1	1	2
PO E 08	Biological Standardization	Pharmacology III	1	1	2
PO E 09	Veterinary Pharmacology	Pharmacology III	1	1	2
PT E 09	Applied Industrial Pharmacy	Pharmaceutical Technology	2	-	2
PT E 10	Good Manufacturing Practices	Pharmaceutical Technology	2	-	2
PT E 11	Protein Pharmaceuticals	Biopharmaceutics & Pharmacokinetics	2	-	2
PT E 12	Drug Metabolism and Transport	Biopharmaceutics & Pharmacokinetics	2	-	2
PT E 13	Cosmetic Preparations	Pharmaceutics III	1	1	2
PP E 16	Quality improvement in healthcare	Hospital pharmacy	2	-	2
PC E 04	Drug Design	Medicinal chemistry III	1	1	2
PM E 07	Infection Control	Pharmaceutical microbiology	1	1	2
PB E 05	Clinical Nutrition	Clinical Biochemistry	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 إختيار الطلاب و تخطر 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)

17- Programme Curriculum (6 cr. Hours of University Requirements + 17٦ Cr Hours of Professional program)

Programme Curriculum **الخطة الدراسية**

Table (1)

Semester (1)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period./ Act.	Pract.	Wr.	Oral		
Pharmaceutical Analytical Chemistry I	**PA 101**	**2**	**1**	**3**	**Registration**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmaceutical Organic Chemistry I	**PR 101**	**2**	**1**	**3**	**Registration**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmacy Orientation	**PT 101**	**1**	**-**	**1**	**Registration**	**25**	**--**	**75**	**--**	**100**	**1**
Medicinal Plants	**PG 101**	**2**	**1**	**3**	**Registration**	**15**	**25**	**50**	**10**	**100**	**2**
Medical Terminology	**MD 101**	**1**	**-**	**1**	**Registration**	**25**	**--**	**75**	**--**	**100**	**1**
Information Technology	**NP 101**	**1**	**1**	**2**	**Registration**	**15**	**25**	**60**	**---**	**100**	**1**
Mathematics	**NP 102**	**1**	**-**	**1**	**Registration**	**25**	**--**	**75**	**--**	**100**	**1**
*** Human Rights and Fighting of Corruption**	**UR 101**	**1**	**-**	**1**	**Registration**	**25**	**--**	**75**	**--**	**pass**	**1**
***English language I**	**UR 102**	**1**	**-**	**1**	**Registration**	**25**	**--**	**75**	**--**	**pass**	**1**
Total		**12**	**4**	**16**						**700**	

- ***Lect.*** = Lecture و ***Period.*** = Periodical
- ***Pract./ Act.*** = Practical / Activity, ***Wr.*** = Written***UR=University requirement*** مقررات لا تضاف للمجموع

Table (2)

Semester (2)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period./Act	Pract.	Wr.	Oral		
Pharmaceutical Analytical Chemistry II	**PA 202**	**2**	**1**	**3**	**Pharmaceutical Analytical Chemistry I**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmaceutical Organic Chemistry II	**PR 202**	**2**	**1**	**3**	**Pharmaceutical Organic Chemistry-I**	**15**	**25**	**50**	**10**	**100**	**2**
Cell Biology	**PB 201**	**1**	**1**	**2**	**Registration**	**15**	**25**	**50**	**10**	**100**	**1**
Anatomy& Histology	**MD 202**	**2**	**1**	**3**	**Registration**	**15**	**25**	**60**	**-**	**100**	**2**
Physical Pharmacy	**PT 202**	**2**	**1**	**3**	**Registration**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmacognosy I	**PG 202**	**2**	**1**	**3**	**Medicinal Plants**	**15**	**25**	**50**	**10**	**100**	**2**
***Psychology**	**UR 203**	**1**	**-**	**1**	**Registration**	**25**	**--**	**75**	**--**	**pass**	**1**
***English language II**	**UR 204**	**1**	**--**	**1**	**English language - 1**	**25**	**--**	**75**	**--**	**pass**	**1**
Total		**13**	**6**	**19**						**600**	

- ***Lect.*** = Lecture
- ***Period./ Act*** = Periodical/ Activity
- ***Pract.*** = Practical
- ***Wr.*** = Written
- ****UR=University requirement*** مقررات لا تضاف للمجموع

Table (3)

Semester (3)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period./ Act.	Pract.	Wr.	Oral		
Pharmaceutical Organic Chemistry-III	**PR 303**	**2**	**1**	**3**	**Pharmaceutical Organic Chemistry-II**	**15**	**25**	**50**	**10**	**100**	**2**
Biochemistry I	**PB 302**	**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**
General Microbiology and Immunology	**PM 301**	**2**	**1**	**3**	**Cell Biology**	**15**	**25**	**50**	**10**	**100**	**2**
Biophysics	**MD 303**	**1**	**1**	**2**	**Registration**	**15**	**25**	**50**	**10**	**100**	**1**
Physiology and Pathophysiology	**MD 304**	**2**	**1**	**3**	**Registration**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmaceutics I	**PT 303**	**2**	**1**	**3**	**Physical Pharmacy**	**15**	**25**	**50**	**10**	**100**	**2**
Total		**13**	**7**	**20**						**700**	

- ***Lect.*** = Lecture
- ***Period./ Act*** = Periodical/ Activity
- ***Pract.*** = Practical ***Wr.*** = Written

Table (4)

Semester (4)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Act.	Wr.	Oral		
Pharmacology –I	**PO 401**	**2**	**1**	**3**	**Physiology**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmaceutical Microbiology	**PM 402**	**2**	**1**	**3**	**General Microbiology and Immunology**	**15**	**25**	**50**	**10**	**100**	**2**
Scientific Writing and Communication Skills	**NP 403**	**1**	**1**	**2**	**English Language II**	**15**	**25**	**60**	**---**	**100**	**1**
Pharmaceutics II	**PT 404**	**2**	**1**	**3**	**Pharmaceutics I**	**15**	**25**	**50**	**10**	**100**	**2**
Biochemistry II	**PB 403**	**2**	**1**	**3**	**Biochemistry I**	**15**	**25**	**50**	**10**	**100**	**2**
Instrumental Analysis	**PA 403**	**1**	**1**	**2**	**Pharmaceutical Analytical Chemistry II**	**15**	**25**	**50**	**10**	**100**	**1**
***Pharmacy Legislation and Practice Ethics**	**NP 404**	**1**	**-**	**1**	**Registration**	**25**	**--**	**75**	**--**	**100**	**1**
Principle of quality assurance	**UR 405**	**1**	**--**	**1**	**Registration**	**25**	**--**	**75**	**--**	**pass**	**1**
Total		**12**	**6**	**18**						**700**	

- ***Lect.*** = Lecture
- ***Period./ Act*** = Periodical/ Activity ***Pract.*** = Practical ***Wr.*** = Written *Taught by pharmaceutics department ****UR=University requirement*** مقررات لا تضاف للمجموع

Table (5)

Semester (5)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period./ Act.	Pract.	Wr.	Oral		
Pharmacology-II	**PO 502**	**2**	**1**	**3**	**Pharmacology I**	**15**	**25**	**50**	**10**	**100**	**2**
Pathology	**MD 505**	**1**	**1**	**2**	**Histology**	15	25	50	**10**	100	**1**
Parasitology & Virology	**PM 503**	**2**	**1**	**3**	**General Microbiology and Immunology**	15	25	50	**10**	**100**	**2**
Pharmaceutics III	**PT 505**	**2**	**1**	**3**	**Pharmaceutics II**	15	25	50	**10**	**100**	**2**
Phytochemistry-I	**PG 504**	**2**	**1**	**3**	**Pharmacognosy I**	15	25	50	**10**	**100**	**2**
Community Pharmacy Practice	**PP 501**	**2**	**1**	**3**	**Pharmacology -I**	15	25	50	**10**	**100**	**2**
Total		**11**	**6**	**17**						**600**	

- ***Lect.*** = Lecture
- ***Period./ Act*** = Periodical/ Activity
- ***Pract.*** = Practical

Table (6)

Semester (6)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period./Act.	Pract.	Wr.	Oral		
Pharmacology-III	**PO 603**	**2**	**1**	**3**	**Pharmacology-II**	**15**	**25**	**50**	**10**	**100**	**2**
Phytochemistry-II	**PG 605**	**2**	**1**	**3**	**Phytochemistry-I**	15	25	50	**10**	100	**2**
Pharmaceutical Technology	**PT 606**	**2**	**1**	**3**	**Pharmaceutics III**	15	25	50	**10**	100	**2**
Hospital Pharmacy	**PP 602**	**2**	**1**	**3**	**Pharmaceutics III**	15	25	50	**10**	100	**2**
Clinical Pharmacy Practice	**PP 603**	**2**	**1**	**3**	**Pharmacology II**	15	25	50	**10**	100	**2**
First Aid and Basic Life Support	**MD 606**	**1**	**1**	**2**	**Physiology**	**15**	**25**	**60**	**---**	**100**	**1**
Total		**11**	**6**	**17**						**600**	

- ***Lect.*** = Lecture
- ***Period./ Act*** = Periodical/ Activity
- ***Pract.*** = Practical
- ***Wr.*** = Written

Table (7)

Semester (7)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period./ Act.	Pract.	Wr.	Oral		
Medicinal Chemistry-I	**PC 701**	**2**	**1**	**3**	**Pharmaceutical Organic Chemistry-II**	**15**	**25**	**50**	**10**	**100**	**2**
Drug Information	**PO 704**	**1**	**0**	**1**	**Pharmacology-III**	**15**	**25**	**60**	**---**	**100**	**1**
Advanced Drug Delivery Systems	**PT 707**	**2**	**-**	**2**	**Pharmaceutics III**	**20**	**---**	**70**	**10**	**100**	**2**
Biopharmaceutics and Pharmacokinetics	**PT 708**	**2**	**1**	**3**	**Pharmaceutics III**	**15**	**25**	**50**	**10**	**100**	**2**
Medical Microbiology	**PM 704**	**2**	**1**	**3**	**Pharmaceutical Microbiology**	**15**	**25**	**50**	**10**	**100**	**2**
Quality Control of Pharmaceuticals	**PA 704**	**1**	**1**	**2**	**Pharmaceutical Analytical Chemistry-II**	**15**	**25**	**50**	**10**	**100**	**1**
Pharmacology IV	**PO 705**	1	1	2	**Pharmacology III**	**15**	**25**	**50**	**10**	**100**	**1**
Elective course	**PE --**	**1**	**1**	**2**	**Prerequisite**	**15**	**25**	**50**	**10**	**100**	**1**
Total		**12**	**6**	**18**						**800**	

- ***Lect.*** = Lecture
- ***Period./ Act*** = Periodical/ Activity
- ***Pract.*** = Practical
- ***Wr.*** = Written

Table (8)

Semester (8)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period./ Act.	Pract.	Wr.	Oral		
Medicinal Chemistry-II	**PC 802**	**2**	**1**	**3**	**Medicinal Chemistry I**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmacotherapy of Endocrine and Renal Disorders	**PP 804**	**2**	**1**	**3**	**Pharmacology IV**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmacotherapy of Oncological Diseases and Radiotherapy	**PP 805**	**2**	**1**	**3**	**Pharmacology IV**	**15**	**25**	**50**	**10**	**100**	**2**
Clinical Pharmacokinetics	**PP 806**	**2**	**1**	**3**	**Biopharmaceutics and Pharmacokinetics**	**15**	**25**	**50**	**10**	**100**	**2**
Clinical Biochemistry	**PB 804**	**2**	**1**	**3**	**Biochemistry-II**	**15**	**25**	**50**	**10**	**100**	**2**
Public Health and Preventive Medicine	**PM 805**	**2**	**--**	**2**	**Medical Microbiology**	**25**	**---**	**75**	**---**	**100**	**2**
Elective Course	**PE ---**	**1**	**1**	**2**	**Prerequisite**	**15**	**25**	**50**	**10**	**100**	**1**
Total		**13**	**6**	**19**						**700**	

- ***Lect. = Lecture Period./Act. = Periodical /Activity Pract. = Practical Wr. = Written***

Table (9)

Semester (9)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period./Act.	Pract.	Wr.	Oral		
Basic & clinical Toxicology	**PO 906**	**2**	**1**	**3**	**Pharmacology-IV**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmacotherapy of Neuropsychiatric Diseases	**PP 907**	**1**	**1**	**2**	**Pharmacology-IV**	**15**	**25**	**50**	**10**	**100**	**1**
Biotechnology& Molecular Biology	**PM 906**	2	1	3	**Pharmaceutical Microbiology**	**15**	**25**	**50**	**10**	**100**	**2**
Phytotherapy	**PG 906**	**2**	**1**	**3**	**Phytochemistry-II**	**15**	**25**	**50**	**10**	**100**	**2**
Medicinal Chemistry III	**PC 903**	2	1	3	Medicinal Chemistry II	**15**	**25**	**50**	**10**	**100**	2
Drug Marketing & Pharmacoeconomics* **	**NP 905**	**1**	**--**	**1**	**Hospital Pharmacy**	**25**	**---**	**75**	**---**	**100**	**1**
Entrepreneurship* **	**UR 906**	**1**	**---**	**1**	**Principle of quality assurance**	**25**	**--**	**75**	**--**	**pass**	**1**
Elective Course	**PE --**	**1**	**1**	**2**	**Prerequisite**	**15**	**25**	**50**	**10**	**100**	**1**
Total		**12**	**6**	**18**						**700**	

- ***Lect.*** = Lecture***Period./ Act*** = Periodical/ Activity
- ***Pract.*** = Practical ***Wr.*** = Written *** Taught by pharmacy practice department **UR:** university equipment مقررات لا تضاف للمجموع

Table (10)

Semester (10)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period./Act.	Pract.	Wr.	Oral		
Pharmacotherapy of Critical Care Patients	**PP 008**	**1**	**1**	**2**	**Pharmacology-IV**	**15**	**25**	**50**	**10**	**100**	**1**
Pharmacotherapy of Dermatological, Reproductive and Musculoskeletal Diseases	**PP 009**	**2**	**1**	**3**	**Pharmacology IV**	**15**	**25**	**50**	**10**	**100**	**2**
Pharmacotherapy of Pediatric Diseases	**PP 010**	**1**	**1**	**2**	**Pharmacology-IV**	**15**	**25**	**50**	**10**	**100**	**1**
Pharmacotherapy of Cardiovascular Diseases	**PP 011**	**1**	**1**	**2**	**Pharmacology-IV**	**15**	**25**	**50**	**10**	**100**	**1**
Pharmacotherapy of Gastrointestinal Diseases	**PP 012**	**1**	**1**	**2**	**Pharmacology-IV**	**15**	**25**	**50**	**10**	**100**	**1**
Pharmacotherapy of Respiratory Diseases	**PP 013**	**1**	**1**	**2**	**Pharmacology-IV**	**15**	**25**	**50**	**10**	**100**	**1**
Clinical Research and Pharmacovigilance	**PP 014**	**1**	**--**	**1**	**Drug information**	**25**	**--**	**75**	**--**	**100**	**1**
Biostatistics	**PO 007**	**1**	**--**	**1**	**Pharmacology-III**	**25**	**-**	**75**	**-**	**100**	**1**
Bioinformatics	**MD 007**	**1**	**-**	**1**	**Drug information**	**25**		**75**		**100**	**1**
Professional Practice	**PP 0015**	**1**	**1**	**2**	**Pharmacotherapy VI, Drug Information**	**15**	**25**	**60**	**-**	**100**	**1**
Elective	**PE --**	**1**	**1**	**2**	**Prerequisite**	**15**	**25**	**50**	**10**	**100**	**1**
Total		**12**	**8**	**20**						**1100**	

- ***Lect.*** = Lecture
- ***Pract.*** = Practical

Period./ Act = Periodical/ Activity
Wr. = Writte

مرفق ٣

خاص بالمادة (١٩)

محتوى المقررات الدراسية

Course Content

PA 101 Pharmaceutical Analytical Chemistry I (2+1)

Acid base reactions (theory, pH calculations, buffer solutions, indicators, color determination of pH, neutralization titration curves and their applications, non aqueous titrations), **Preciptimetry** (theory, solubility product principle, detection of E.P. and applications of preciptimetric reactions), **Complexometry** (theory, complexometric indicators, titration curves and applications of complexometric reactions), **Gravimetry** (theory, contamination and purification of precipitate, applications of gravimetric analysis).

PR 101 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. Alkenes, alkadienes and alkynes. Alkyl halides (nomenclature, preparation and chemical reactions (S_N1, S_N2, E_1, E_2). Alcohols (nomenclature, synthesis and chemical reactions. Carbonyl compounds (Aldehydes ,ketones, carboxylic acids & derivatives) nomenclature ,synthesis and chemical reactions.

PA 202 Pharmaceutical Analytical Chemistry II (2+1)

Redox titrations (theory, oxidation potentials, Nernest equation, redox systems, factors affecting system potential, titration curves and determination of E.P , redox reactions involving I_2, application of redox reactions), **Electrochemistry**: potentiometry (electrode potential, reference electrodes, indicator electrode), conductimetry (specific, equivalent, and ionic conductance, cell constant, applications), and polarography (ILkovic equation, dropping mercury electrodes, diffusion current, applications, derivatization polarography), **Introduction to statistical analysis**

PR 202 Pharmaceutical Organic Chemistry II (2+1)

This course involves aromatic compounds and aromaticity, Benzene & electrophilic substitution, orientation .Different classes of organic compounds: Arenes, Nitro compounds, aryl halides, Aromatic sulphonic acid, Aromatic amines and diazonium salts, Phenols, ethers & epoxides (Nomenclature, preparations and chemical reactions). 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.

PR 303 Pharmaceutical Organic Chemistry III (2+1)

This course involves: carbohydrates, polynuclear aromatic hydrocarbon (synthesis and chemical reactions) and heterocyclic chemistry. In addition, Stereochemistry (Optical isomerism, Conformational isomerism, Geometrical isomerism, Tautomerism & metamerism. Racemic modification, nomenclature of configurations)

PC 701 Medicinal Chemistry I (2+1)

This course enables the student to study various Medicinal Chemistry aspects of chemotherapeutic drugs as well as related drugs such as those combating pain and inflammation. The following topics will be addressed: Introduction to chemotherapy, antibacterial agents, antiviral agents, antifungal agents, antiparasitic agents, and antineoplastic agents.

PC 802 Medicinal Chemistry II (2+1)

This course enables the student to study various Medicinal Chemistry aspects of the drugs acting on the central and peripheral nervous systems and related cardiovascular drugs, and diuretics. The following topics will be addressed: Medicinal Chemistry of general anaesthetics, anxiolytics, antiepileptics, antipsychotics, antidepressants, antiparkinsonism agents, anti-Alzheimer's agents, autonomic drugs, antihypertensive agents, antianginal agents, antiarrhythmic agents, antihyperlipidimic agents, and diuretics.

PC 903 Medicinal Chemistry III (2+1)

This course enables the student to study various Medicinal Chemistry aspects of drugs acting on metabolic and endocrine disorders, as well as related agents. The following topics will be addressed: hormones and related agents, antidiabetic agents, antiallergic agents, antiulcer agents, non-steroidal anti-inflammatory drugs, and opioid analgesics.

PA 403 Instrumental Analysis (1+1)

Spectrometric methods of analysis including UV/visible spectroscopy (principles, instrumentation, and applications in pharmaceutical analysis), flame photometry (principles and instrumentation), spectrofluorometry (principles instrumentation, factors affecting fluorescence intensity and applications in pharmaceutical analysis).**Chromatography**(HPLC,UPLC, and GC).

PA 704 Quality Control of Pharmaceuticals (1+1)

Quality control & quality assurance, In process control and validation, Sampling, Analysis of raw materials & pharmaceuticals using reference standard, Pharmacopial methods of stability and stability testing of drugs, Validation of analytical method , ISO and BSI

PB 201 Cell Biology (1+1)

The course aims at studying the structure and function of prokaryotic and eukaryotic cells. In this course study will include many different areas of cellular biology involving: the structure and function of cell membrane and cellular organelles - The synthesis and function of macromolecules such as DNA, RNA, and proteins - control of gene expression - cell division - apoptosis and cancer biology

PB 302 Biochemistry I (2+1)

Proteins (protein structure, biologically important peptides – fate of proteins) – Amino acids as precursors for biosynthesis of biomolecules (e.g. neurotransmitters, nucleotides, …) – Carbohydrates (glycoproteins and proteoglycans - glucose transporters) – Lipids (physiologically important lipid molecules – cholesterol and steroids – lipoprotein metabolism) – Enzymology (enzyme kinetics – regulation – enzyme inhibitors as drugs) - Hemoglobin and porphyrins (Hb derivatives and types – metabolism of Hb and regulation) – Biological oxidation and ATP synthesis

PB 403 Biochemistry II (2+1)

Metabolism and energy production from dietary fuels (carbohydrates, lipids and proteins) –, Integration of metabolism (Feed/fast cycle – diabetes mellitus – obesity) – Nitrogen metabolism and nitrogen balance

– Hormonal regulation of metabolism and clinical correlations., Inborn errors of metabolism - Biochemistry of aging and role of free radicals and antioxidants.

PB 804 Clinical Biochemistry (2+1)

Biochemical/pathophysiological changes and laboratory diagnostic markers for disorders of (Endocrine glands – renal function – hepatic function – gastric function – bone and mineral metabolism - plasma proteins and lipoproteins - myocardial infarction) - Electrolytes, blood gases and acid/base balance - Handling, preservation, storage and analysis of biological samples – Homeostasis and biochemical aspects of hematology and blood analysis – Urine analysis – Tumor markers - Recent diagnostic biomarkers.

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 cell and cell contents. In this course, the student will study: importance of natural products, preparation of natural products-derived drugs including collection, drying, storage, preservation and adulteration. The course will introduce the students to the different classes of secondary metabolites. In addition, the course will discuss and address the variability in occurrence of pharmacologically active substances in certain official medicinal leafy plants according to their WHO monographs. The course introduces students to some botanical drugs of leaves to identify examples of these drugs in their entire and powdered forms. Student will learn about the major constituents, folk uses and clinically proven uses.

PG 202 Pharmacognosy I (2+1)

This course is based on the Egyptian flora and other flora 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 flower, seed, 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, precautions of those medicinal plants, possible herbal-drug interactions of selected examples of these drugs and to have an overview over their phytopharmaceuticals available in the market specially the Egyptian market.

PG 303 Pharmacognosy II (2+1)

Based on the Egyptian flora and other flora of wild and cultivated medicinal plants that are used in the pharmaceutical, cosmetic and food industries in the global & Egyptian market, the students should have the knowledge and skills that enable them to differentiate between different organs through their monographs. The course comprises the study of identification of different organs through their monographs. (fruits, herbs, subterranean organs, unorganized drugs in addition to drugs of marine and animal origin). During the lectures and practical sessions, students learn to identify examples of these drugs in their entire and powdered forms, 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 in the market specially the Egyptian market.

PG 504 Phytochemistry I (2+1)

This course is 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 of plant or animal origin, carbohydrates and glycosides of plant or animal origin and different techniques used for their preparation, identification and determination.

PG 605 Phytochemistry II (2+1)

In continuation with phytochemistry I, this course aims to enable students to demonstrate the knowledge and experience that enables her/ him to understand, describe and deal with the chemistry of alkaloids, tannins and antioxidants of plant, fungi or animal origin as well as techniques for their isolation, identification and determination in their respective sources. Finally, the course focuses on the structure activity relationships (SAR) of these natural products derived compounds and their pharmacophoric features. Also, the students should become aware of different chromatographic methods used for isolation and analysis of different plant constituents and their pharmacological actions and medicinal uses.

PG 906 Phytotherapy (2+1)

The course aims to enable students to attain the systematic approach for herbal prescribing through a comparative study of both traditional and scientifically based uses of herbal drugs in the treatment of various clinical disorders. The course provides clinical pharmacy students with review of the available information on how botanicals may normalize an

altered function. Approval by World Health Organization (WHO), German Federal Institute for Drugs and Medical Devices (Commission E) is the base for selection of the studied herbs. The herbal drugs treated in combined way relative to pharmacognosy, pharmacology and toxicology. Special concern is given to the possible mode of action of the herbal drugs based on experimental and clinical pharmacological studies. 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.

PM 301 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. It also explores the basic concepts microbial growth, cultivation and reproduction.

Moreover it introduces the modern concepts of medical immunology, with an emphasis on Host parasite relationship, Non-specific and specific immunity, Mechanism of protective immunity. Molecular and cellular immunology, including antigen and antibody structure, function and reaction between them, effector mechanisms, complement, and cell mediated immunity. Active and passive immunization. Hypersensitivity

and in vitro antigen antibody reactions, Immuno-deficiency disorders, Autoimmunity and auto-immune disease, organ transplantation.

PM 402 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. Sterilization, sterilization indicators, sterility testing, aseptic area, the microbiological quality of pharmaceuticals. Validation of sterilization process. Moreover, it explains the different groups of antimicrobials, their mechanism of action and resistance of microbes to biocides. Microbiological evaluation of antiseptics, disinfectants and preservatives. Antibiotics, classification and mechanism of action, Antiviral and antifungal agents, different classes of antibiotics including the new categories and new approaches to overcome bacterial resistance & antibiotics clinical abuse.

PM 503 Parasitology &Virology (2+1)

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

This part of the course will discuss medical helminthology, protozoology and entomology concerning their morphological features, life cycle, pathogenesis, clinical manifestations, different diagnostic techniques, the most recent lines of treatment and prevention with control strategy for

each parasitic infection. Moreover, it also covers laboratory diagnosis of human parasitic infections. Virology (general properties of viruses, structure, function, terminology& morphology of viruses, of infection methods of viral cultivation, Recognition of virus replication, virus replication cycle. Outcomes ofhost cells by viruses, virus classification, methods of inactivation of viruses, diagnosis of viral infection, immune response to viral infection, chemotherapy and prevention of viral diseases, DNA-viruses, RNA viruses).

PM 704 Medical Microbiology (2+1)

The course aims at studying microorganisms causing infectious disease in human beings. The infectious diseases, their etiology and clinical manifestation, routes of transmission, treatment and techniques in detection and identification of pathogenic infections caused by Gram positive cocci & bacilli, Gram negative cocci & bacilli and mycobacteria will be studied. The course also study Gram-negative unusual bacteria (rods), Miscellaneous fastidious gram-negative rods, Obligate anaerobic gram-negative bacteria.

Virology (general properties of viruses, structure, function, terminology & morphology of viruses, methods of viral cultivation, Recognition of virus replication, virus replication cycle, Outcomes of infection of host cells by viruses, virus classification, methods of inactivation of viruses, diagnosis of viral infection, immune response to viral infection, chemotherapy and prevention of viral diseases, DNA-viruses, RNA viruses).Mycology (importance, Morphology and reproduction of fungi, pathogenic fungi including superficial, subcutaneous, systemic and opportunistic mycotic infections).

PM 805 Public Health and Preventive medicine (2+0)

This course aims at understanding all scientific disciplines required for health education and promotion directed to the community health. How epidemiology acts as the bases of public health actions will be taught. Detailed scientific information and practices programs will be provided for control of communicable, non-communicable diseases, improving mental, social, environmental, occupational, geriatric and family health, use of sufficient and balanced food and nutrition, supplying safe drinking water, treating and disposing wastes and proper intervention during disasters

PM 906 Biotechnology & Molecular Biology (2+1)

The course aims to provide students with fundamentals, scope and applications in biotechnology through studying fermentation technology, upstream, downstream, scaling up and down processes, use of molecular techniques for production of recombinant products and other major biotechnological products, biotransformation, bioremediation, bioleaching, bioinsecticides, biosurfactants and biopolymer production.

PO 401 Pharmacology I (2+1)

Introduction, Pharmacokinetics: Pharmacodynamics: Aspects of Pharmacotherapy; Adverse Drug Effects, Autonomic Nervous System , Cholinergic System and Drugs, Anticholinergic Drugs and Drugs Acting on Autonomic Ganglia , Adrenergic System Drugs , Antiadrenergic Drugs (Adrenergic Receptor Antagonists) and Drugs for Glaucoma, Skeletal Muscle Relaxants and Local Anaesthetics, Relevant Physiology of Urine Formation , Diuretics, Antidiuretics, Cardiac Electrophysiological Considerations, Drugs Affecting Renin-Angiotensin System and Plasma Kinins, Antihypertensive Drugs, Cardiac Glycosides

and Drugs for Heart Failure, Antiarrhythmic Drugs, Antianginal and Other Anti-ischaemic Drugs

PO 502 Pharmacology II (2+1)

This course integrates principles of pharmacology with conceptual knowledge of physiology and pathophysiology disease processes regarding, General Anaesthetics, Sedative-Hypnotics, Antiepileptic Drugs, Antiparkinsonian Drugs, Drugs Used in Mental Illness: Antipsychotic and Antimanic Drugs, Antidepressant and Antianxiety Drugs, Opioid Analgesics and Antagonists, CNS Stimulants and Cognition Enhancers. Histamine and Antihistaminics, 5-Hydroxytryptamine, its Antagonists and Drug Therapy of Migraine, Prostaglandins, Leukotrienes (Eicosanoids) and Platelet Activating Factor, Nonsteroidal Antiinflammatory Drugs and Antipyretic-Analgesics, Antirheumatoid and Antigout Drugs, Drugs for Cough and Bronchial Asthma, Haematinics and Erythropoietin, Drugs Affecting Coagulation, Bleeding and Thrombosis, Hypolipidaemic Drugs and Plasma Expanders, Drugs for Peptic Ulcer, Drugs for Emesis, Reflux and Digestive Disorders, Drugs for Constipation and Diarrhoea, Anticancer Drugs

PO 603 Pharmacology III (2+1)

This course integrates principles of pharmacology with conceptual knowledge of physiology and pathophysiology disease processes regarding , Introduction to endocrine hormones, Thyroid Hormone and Thyroid Inhibitors, parathyroid hormone and bone mineral hemostasis regulators and Drugs Affecting Calcium Balance, adrenal Corticosteroids, Insulin, Oral Hypoglycaemic Drugs and Glucagon, Androgens and Drugs for Erectile Dysfunction, Estrogens, Progestins and Contraceptives, Anterior Pituitary Hormones, Oxytocin and Other Drugs Acting on Uterus.

PO 704 Drug Information (1+0)

The course aims to educate students about the importance of drug information centers, drug information resources including primary, secondary, and tertiary sources and strategies for accessing and searching quality Web-based resources. In addition, students will learn the structure of clinical trials and other studies beyond clinical trials as well as ethical aspects of drug information practice.

PO 705 Pharmacology IV (1+1)

This course study Antimicrobial Drugs General Considerations, Sulfonamides, Cotrimoxazole and Quinolones, Beta-Lactam Antibiotics, Tetracyclines and Chloramphenicol (Broad-Spectrum Antibiotics), Aminoglycoside Antibiotics, Macrolide, Lincosamide, Glycopeptide and Other Antibacterial Antibiotics; Urinary Antiseptics, Antitubercular Drugs, Antifungal Drugs, Antiviral Drugs, Antimalarial Drugs, Antiamoebic and Other Antiprotozoal Drugs , Anthelmintic Drugs

PO 906 Toxicology and Forensic chemistry (2+1)

Introduction to toxicology, Approach to treatment, Blood as target organ, Toxic response of immune system, Toxic responses of the respiratory system, Toxic responses of the nervous systems, Toxic responses of visual system, Toxic responses of the liver, Toxic responses of the kidney, Toxic responses of the heart & vascular system, Toxic effects of pesticides, Toxic effects of metals, Toxic effects of solvents & vapors, Food Poisoning & Animal poisons.

PO 007 Biostatistics (1+0)

Pharmacological screening and standardization, Design of clinical studies, Biostatistics, Drug approval process.

PP 501 Community Pharmacy Practice (2+1)

This course includes the study of the clinical situations that can be handled by the pharmacist in the community pharmacy (referral or using OTC medications) including upper respiratory tract, gastrointestinal and musculosketal symptoms. In addition, skin, eyes, and ears, woman health and childhood symptoms as well as lifestyle education to a patient with diabetes and high cholesterol will be discussed.

PP 602 Hospital Pharmacy (2+1)

Hospital pharmacy and its organization, responsibilities of hospital pharmacists, pharmacy and therapeutic committee, hospital formulary, dispensing to-in-patients, dispensing to out-patients, transfer of care, patient's medication record, and rational medication use. Dispensing of cytotoxic drugs, narcotics, vaccines and radiopharmaceuticals will be discussed, in addition to I.V admixture and TPN and medication safety.

PP 603 Clinical Pharmacy Practice (2+1)

This course includes the definition and concepts of clinical pharmacy and pharmaceutical care, case history and case presentation, medication history taking, clinical problem solving, and therapeutic planning, clinical rounding and assessment of patient compliance. Drug-related problems and drug interactions. Interpretation of clinical laboratory data and physical examination as well as therapeutic consideration in pregnancy and lactation.

PP 804 Pharmacotherapy of endocrine & renal diseases (2+1)

This course includes the Pathophysiology, causes, clinical presentation, diagnosis and application of pharmaceutical care plans in different endocrinologic disorders (Diabetes, thyroid disorder, caushing syndrome,...) and different renal disorders and related fluid and electrolyte disturbances (acute and chronic renal failure, uremic syndrome, kidney stones, ..). The course develops the students' ability to design, monitor, refine safe and cost-effective treatment plans and provide appropriate information to patient, caregivers, and health professionals.

PP 805 Pharmacotherapy of oncological diseases and Radiotherapy (2+1)

Cancer aetiology, risk factors, cancer staging and grading, diagnosis, prognosis, optimizing chemotherapeutic regimens, different types of tumours (solid and hematologic) and their management, toxicities of chemotherapy, supportive treatment, pharmaceutical care and patient's support measures. This course also includes studying radioactive isotopes which process medical applications and precautions of their usage.

PP 806 Clinical Pharmacokinetics (2+1)

The course provides the students with basic concepts of clinical pharmacokinetics comprising linear versus non-linear pharmacokinetics, compartmental and non-compartmental pharmacokinetics, and clearance, volume of distribution, half-life, elimination rate constant, bioavailability and bioequivalence. The course makes the students aware of drug dosing in special populations suffering from renal disease, hepatic disease, obesity and heart failure. It provides the student with the principals of clinical pharmacokinetics of drugs with narrow therapeutic index

including antibiotics, cardiovascular, respiratory and central nervous system agents and effect of disease states and conditions on their pharmacokinetic parameters as well as drug interactions.

PP 907 Pharmacotherapy of neuropsychiatry diseases (1+1)

This course aims to provide the student with the knowledge in, pathophysiology, clinical interpretation, pharmacotherapy and management of neuropsychiatric diseases (e.g mental health disorders, schizophrenia, depression, anxiety, seizure disorders, parkinsonism, migraines, dementia and Alzheimer's disease). Sedative and hypnotics, general anesthetics, opioid analgesics and non steroidal anti-inflammatory drugs.

PP 008 Pharmacotherapy of critical care patients (1+1)

This course aims to provide the student with the knowledge in, pathophysiology, clinical interpretation, pharmacotherapy and management of critical care illness (e.g. medical and surgical crises, trauma patients, supportive care, ICU infections, burns, neuro-critical care, cardiovascular critical care, sepsis, septic shock, pain and analgesia, bleeding disorders and anticoagulation, nutritional support and therapy, hemodynamic monitoring, fluid and electrolyte disorders).

PP 009 Pharmacotherapy of dermatological, reproductive and musculoskeletal diseases (1+1)

Skin structure and function, primary and secondary lesions. Most popular skin diseases: infective and non-infective types and their differentiation. Sexually transmitted diseases, male infertility, and women health. Musculoskeletal disorders are also included.

PP 010 Pharmacotherapy of Pediatric diseases (1+1)

Nutritional requirements in neonates and infants, nutritional disorders, neonatology, infectious diseases in pediatrics, congenital heart diseases, endocrine, neurological, haematologic, renal, and respiratory disorders, pediatric emergencies.

PP 011 Management of Cardiovascular diseases (1+1)

Main diseases affecting the cardiovascular system, symptoms, prognosis, pharmacological and non-pharmacological management, patient counselling and monitoring of dyslipidaemias, hypertension, coronary artery disease, acute coronary syndromes, heart failure, dysrhythmias, thromboembolic disorders, and stroke.

PP 012 Pharmacotherapy of Gastrointestinal diseases (1+1)

Hepatic disorders including viral hepatitis, pancreatitis, gastrointestinal bleeding, peptic ulcer, gastro-esophageal reflux disease, inflammatory bowel diseases and irritable bowel syndrome as well as gastrointestinal symptoms including nausea, vomiting, constipation, and diarrhea.

PP 013 Pharmacotherapy of Respiratory diseases (1+1)

Epidemiology, aetiology, pathophysiology, clinical manifestation, investigations, treatment, monitoring, and patient counseling of bronchial asthma, chronic obstructive pulmonary disease, pulmonary hypertension, cystic fibrosis, upper and lower respiratory tract infections, and drug-induced respiratory problems.

PP 014 Clinical Research & pharmacovigilance (1+0)

This course introduces the student to the basic principles of research methodology: design experiments, analyze data, evaluate results, report findings, and write a scientific manuscript, in addition to, ethical guidelines in drug research. This course also provides the student's with understanding of pharmacovigilance importance, concept, processes, systems, global safety standards and regulations and reporting systems.

PP 015 Professional Practice (1+1)

Students are introduced to professional problem solving and decision making appropriate to the patient. The course is based on simulated case management format with emphasis on aspects of drug delivery and formulation, the role of the pharmacist in optimizing the use of medicines and improving health outcomes whether over-the-counter (OTC) medications or chronic disease state management, extemporaneous dispensing issues and calculations and some legal and ethical aspects of dispensing and related pharmacy practice issues.

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 physical and chemical 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, buffer, solubility, dissolution, partition coefficient, surface and interfacial phenomena, surface active agents, adsorption and its application in pharmacy and rheological behavior of dosage form.Drug reaction rate, stability and stabilization of drugs.

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. Liquid dosage forms (solution, suspensions, emulsions and colloids)

PT 404 Pharmaceutics II (2+1):

This course involves principles of formulation, development, sterilization, packaging and quality control testing of topical include (creams, ointments, gels and pastes) and transdermal drug systems (TDDS) Rectal, ocular and pulmonary dosage forms.

PT 505 Pharmaceutics III (2+1):

The course introduces the students to describe the principles and techniques involved in the formulation, manufacturing and quality control test of oral dosage forms (powders, granules, tablets, capsules) and parenteral dosage forms

PT 606 Pharmaceutical Technology (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, extraction, size reduction, size separation, size analysis and size enlargement. The course will also cover the preformulation studies needed for development of pharmaceutical dosage forms

PT 707 Advanced Drug Delivery Systems (2+0):

This course will provide an in-depth overview of the newest strategies and achievements in the drug delivery and targeting field. Comparison of the delayed, sustained and controlled release, osmosis and matrix delivery systems..etc. Particular emphasis will be given to the delivery of macromolecules, including vaccines, proteins and therapeutic agent using different delivery systems (liposomes, niosomes, microemulsion, nanoparticles..etc) and the various routes (oral and non oral) application.

PT 708 Biopharmaceutics & Pharmacokinetics (2+1):

The course is concerned with the exploration and examination of the physicochemical properties of drugs in the physiological environment and their impact on product performance. It explores the principles of biopharmaceutics and strategies for enhancing drug delivery and bioavailability. Also it introduces the students to basic pharmacokinetic parameters and mathematical aspects. General principles of pharmacokinetic models are presented as they pertain to the process of absorption, distribution and elimination of drugs in humans and the significance of these processes in drug therapy. Topics also emphasize linear and nonlinear metabolic clearance kinetics, drug-drug interaction

mechanisms and kinetics, in vitro-in vivo predictions, pharmacogenetics and other sources of inter-individual variability.

UR 203 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.

UR 906 Entrepreneurship (1+0)

This course provides the students with an in-depth understanding of key concepts in entrepreneurship and business development. The goal of the course is to provide students with 'hands-on' experience in starting a business or new service, owing and running their own business. It will cover the entrepreneurial mind and different types of entrepreneurs. The course addresses the entrepreneurial process and techniques applied to business development - new business formation, business growth and sustainability.

NP 905 Drug marketing & Pharmacoeconomics (1+0)

The objective of this course is to introduce students to the concepts of pharmaceutical marketing environment including the importance of customer satisfaction, 4 Ps of marketing namely: product, price, place and promotion as well as Pharmaceutical product marketing mix. Marketing strategy, market segmentation, situational analysis, concepts of positioning, targeting, profiling, product life cycle, new product

development, portfolio management, advertising, distribution and pricing strategies. The course also gives a focus about the importance of pharmacoeconomics, types of costs, methods of pharmacoeconomics analysis as well as evaluation of the quality of published Pharmacoeconomics data.

MD 101 Medical Terminology (1+0)

Introduction, The digestive system, The integumentary system, The muscular and skeletal systems, The endocrine system, The nervous system, Cardiovascular system, Lymphatic system& immunology , The eye and the ear, The reproductive system, The respiratory system, Radiology and nuclear medicine.

MD 202 Anatomy and Histology (2+1)

The aim of the course is to provide the students with competency concerning the appropriate functions of cells, tissues, organs and body system. The course also enables the student to integrate physiological data and mechanisms with ongoing taught sciences: anatomy and histology. Histology part includes cytology, epithelium, C.T., blood, muscle, vascular, lymphatic, respiratory, gastrointestinal and endocrine systems. Anatomy part includes introduction to human anatomy, tissues of the body, skeletal system, articular system, muscular system, digestive system, cardiovascular, respiratory system, lymphatic system, urinary system, genital system, nervous and endocrine systems.

MD 303 Biophysics (1+1):

This course aims at studying different biophysical theories and their applications. It will include: Transport across the cell membrane - Ion channels - Types of receptors, cellular communication and cell signaling

- Membrane potential and action potential, conduction across membrane of different cell types and applications - Principle of measuring blood pressure - The quantum model of the atom, radiation types, applications and hazards - Laser technology types, applications and hazards

MD 304 Physiology & Pathophysiology (2+1):

Cell physiology, Neuromuscular and synaptic transmission, PNS physiology, Autonomic Nervous System physiology, Central Nervous System physiology, Cardiovascular System physiology, Endocrine physiology, Renal physiology, Respiratory physiology, The lymphatic system and immunity, GIT Physiology. Pathophysiology of Diabetes, Pathophysiology of Hypertension, Pathophysiology of Heart failure, Pathophysiology of Hepatitis, Pathophysiology of Inflammation, Pathophysiology of Psychosis, Pathophysiology of Asthma, Pathophysiology of Parkinsonism, Pathophysiology of Alzheimer disease

MD 505 Pathology (1+1)

The main aim of Pathology course is to provide the student with knowledge and skills for common diseases affecting body organs and 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 606 First Aid and Basic Life Support (1+1)

After completing the course, the student should be able to know how to deal with medical emergency based on the different courses. It includes:

introduction & accidents, 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.

MD 007 Bioinformatics (1+0)

Introduction to Bioinformatics, Genomic sequences, Sequence alignment, BLAST, Advanced BLAST, Multiple sequence alignment, Molecular phylogeny introduction and evolution, mRNA and gene expression introduction, Differential expression intro, normalization, visualization/clustering, Gene Pattern, Statistics for differential expression, multiple testing, Functional interpretation of array data, Characterizing eukaryotic genomes, Human variation and disease, Linking genes and disease, Sequence variation, phenologs, comparative genomics, personalized medicine, multiple testing.

UR101 Human Rights and Fighting of Corruption (1+0)

The course provides an introduction to basic human rights philosophy, principles, instruments and institutions, and also an overview of current issues and debates in the medical and pharmaceutical field with focus on the problems specific to our country. This course also aims to explore some aspects of the diverse and increasingly complex body of international law of human rights that has both national and international application.

يغطي هذا المقررالموضوعات التالية: حقوق الإنسان في القانون الجنائى، حق الإنسان فى تغيير جنسيته أو التخلىعن إحدى جنسياته، المواثيق الدوليةالمتعلقة بحماية حقوق الإنسان، علاقة العولمة والتنمية بالحقوق الاقتصادية والاجتماعية والثقافية، الحقوق الاقتصاديةوالاجتماعيةوالثقافية للإنسان، حقوق الإنسان فى الشريعة الإسلامية، حقوق المرأةفى

قانونى العمل والتأمين الاجتماعى، حقوق الإنسان فى التقاضى، الحقوق المدنية والسياسية للإنسان

UR 102 English language 1(1+0):

This is an English for General Purposes course which revises the students' fundamental knowledge of the English language in the following areas: grammar, reading, writing, listening, and speaking

UR 204 English language II (1+0):

This is an English for Specific Purpose course which provides students the language, information, and skills needed for their studies and careers. This course aims to teach the fundamentals of effective scientific writing. It covers methods of paraphrasing, common mistakes in scientific writing, different writing styles, how to write a scientific report, proposal and manuscript.

UR 405 Principles of Quality assurance (1+0):

The course gives an introduction about quality including definition, origin, importance and types. Definition of accreditation, importance and types. Basic concepts of quality in education: program, course, intended learning outcomes and competency. Team skills, quality tools and continuous improvement.

NP 101 Information Technology (1+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, excel and power point. It gives students a practical experience on developing projects related to the specialty of each faculty.

NP 102 Mathematics (1+0)

This course provides an essential guide to the mathematical concepts, techniques, and calculations, a student in the pharmaceutical sciences is likely to encounter. It includes definition of Number, Variable, Function, composition of functions, different types of functions. Definition of Limits of one variable functions, continuity, differentiability and applications of these concepts. Definition of the definite and indefinite integrals. The fundamental theorem of calculus and applications of definite integral. Determined the area arc length, volumes and surfaces of revolutions Differentiation and integrations of exponential, logarithmic, trigonometric and transcendental functions. Techniques of integrations, trigonometric and transcendental functions. Techniques of integrations. Matrix Algebra and system of linear equations.

NP 403 Scientific writing & Communication Skills (1+1)

The course focuses on concept and meaning of communication; verbal and non verbal communication (body and vocal language); active listening skills; communication styles and presentation skills. In addition, barriers hinder good communication and strategies for dealing with special classes of patients, stages of change model and counselling in diverse pharmacy practice setting will be discussed to improve inter- and

intra-professional collaboration and communication with patients and other health care providers.

NP 404 Pharmacy Legislation & Practice Ethics (1+0)

A detailed presentation of law that governs and affects the practice of pharmacy, legal principles for non-controlled and controlled prescriptions, 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, research ethics and animal ethics.

PA E ٠5 Advanced Pharmaceutical Analysis - Spectroscopy (1+1)

Basic concepts of advanced spectroscopic techniques including Fourier Transform Infra-red (FTIR), Near Infra-red (NIR), and Raman spectroscopy. Applications of the studied techniques in pharmaceutical analysis.

PG E ٠7 Quality Control of natural products (1+1)

The course aim to provide students basic knowledge for quality control of herbal drugs according to WHO guidelines and pharmacopoeias standards, to introduce safe, effective and pure medicine. Analysis of herbal drugs by GC, HPLC and spectroscopy. Basic concepts of microbial quality control.

PT E ٠9 Applied Industrial Pharmacy (2+0)

Industrial Pharmacy is a discipline which includes manufacturing, development and distribution of drug products manufacturing and skills required to pursue a position in formulation development, process development, manufacturing or quality control.

PO E ٠8 Biological Standardization (1+1)

This course study pharmacological screening and standardization, drug approval process, and design of clinical studies.

PC E ٠4 Drug Design (1+1)

This course aims to provide students with basic knowledge of the process of drug discovery and development from the identification of new target macromolecules to the introduction of new chemical entities into drug market. The following topics will be addressed: lead identification, lead optimization, drug action at receptors, drug action on enzymes, prodrug design and applications, as well as structure-based and computer-aided drug design methods.

PG E ٠8 Chromatography and Separation Techniques (1+1)

The course aims to provide the pharmacy students with knowledge about the methods of chromatographic separation; applications and uses of the different chromatographic techniques in the isolation, identification, qualitative and quantitative analysis of active constituents from medicinal plants in standardization and quality control of herbal drugs. The course involves introduction, terminology, classification and modes of chromatographic separations. The course also covers in details the following topics: adsorption chromatography, column chromatography, thin layer chromatography, chromatotron, partition chromatography, DCCC, Paper chromatography, Gas chromatography, HPLC, UPLC, Ion

exchange chromatography, Gel chromatography and affinity, supercritical fluid chromatography and electrophoresis.

PT E 10 Good Manufacturing Practices (2+0)

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. Reformulation studies that focus on the physicochemical properties of a new drug candidate that could affect the drug performance and the development of a dosage form.

PT E 11 Protein Pharmaceuticals (2+0)

This course will provide an in-depth overview of different types of protein as (adaptor, carrier, Transport chromosomal, complex, designer, factitious, fibrous, fluorescent, fusion housekeeping, , hydrophobic , hypothetical, immunoglobulin Ig, luxury, membrane transport, heat shock, Finger)proteins . Growth factors, Drug Targets checkpoint control proteins.

PO E ٠9 Veterinary pharmacology (1+1)

This course is concerned with the action of drugs on the tissues of domesticated animals, and the fate of these drugs in those species. It will provide the scientific bases for the art of veterinary therapeutics. It emphasizes the study of pharmacodynamics, pharmacokinetics, and pharmacotherapy. It will include brief account on chemotherapy, toxicology, posology, metrology and the role of pharmacy in collection,

preparation, standardization and dispensing of drugs and pharmacology in concern to patient animals.

PG E ٠9 Analysis of food and flavors (1+1)

The course will enable students to deal with modern techniques used in the process of food and flavor analysis. It will provide brief notes on food and flavor chemistry, different flow sheets as well as recent advances in qualitative and quantitative analysis of food and flavor contents based on their nature including sample preparation, micro extraction techniques and headspace analysis. The course will cover challenges of analyzing food, food additives and flavor, safety and allowed limits of flavor and additives in edible and pharmaceutical preparations.

PG E10 Aromatherapy and herbal cosmetics (1+1)

This course provides the pharmacy with an overview about aromatherapy and its important role in health and healthcare. Study the commonly used essential oils and their different extraction techniques from plants. Identify safety and ethical issues and discuss their application in practice situations. Evaluate the use of essential oils for management of pain, anxiety, nausea, and fatigue. Additionally, the students will also have knowledge about different herbs and natural products used in cosmetics as oils, perfumes, natural dyes, composition and its sources. Plant extracts used in cosmetics, their types according to site of application such as herbal cosmetics for skin, hair and dentifrices. Discuss the preparation, identification and evaluation of natural components in different cosmetic perpetrations. Safety and guidelines of using natural products in cosmetics are also studied.

PT E 12 Drug Metabolism and Transport (2+0)

The course is concerned with study of drug metabolism pharmacokinetics. Drug metabolizing enzymes oxidize, reduce , hydrolyze or conjugate compounds, characteristic of phase I and phase II .Topics emphasize linear and nonlinear metabolic clearance kinetics ,drug-drug interaction mechanisms and kinetics, metabolite kinetics, in vitro-in vivo predictions, pharmacogenetics and other sources of inter-individual variability. Provides advance knowledge of the physico-chemical and biological concepts underlying in vivo transport and delivery of drugs. Distribution of drugs within the body and factors affecting distribution of drugs through cancer tissues, CNS and placental. Protein binding and its effect on transport or distribution.

PT E 13 Cosmetic Preparations (1+1)

This course will provide definition and concepts, classification of skin types, hair structure and color, skin care products, shaving preparations, hygiene products, bath preparations, baby cosmetics, hair preparations, make-up preparations, fragrance preparations, antiperspirants and deodorants, Sunscreens and Sunblock, skin whitening products, anti-aging Products, quality control tests of cosmetic products.

PP E 16 Quality improvement in healthcare (2+0)

This course covers Total Quality Management (TQM) philosophies and frameworks, various tools and techniques of Total Quality Management, quality improvement cycle, appropriate tools and techniques for controlling, improving and measuring quality.

PG E 1١ Biotechnology of medicinal plants (1+1)

The course will provide students with basics and scope of pharmaceutical plant biotechnology. It will enable students to understand impact of

whole genome and proteome on plant metabolome and biosynthesis of metabolites. Also, the course will deal with transgenic plants, edible vaccines and plantibodies and their medical applications, recombinant proteins and their role in production of pharmaceutically active metabolites. The students will gain knowledge about plant tissue culture technique and its application in the pharmaceutical field as well as biotransformation of natural products.

PM E ٠7 Infection Control (1+1)

This course aims to ensure that the students are well prepared to direct the infection control services and to develop and supervise infection control programs in different health care facilities. Also, this course will provide students with knowledge about basic guidelines of infection control that make them able to work within the hospital team and in the integrated programs of quality management.

PB E 05 Clinical nutrition (1+1)

Types and function of nutrients (macro and micronutrients) in the body, Nutrients requirements and needs (RDI), Concepts of balanced diet, Food pyramids and health plate, Energy expenditure, Nutrition in pediatric , geriatric, pregnancy, and lactation, Nutritional assessments, Main nutritional disorders, Parental nutrition, Food allergy, Drug food interaction, Life style related disease and dietary management, Nutritional managements of cancer, anemia, kidney, and liver disease, Social health problems as smoking, alcoholism,-----etc.