# جمهورية مصر العربية

# وزارة التعليم العالي

# كلية الصيدلة – جامعة أسيوط

# لائحة برنامج درجة بكالوريوس الصيدلة (فارم دى PharmD)

# بنظام الساعات المعتمدة

# قرار وزاري رقم (٤١٩٨) بتاريخ ٢٠١٩/٩/١٨م

# ٢٠١٩

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## أولا: رؤية و رسالة و أهداف كلية الصيدلة- جامعة اسيوط

**الرؤيـــة:**

الريادة فى التعليم الصيدلى والبحث العلمى وخدمة المجتمع على المستوى القومى والعالمى.

**الرســالة:**

توفـير تعليم صيدلى متميز من خلال برامج علمية معتمدة لتأهيل صيادلة ذوى كفاءة عالية قادرين على المساهمة فى تحسين الرعاية الصحية للمجتمع والمنافسة فى مجالات العمل على المستوى القومى والعالمى، وترسيخ أخلاقيات مهنة الصيدلة فى خريجيها وغرس قيم التعليم الذاتى والمستمر وإجراء أبحاث علمية متطورة تساهم فى تطوير صناعة الدواء وتلبى الإحتياجات الصحية للمجتمع.

**الغايات والأهداف الإستراتيجية للكلية:**

١. جهاز أكاديمى وإدارى فعال.
٢. تخريج صيدلى متميز قادر على الإبتكار والمنافسة فى سوق العمل.
٣. تحقيق مستوى متميز فى البحث العلمى وخدمة المجتمع.
٤. التقويم المستمر للمؤسسة.

## ثانيا: الأقسام العلمية

| Abbreviation | Department | القسم |
|---|---|---|
| **PG** | **Pharmacognosy** | العقاقير |
| **PC** | **Medicinal Chemistry** | الكيمياء الدوائية |
| **PR** | **Pharmaceutical Organic Chemistry** | الكيمياء العضوية الصيدلية |
| **PA** | **Pharmaceutical Analytical Chemistry** | الكيمياء التحليلية الصيدلية |
| **PT** | **Pharmaceutics** | الصيدلانيات |
| **PI** | **Industrial Pharmacy** | الصيدلة الصناعية |
| **PP** | **Clinical Pharmacy** | الصيدلة الإكلينيكية |
| **PB** | **Biochemistry** | الكيمياء الحيوية |
| **PM** | **Microbiology and Immunology** | الميكروبيولوجيا والمناعة |
| **PO** | **Pharmacology and Toxicology** | علم الأدوية والسموم |

**تقوم الأقسام العلمية التالية بالإشراف على تدريس المقررات الموضحه قرين كل منها وذلك على النحو التالى:**

| Department | Courses supervised |
|---|---|
| **Pharmaceutics** | **Mathematics , Pharmacy Legislation and practice ethics** |
| **Pharmacognosy** | **Entrepreneurship** |
| **Medicinal Chemistry** | **Information Technology, Communication skills** |
| **Pharmaceutical Analytical Chemistry** | **University requirement courses** |
| **Clinical Pharmacy** | **First Aid and Basic Life Support, and Marketing & Pharmacoeconomics** |
| **Biochemistry** | **Scientific writing** |
| **Microbiology and Immunology** | **Pathology, Parasitology, and Public Health** |
| **Pharmacology and Toxicology** | **Anatomy& Histology, Physiology I, and II** |

## ثالثا: أحكام انتقالية

١. **تطبق أحكام هذه اللائحة إعتبارا من العام الدراسى ٢٠١٩/٢٠٢٠ لصدور القرار الوزارى بالموافقة عليها.وذلك على الطلاب المستجدين بالكلية للعام الدراسى ٢٠١٩ / ٢٠٢٠**

٢. **بالنسبة للطلاب المقيدون بالفرق الأخرى فى الأعوام السابقة تطبق عليهم اللائحة المقيدين عليها فيما يختص بالدراسة والإمتحان لحين تخرجهم.**

## رابعا: لائحة المرحلة الجامعية الأولى : برنامج بكالوريوس الصيدلة (فارم دى PharmD)

# مواد لائحة برنامج بكالوريوس الصيدلة (فارم دى PharmD)

## مادة (١) :

### رؤية البرنامج:

التميز العلمي والتطوير المستمر لخدمة المنظومة الصحية العلاجية و الصناعات 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 من المساهمة في تطوير الصناعات الدوائية و رفع كفاءة منظومة الرعاية الصيدلية على المستوى المحلي والإقليمي في المستشفيات و الصيدليات الاهلية من خلال تقديم الخدمات الصيدلية بمستوى مهني متميز 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 داخل 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 صيدلى 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.
- التنمية المهنية المستدامة وإظهار قدرة الصيدلى إكتساب 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 دى PharmD) طبقا لنظام الساعات المعتمدة.

## مادة ( ٣ ) :

### التأهيل للدرجات الأكاديمية الأعلى

درجة بكالوريوس الصيدلة (فارم دى 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 كاملة ( امتياز) فى مواقع العمل (٥+١). بالإضافة إلى عدد ١٠٠ ساعة تدريب ميدانى فعلى 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.
- يدرس ويجتاز الطالب مقررات دراسية تصل مجموع ساعاتها المعتمدة ١٧٥ ساعة تشمل ٨ ساعات معتمدة مقررات كلية إختيارية بالإضافة إلى متطلبات الجامعة بحد أقصى ٦ ساعات معتمدة.

- المقرارات الاختيارية للطالب في المستويين الآخرين يفضّل ان تحقق له جدارات و مهارات تساعده على التوجه المهني والتخصص ، وأن يكون أحد المقررات الإختيارية فى أحدى المجالات الصيدلية الإكلينيكية.
- يكمل الطالب ١٠٠ ساعة فعلية تدريب صيفى يبدأ بنهاية المستوى الثالث و قبل البدء فى سنة الامتياز.

## مادة (٦) : 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.
- لا 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 لجنة شئون التعليم والطلاب بالكلية السماح للطالب في أخر فصلين دراسيين بزيادة العبء الدراسي عن الحد الأقصى وبما لا يتجاوز عدد ٣ ساعات معتمدة (يستفيد منها الطالب لمرة واحدة).
- يجوز لمجلس الكلية بعد موافقة لجنة شئون التعليم والطلاب بالكلية السماح للطالب المتعثر (أنظر مادة ١٣ - التعثرالأكاديمي) بزيادة العبء الدراسي عن الحد الأقصى خلال الفصل الصيفي وبما لا يتجاوز عدد ٢ ساعة معتمدة.

### ب) 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.
- يقوم الطالب 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 المتطلب السابق لهذا المقرر.
- يجوز لمجلس الكلية في حالات الضرورة القصوى وبعد موافقة لجنة شئون التعليم والطلاب بالكلية السماح للطالب بتسجيل بعض المقررات بالتوازي مع متطلباتها التي لم يجتازها الطالب بنجاح إذا قل العبء الدراسي المتاح للطالب عن ١٢ ساعة معتمدة.
- ينبغى 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 أسبوع من نهاية فترة التسجيل.

**ج) 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.
- يجوز للطالب بعد تسجيله المقررات 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) : المواظبة

**أ) المواظـــبة**

- 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.
- يعتبر 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 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

**التدريــب الميداني الاولى :**

- على الطالب أن يؤدى 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 و قبل البدء فى سنة الامتياز.

**التدريب الميداني المتقدم (سنة الامتياز):**

- على الطالب أن يكمل سنة الأمتياز بعد الإنتهاء من السنوات الدراسية (١٧٥ ساعة معتمدة) بواقع ٣٦ اسبوعا وذلك بالتدريب فى شركات ومصانع الأدوية والمستلزمات الطبية والمكملات الغذائية وشركات التوزيع ومخازن الأدوية - مراكز وهيئات الرقابة الدوائية المحلية والعالمية ( MOH-CAPA-WHO,FDA,EMA..etc;...) - وكليات الصيدلة ومراكز البحوث الصيدلية والطبية والإتاحة الحيوية والدراسات السريرية - الأعلام والتسويق الدوائى..... إلخ ، بالإضافة إلى الصيدليات الخاصة والحكومية ، بحيث يكون البرنامج التدريبي متكامل وممنهج بطريقة دورية تناوبية مسجلة بالساعات والمهام التدريبية وتحت إشراف دقيق من الكلية وجهة التدريب.
- يقدم الطالب مشروع تخرج فى تخصص معين يساهم فى تمهيد وإعداد الطالب للتوجه لهذا التخصص. ويمكن للخريج العمل فى هذا المجال لمدة سنتين ليصبح بعدها صيدلي متخصص فى احدى المجالات الصيدلية المختلفة .
- يجب أن يشمل برنامج التدريب دورة تدريبية واحدة من دورات التدريب الصيدلى الإكلينيكى طبقا لبرنامج 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

| النسبة المئوية | عدد النقاط | الرمز | التقدير |
|---|---|---|---|
| ٩٥ فأكثر | ٤ | $A^+$ | ممتاز |
| ٩٠ لأقل من ٩٥ | ٣،٨ | A | |
| ٨٥ لأقل من ٩٠ | ٣،٦ | $A^-$ | |
| ٨٢،٥ لأقل من ٨٥ | ٣،٤ | $B^+$ | جيد جدا |
| ٧٧،٥ لأقل من ٨٢،٥ | ٣،٢ | B | |
| ٧٥ لأقل من ٧٧،٥ | ٣ | $B^-$ | |
| ٧٢،٥ لأقل من ٧٥ | ٢،٨ | $C^+$ | جيد |
| ٦٧،٥ لأقل من ٧٢،٥ | ٢،٦ | C | |
| ٦٥ لأقل من ٦٧،٥ | ٢،٤ | $C^-$ | |
| ٦٢،٥ لأقل من ٦٥ | ٢،٢ | $D^+$ | مقبول |
| ٦٠ لأقل من ٦٢،٥ | ٢ | 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 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**

يُعتبر الطالب راسباً في المقرر في الحالات التالية:

- 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 المقرر والامتحان 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 شئون التعليم والطلاب بالكلية.

## 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 دى PharmD)

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

**أولا :** دراسة واجتياز ١٧٥ ساعة معتمدة تشمل متطلبات الكلية الإختيارية على ألا يقل المعدل التراكمي عن أثنين.

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

**ثالثا:** اجتياز فترة التدريب الميداني الأولي باجمالي 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 و قبل البدء فى سنة الامتياز.

**رابعا**: اجتياز سنة الإمتياز والتى تشمل مشروع التخرج فى احد التخصصات المطروحة للتسجيل.

## مادة (١٦) :

### نظام تأديب الطلاب

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

## مادة (١٧) :

**كود الأقسام ومتطلبات الجامعة والكلية والمقررات الإختيارية**

**١ـ كود الأقسام** **Abbreviations Course for Key**

| | |
|---|---|
| PA | Pharmaceutical Analytical Chemistry |
| PB | Biochemistry |
| PC | Medicinal Chemistry |
| PG | Pharmacognosy |
| PI | Industrial Pharmacy |
| PM | Microbiology and Immunology |
| PO | Pharmacology and Toxicology |
| PP | Clinical Pharmacy |
| PR | Pharmaceutical Organic Chemistry |
| PT | Pharmaceutics |
| MD | Medical Courses |
| NP | Nonclassified Pharmacy courses |
| PE | Elective courses |

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.

**٢ـ متطلبات الجامعة** **University Requirements:**

| Course code | Course title | Credit hours | | |
|---|---|---|---|---|
| | | L | P/T | Total |
| UR 101 | English Language | 2 | - | 2 |
| UR 202 | Psychology | 1 | - | 1 |
| UR 203 | Human Rights and Fighting Corruption | 1 | - | 1 |

**Faculty Requirements:** **٣ـ متطلبات الكلية**

***Courses supervised by the Department** * **مقررات يشرف عليها القسم**

**Pharmacognosy Department:**

| 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 I | 2 | 1 | 3 |
| PG 605 | Phytochemistry II | 2 | 1 | 3 |
| PG 706 | Applied and Forensic Pharmacognosy | 1 | 1 | 2 |
| PG 907 | Phytotherapy and Aromatherapy | 2 | 1 | 3 |
| PG E08 | Biotechnology of Medicinal Plants | 1 | 1 | 2 |
| PG E09 | Complementary and Alternative Medicinal Plants | 1 | 1 | 2 |
| PG E10 | Quality Control of Herbal Drugs | 1 | 1 | 2 |
| NP 007 | Entrepreneurship* | 1 | - | 1 |

**Medicinal Chemistry Department:**

| Course code | Course title | Credit hours | | |
|---|---|---|---|---|
| | | L | P/T | Total |
| PC 501 | Medicinal Chemistry I | 2 | 1 | 3 |
| PC 602 | Medicinal Chemistry II | 2 | 1 | 3 |
| PC 703 | Medicinal Chemistry III | 2 | 1 | 3 |
| PC 804 | Drug Design | 1 | 1 | 2 |
| PC E05 | Computer-aided Molecular Design | 1 | 1 | 2 |
| PC E06 | Medicinal chemistry of supplementary drugs and Nutraceuticals | 1 | 1 | 2 |
| PC E07 | Nanochemistry and related aspects | 1 | 1 | 2 |
| NP 101 | Information Technology* | 1 | 1 | 2 |
| NP 404 | Communication Skills* | 1 | 1 | 2 |

**Pharmaceutical Organic Chemistry Department:**

| Course code | Course title | Credit hours | | |
|---|---|---|---|---|
| | | L | P/T | Total |
| PR 101 | Pharmaceutical Organic Chemistry I | 2 | 1 | 3 |
| PR 202 | Pharmaceutical Organic Chemistry II | 2 | 1 | 3 |
| PR 303 | Pharmaceutical Organic Chemistry III | 2 | 1 | 3 |
| PR 404 | Basic Spectroscopy | 1 | - | 1 |
| PR E05 | Recent Techniques of Structure Elucidation | 1 | 1 | 2 |
| PR E06 | Green Chemistry | 1 | 1 | 2 |
| PR E07 | Advanced Level of Drug Synthesis | 1 | 1 | 2 |

**Pharmaceutical Analytical Chemistry Department:**

| Course code | Course title | Credit hours | | |
|---|---|---|---|---|
| | | L | P/T | Total |
| PA 101 | Pharmaceutical Analytical Chemistry I | 2 | 1 | 3 |
| PA 202 | Pharmaceutical Analytical Chemistry II | 2 | 1 | 3 |
| PA 303 | Pharmaceutical Analytical Chemistry III | 1 | 1 | 2 |
| PA 404 | Instrumental Analysis | 2 | 1 | 3 |
| PA 005 | Quality Control of Pharmaceutical | 2 | 1 | 3 |
| PA E06 | Advanced Pharmaceutical Analysis - Spectroscopy | 1 | 1 | 2 |
| PA E07 | Environmental Analysis | 1 | 1 | 2 |
| PA E08 | Forensic Analysis | 1 | 1 | 2 |
| UR 101 | English Language* | 2 | - | 2 |
| UR 202 | Psychology* | 1 | - | 1 |
| UR 203 | Human Rights and Fighting Corruption* | 1 | - | 1 |

**Pharmaceutics Department:**

| 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 | Pharmaceutics IV | 2 | 1 | 3 |
| PT 607 | Biopharmaceutics and pharmacokinetics | 2 | 1 | 3 |
| PT 008 | Advanced drug delivery systems | 1 | 1 | 2 |
| PT E09 | Drug Targeting | 1 | 1 | 2 |
| PT E10 | Pharmaceutical Nanotechnology | 1 | 1 | 2 |
| PT E11 | Cosmetic Preparations | 1 | 1 | 2 |
| PT E12 | Clinical Pharmaceutics | 1 | 1 | 2 |
| NP 102 | Mathematics* | 1 | - | 1 |
| NP 705 | Pharmacy Legislations and ethics* | 1 | - | 1 |

**Industrial Pharmacy Department:**

| Course code | Course title | Credit hours | | |
|---|---|---|---|---|
| | | L | P/T | Total |
| PI 701 | Industrial Pharmacy I | 2 | 1 | 3 |
| PI 802 | Industrial Pharmacy II | 2 | 1 | 3 |
| PI 903 | Good manufacturing practice | 1 | 1 | 2 |
| PI E04 | Drug Manufacturing | 1 | 1 | 2 |

**Clinical Pharmacy Department:**

| Course code | Course title | Credit hours | | |
|---|---|---|---|---|
| | | L | P/T | Total |
| PP 701 | Drug Information | 1 | 1 | 2 |
| PP 802 | Clinical Pharmacokinetics | 2 | 1 | 3 |
| PP 803 | Community Pharmacy | 2 | 1 | 3 |
| PP 904 | Clinical Pharmacy I | 2 | 1 | 3 |
| PP 905 | Hospital Pharmacy | 2 | 1 | 3 |
| PP 006 | Clinical Pharmacy II | 2 | 1 | 3 |
| PP 007 | Clinical research, pharmacoepidemiology | 2 | - | 2 |
| PP E08 | Precision Pharmacy | 1 | 1 | 2 |

| | | | | |
|---|---|---|---|---|
| PP E09 | Advanced Pharmaceutical Care | 1 | 1 | 2 |
| PP E10 | Pharmacy Administration and Management | 1 | 1 | 2 |
| MD 007 | First Aid and Basic Life Support* | 1 | 1 | 2 |
| NP 806 | Marketing & Pharmacoeconomics* | 2 | - | 2 |

**Biochemistry Department:**

| Course code | Course title | Credit hours | | |
|---|---|---|---|---|
| | | L | P/T | Total |
| PB 201 | Cell Biology | 2 | - | 2 |
| PB 402 | Biochemistry I | 2 | 1 | 3 |
| PB 503 | Biochemistry II | 2 | 1 | 3 |
| PB 704 | Clinical Biochemistry | 2 | 1 | 3 |
| PB E 05 | Cancer Biology | 1 | 1 | 2 |
| PB E06 | Radioisotopes in biochemistry and medicine | 1 | 1 | 2 |
| PB E07 | Clinical nutrition | 1 | 1 | 2 |
| PB E08 | Tissue metabolism | 1 | 1 | 2 |
| NP 303 | Scientific writing* | 2 | - | 2 |

**Microbiology and Immunology Department:**

| Course code | Course title | Credit hours | | |
|---|---|---|---|---|
| | | L | P/T | Total |
| PM 401 | General Microbiology and Immunology | 2 | 1 | 3 |
| PM 502 | Pharmaceutical Microbiology | 2 | 1 | 3 |
| PM 603 | Medical Microbiology | 2 | 1 | 3 |
| PM 904 | Pharmaceutical Biotechnology | 2 | 1 | 3 |
| PM E05 | Antimicrobial stewardship | 1 | 1 | 2 |
| PM E06 | Infection Control | 1 | 1 | 2 |
| PM E07 | Molecular Biology and Epigenetics | 1 | 1 | 2 |
| MD 302 | Pathology* | 1 | 1 | 2 |
| MD 405 | Parasitology* | 1 | 1 | 2 |
| MD 906 | Public Health* | 2 | - | 2 |

**Pharmacology and Toxicology Department:**

| Course code | Course title | Credit hours | | |
|---|---|---|---|---|
| | | L | P/T | Total |
| PO 101 | Medical Terminology | 1 | - | 1 |
| PO 502 | Pharmacology I | 2 | 1 | 3 |
| PO 603 | Biostatistics | 1 | - | 1 |
| PO 604 | Pharmacology II | 2 | 1 | 3 |
| PO 705 | Pharmacology III | 2 | - | 2 |
| PO 806 | Toxicology and Forensic Chemistry | 2 | 1 | 3 |
| PO 007 | Drug Interactions | 1 | 1 | 2 |
| PO E08 | Biological Standardization | 1 | 1 | 2 |
| MD 201 | Anatomy & Histology* | 2 | 1 | 3 |
| MD 303 | Physiology I* | 2 | 1 | 3 |
| MD 404 | Physiology II* | 2 | 1 | 3 |

## Elective Courses

## ٤- مقررات اختيارية

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 |
| PA E06 | Advanced Pharmaceutical Analysis - Spectroscopy | 1 | 1 | 2 |
| PA E07 | Environmental Analysis | 1 | 1 | 2 |
| PA E08 | Forensic Analysis | 1 | 1 | 2 |
| PB E 05 | Cancer Biology | 1 | 1 | 2 |
| PB E06 | Radioisotopes in biochemistry and medicine | 1 | 1 | 2 |
| PB E07 | Clinical nutrition | 1 | 1 | 2 |
| PB E08 | Tissue metabolism | 1 | 1 | 2 |
| PC E05 | Computer-aided Molecular Design | 1 | 1 | 2 |
| PC E06 | Medicinal chemistry of supplementary drugs and Nutraceuticals | 1 | 1 | 2 |
| PC E07 | Nanochemistry and related aspects | 1 | 1 | 2 |
| PG E08 | Biotechnology of Medicinal Plants | 1 | 1 | 2 |
| PG E09 | Complementary and Alternative Medicinal Plants | 1 | 1 | 2 |

| | | | | |
|---|---|---|---|---|
| PG E10 | Quality Control of Herbal Drugs | 1 | 1 | 2 |
| PI E04 | Drug Manufacturing | 1 | 1 | 2 |
| PM E05 | Antimicrobial stewardship | 1 | 1 | 2 |
| PM E06 | Infection Control | 1 | 1 | 2 |
| PM E07 | Molecular Biology and Epigenetics | 1 | 1 | 2 |
| PO E08 | Biological Standardization | 1 | 1 | 2 |
| PP E08 | Precision Pharmacy | 1 | 1 | 2 |
| PP E09 | Advanced Pharmaceutical Care | 1 | 1 | 2 |
| PP E10 | Pharmacy Administration and Management | 1 | 1 | 2 |
| PR E05 | Recent Techniques of Structure Elucidation | 1 | 1 | 2 |
| PR E06 | Green Chemistry | 1 | 1 | 2 |
| PR E07 | Advanced Level of Drug Synthesis | 1 | 1 | 2 |
| PT E09 | Drug Targeting | 1 | 1 | 2 |
| PT E10 | Pharmaceutical Nanotechnology | 1 | 1 | 2 |
| PT E11 | Cosmetic Preparations | 1 | 1 | 2 |
| PT E12 | Clinical Pharmaceutics | 1 | 1 | 2 |

L: Lecture P: Practical T: Tutorial

لمجلس الكلية طرح المقررات الإختيارية المذكورة بالجدول السابق في كل مستوى/فصل دراسي وذلك بعد موافقة لجنة شئون التعليم والطلاب وبعد أخذ رأي مجالس الأقسام المعنية. ويمكن للكلية إضافة مقررات إختيارية أخرى يشترط موافقة مجلس الجامعة بعد إبداء المبررات اللازمة.

## مادة (١٨) :

**الخطة الدراسية (مرفق ١)**

## مادة (١٩) :

**محتوى المقررات الدراسية ( أنظر مرفق ٢)**

## مادة (٢٠) :

**تحديث المقررات الدراسية**

يجوز لمجلس الجامعة الموافقة على تحديث نسبة لا تتجاوز ٢٠% من محتوى المقررات الدراسية بناء على إقتراح مجلس الكلية وذلك بعد موافقة لجنة شئون التعليم والطلاب بالكلية ومجلس القسم العلمي المعني وبعد إبداء المبررات اللازمة.

## مادة (٢١) :

### برنامج التدريب لسنة الإمتياز

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

# مرفق رقم ١ : خاص بالمادة رقم ( ١٨ )

## 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. | Pract./Tut. | Wr. | Oral | | |
| Pharmaceutical Analytical Chemistry I | PA 101 | 2 | 1 | 3 | Registration | 20 | 40 | 75 | 15 | 150 | 2 |
| Pharmaceutical Organic Chemistry I | PR 101 | 2 | 1 | 3 | Registration | 20 | 40 | 75 | 15 | 150 | 2 |
| Pharmacy Orientation | PT 101 | 1 | - | 1 | Registration | 10 | -- | 40 | --- | 50 | 1 |
| Medicinal Plants | PG 101 | 2 | 1 | 3 | Registration | 20 | 40 | 75 | 15 | 150 | 2 |
| Medical Terminology | PO 101 | 1 | - | 1 | Registration | 10 | -- | 40 | --- | 50 | 1 |
| Information Technology | NP 101 | 1 | 1 | 2 | Registration | 15 | 25 | 60 | - | 100 | 1 |
| Mathematics | NP 102 | 1 | --- | 1 | Registration | 10 | --- | 40 | --- | 50 | 1 |
| English Language* | UR 101 | 2 | - | 2 | Registration | 15 | - | 85 | - | 100 | 2 |
| Total | | 10 + 2 | 4 | 14 + 2 | | | | | | 700 | |

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

**متطلب جامعة بتقدير نجاح ورسوب فقط دون إضافة درجات للمجموع التراكمى*

# Table (2)

## 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 | PA 202 | 2 | 1 | 3 | Pharmaceutical Analytical Chemistry I | 20 | 40 | 75 | 15 | 150 | 2 |
| Pharmaceutical Organic Chemistry II | PR 202 | 2 | 1 | 3 | Pharmaceutical Organic Chemistry-I | 20 | 40 | 75 | 15 | 150 | 2 |
| Cell Biology | PB 201 | 1 | 1 | 2 | Registration | 15 | 25 | 60 | -- | 100 | 1 |
| Anatomy& Histology | MD 201 | 2 | 1 | 3 | Registration | 20 | 40 | 90 | --- | 150 | 1 |
| Physical Pharmacy | PT 202 | 2 | 1 | 3 | Registration | 20 | 40 | 75 | 15 | 150 | 2 |
| Pharmacognosy I | PG 202 | 2 | 1 | 3 | Medicinal Plants | 20 | 40 | 75 | 15 | 150 | 2 |
| Psychology* | UR 202 | 1 | - | 1 | Registration | 10 | - | 40 | - | 50 | 1 |
| Human Rights and Fighting Corruption* | UR 203 | 1 | - | 1 | Registration | 10 | - | 40 | - | 50 | 1 |
| Total | | 11 + 2 | 6 | 17 + 2 | | | | | | 850 | |

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

**متطلب جامعة بتقدير نجاح ورسوب فقط دون إضافة درجات للمجموع التراكمى*

# Table (3)

## 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 | PA 303 | 1 | 1 | 2 | Pharmaceutical Analytical Chemistry-II | 15 | 25 | 50 | 10 | 100 | 1 |
| Pharmaceutical Organic Chemistry III | PR 303 | 2 | 1 | 3 | Pharmaceutical Organic Chemistry-II | 20 | 40 | 75 | 15 | 150 | 2 |
| Pathology | MD 302 | 1 | 1 | 2 | Anatomy& Histology | 15 | 25 | 50 | 10 | 100 | 1 |
| Pharmacognosy II | PG 303 | 2 | 1 | 3 | Pharmacognosy-I | 20 | 40 | 75 | 15 | 150 | 2 |
| Physiology I | MD 303 | 2 | 1 | 3 | Cell biology | 20 | 40 | 75 | 15 | 150 | 2 |
| Pharmaceutics I | PT 303 | 2 | 1 | 3 | Physical Pharmacy | 20 | 40 | 75 | 15 | 150 | 2 |
| Scientific Writing | NP 303 | 2 | - | 2 | Registration | 25 | - | 75 | - | 100 | 2 |
| Total | | 12 | 6 | 18 | | | | | | 900 | |

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

# Table (4)

## Semester (4)

| Course Title | Course Code | Credit Hours | | | Prerequisite | Examination Marks | | | | Total Marks | Final Exam. Hours |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lect. | Pract. | Total | | Period. | Pract./Tut. | Wr. | Oral | | |
| Biochemistry I | PB 402 | 2 | 1 | 3 | Pharmaceutical Organic Chemistry-II | 20 | 40 | 75 | 15 | 150 | 2 |
| General Microbiology and Immunology | PM 401 | 2 | 1 | 3 | Registration | 20 | 40 | 75 | 15 | 150 | 2 |
| Instrumental Analysis | PA 404 | 2 | 1 | 3 | Pharmaceutical Analytical Chemistry-II | 20 | 40 | 75 | 15 | 150 | 2 |
| Physiology II | MD 404 | 2 | -- | 2 | Cell biology | 15 | -- | 75 | 10 | 100 | 2 |
| Pharmaceutics II | PT 404 | 2 | 1 | 3 | Physical Pharmacy | 20 | 40 | 75 | 15 | 150 | 2 |
| Communication skills | NP 404 | 1 | 1 | 2 | Registration | 15 | 25 | 50 | 10 | 100 | 1 |
| Parasitology | MD 405 | 1 | 1 | 2 | Registration | 15 | 25 | 50 | 10 | 100 | 1 |
| Basic spectroscopy | PR 404 | 1 | - | 1 | Registration | 10 | - | 40 | - | 50 | 1 |
| Total | | 13 | 6 | 19 | | | | | | 950 | |

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

# Table (5)

## Semester (5)

| Course Title | Course Code | Credit Hours | | | Prerequisite | Examination Marks | | | | Total Marks | Final Exam. Hours |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lect. | Pract. | Total | | Period. | Pract./Tut. | Wr. | Oral | | |
| Biochemistry II | PB 503 | 2 | 1 | 3 | Biochemistry-I | 20 | 40 | 75 | 15 | 150 | 2 |
| Pharmaceutical Microbiology | PM 502 | 2 | 1 | 3 | General Microbiology and Immunology | 20 | 40 | 75 | 15 | 150 | 2 |
| Phytochemistry I | PG 504 | 2 | 1 | 3 | Registration | 20 | 40 | 75 | 15 | 150 | 2 |
| Pharmaceutics III | PT 505 | 2 | 1 | 3 | Physical Pharmacy | 20 | 40 | 75 | 15 | 150 | 2 |
| Medicinal Chemistry I | PC 501 | 2 | 1 | 3 | Pharmaceutical organic III | 20 | 40 | 75 | 15 | 150 | 2 |
| Pharmacology I | PO 502 | 2 | 1 | 3 | Physiology II | 20 | 40 | 75 | 15 | 150 | 2 |
| Total | | 12 | 6 | 18 | | | | | | 900 | |

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

# Table (6)

## Semester (6)

| Course Title | Course Code | Credit Hours | | | Prerequisite | Examination Marks | | | | Total Marks | Final Exam. Hours |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lect. | Pract. | Total | | Period. | Pract./Tut. | Wr. | Oral | | |
| Biostatistics | PO 603 | 1 | - | 1 | Pharmacology-1 | 10 | - | 40 | - | 50 | 1 |
| Pharmacology II | PO 604 | 2 | 1 | 3 | Pharmacology-1 | 20 | 40 | 75 | 15 | 150 | 2 |
| Pharmaceutics IV | PT 606 | 2 | 1 | 3 | Physical Pharmacy | 20 | 40 | 75 | 15 | 150 | 2 |
| Biopharmaceutics and Pharmacokinetics | PT 607 | 2 | 1 | 3 | Pharmaceutics I | 20 | 40 | 75 | 15 | 150 | 2 |
| Phytochemistry II | PG 605 | 2 | 1 | 3 | Phytochemistry-I | 20 | 40 | 75 | 15 | 150 | 2 |
| Medicinal Chemistry II | PC 602 | 2 | 1 | 3 | Medicinal Chemistry - I | 20 | 40 | 75 | 15 | 150 | 2 |
| Medical Microbiology | PM 603 | 2 | -- | 2 | General Microbiology and Immunology | 15 | -- | 75 | 10 | 100 | 2 |
| Total | | 13 | 5 | 18 | | | | | | 900 | |

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

# Table (7)

## Semester (7)

| Course Title | Course Code | Credit Hours | | | Prerequisite | Examination Marks | | | | Total Marks | Final Exam. Hours |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lect. | Pract. | Total | | Period. | Pract./Tut. | Wr. | Oral | | |
| Pharmacology III | PO 705 | 2 | - | 2 | Pharmacology-II | 15 | -- | 75 | 10 | 100 | 2 |
| Medicinal Chemistry III | PC 703 | 2 | 1 | 3 | Medicinal Chemistry I | 20 | 40 | 75 | 15 | 150 | 2 |
| Applied & Forensic Pharmacognosy | PG 706 | 1 | 1 | 2 | Pharmacognosy II | 15 | 25 | 50 | 10 | 100 | 1 |
| Drug Information | PP 701 | 2 | - | 2 | Pharmacology II | 15 | - | 75 | 10 | 100 | 1 |
| Clinical Biochemistry | PB 704 | 2 | 1 | 3 | Biochemistry-II | 20 | 40 | 75 | 15 | 150 | 2 |
| Industrial Pharmacy I | PI 701 | 2 | 1 | 3 | Pharmaceutics IV | 20 | 40 | 75 | 15 | 150 | 2 |
| Pharmaceutical Legislations and ethics | NP 705 | 1 | - | 1 | Registration | 10 | -- | 40 | -- | 50 | 1 |
| Elective | PE--- | 1 | 1 | 2 | Registration | 15 | 25 | 50 | 10 | 100 | 1 |
| Total | | 12 | 6 | 18 | | | | | | 900 | |

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

# Table (8)

## Semester (8)

| Course Title | Course Code | Credit Hours | | | Prerequisite | Examination Marks | | | | Total Marks | Final Exam. Hours |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lect. | Pract. | Total | | Period. | Pract./Tut. | Wr. | Oral | | |
| Clinical Pharmacokinetics | PP 802 | 2 | 1 | 3 | Biopharmaceutics and Pharmacokinetics | 20 | 40 | 75 | 15 | 150 | 2 |
| Drug Design | PC 804 | 1 | 1 | 2 | Pharmaceutical Organic Chemistry III | 15 | 25 | 50 | 10 | 100 | 1 |
| Toxicology & Forensic Chemistry | PO 806 | 2 | 1 | 3 | Pharmacology-III | 20 | 40 | 75 | 15 | 150 | 2 |
| Marketing & Pharmacoeconomics | NP 806 | 2 | -- | 2 | Registration | 25 | --- | 75 | -- | 100 | 2 |
| Industrial Pharmacy II | PI 802 | 2 | 1 | 3 | Industrial Pharmacy I | 20 | 40 | 75 | 15 | 150 | 2 |
| Community Pharmacy | PP 803 | 2 | 1 | 3 | Pharmacology II | 20 | 40 | 75 | 15 | 150 | 2 |
| Elective | PE --- | 1 | 1 | 2 | Registration | 15 | 25 | 50 | 10 | 100 | 1 |
| Total | | 12 | 6 | 18 | | | | | | 900 | |

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

# Table (9)

## Semester (9)

| Course Title | Course Code | Credit Hours | | | Prerequisite | Examination Marks | | | | Total Marks | Final Exam. Hours |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lect. | Pract. | Total | | Period. | Pract./Tut. | Wr. | Oral | | |
| Pharmaceutical Biotechnology | PM 904 | 2 | 1 | 3 | General Microbiology & Immunology | 20 | 40 | 75 | 15 | 150 | 2 |
| Clinical pharmacy I | PP 904 | 2 | 1 | 3 | Pharmacology II | 20 | 40 | 75 | 15 | 150 | 2 |
| Hospital Pharmacy | PP 905 | 2 | 1 | 3 | Pharmaceutics IV | 20 | 40 | 75 | 15 | 150 | 2 |
| Public Health | MD 906 | 2 | - | 2 | Medical Microbiology | 10 | -- | 75 | 10 | 100 | 2 |
| Phytotherapy and Aromatherapy | PG 907 | 2 | 1 | 3 | Phytochemistry-II | 20 | 40 | 75 | 15 | 150 | 2 |
| Good Manufacturing Practice | PI 903 | 1 | 1 | 2 | Pharmaceutical Technology II | 15 | 25 | 50 | 10 | 100 | 1 |
| Elective | PE --- | 1 | 1 | 2 | Registration | 15 | 25 | 50 | 10 | 100 | 1 |
| Total | | 12 | 6 | 18 | | | | | | 900 | |

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

# Table (10)

## Semester (10)

| Course Title | Course Code | Credit Hours | | | Prerequisite | Examination Marks | | | | Total Marks | Final Exam. Hours |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lect. | Pract. | Total | | Period. | Pract./Tut. | Wr. | Oral | | |
| Quality Control of Pharmaceuticals | PA 005 | 2 | 1 | 3 | Pharmaceutical Analytical Chemistry-II | 20 | 40 | 75 | 15 | 150 | 2 |
| First Aid and Basic Life Support | MD 007 | 1 | 1 | 2 | Registration | 15 | 25 | 50 | 10 | 100 | 1 |
| Drug interactions | PO 007 | 1 | 1 | 2 | Pharmacology-III | 15 | 25 | 50 | 10 | 100 | 1 |
| Advanced Drug Delivery Systems | PT 008 | 1 | 1 | 2 | Pharmaceutics IV | 15 | 25 | 50 | 10 | 100 | 1 |
| Clinical Pharmacy II | PP 006 | 2 | 1 | 3 | Clinical Pharmacy I | 20 | 40 | 75 | 15 | 150 | 2 |
| Clinical Research, Pharmacoepidemiology and & Pharmacovigilance | PP 007 | 2 | -- | 2 | Registration | 15 | -- | 75 | 10 | 100 | 1 |
| Entrepreneurship | NP 007 | 1 | - | 1 | Registration | 10 | - | 40 | -- | 50 | 1 |
| Elective | PE --- | 1 | 1 | 2 | Registration | 15 | 25 | 50 | 10 | 100 | 1 |
| Total | | 11 | 6 | 17 | | | | | | 850 | |

- ***Lect.*** = Lecture
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- ***Wr.*** = Written

# مرفق ٢

## خاص بالمادة (١٩)

## المحتوى العلمى للمقررات الدراسية Course Content

### PA 101 Pharmaceutical Analytical Chemistry I

This course introduces the students to the relevant aspects of chemical kinetics, rate of reaction and chemical equilibrium. Additionally, it also aims to provide the students with the essential knowledge of general chemistry, types of chemical reactions, calculation of concentrations of substances and qualitative analysis of anions and cations and their mixtures.

### PA 202 Pharmaceutical Analytical Chemistry II

It mainly includes the aspects of volumetric quantitative analysis which are acid-base and non aqueous titrations, preciptimetry and complexiметry. Relevant applications in pharmaceutical analysis will be deeply investigated.

### PA 303 Pharmaceutical Analytical Chemistry III

It introduces the students to redox titrations and its applications and theory and applications of electrochemical techniques (potentiometry, conductimetry and voltametric). Relevant pharmaceutical applications such as water analysis, analysis of fats, oils and cosmetics will be also introduced.

### PA 404 Instrumental Analysis

The spectroscopic methods of analysis which include UV/Vis spectroscopy and fluorimetric methods, including principals, instrumentation and applications in pharmaceutical analysis will be introduced. Additionally, chromatographic methods for pharmaceutical analysis including TLC, HPLC, UPLC, GC and capillary electrophoresis will be also introduced.

### PA 005 Quality Control of Pharmaceuticals

The course concerned with methods and procedures for evaluation of safety, potency and palatability of pharmaceutical products of small and large molecules drugs including herbal drugs. The standard pharmacopeial methods, procedures and international guidelines as WHO, EMA, TGA. Good Analytical Practice and Sampling. Documentation. Validation of analytical methods according to ICH Guidelines Q2 R1. Compendial testing. Drug stability testing according to ICH Q1 R2 Guidelines. Stress conditions for drug degradation according to ICH Q1 R2 Guidelines. 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.

## PA E06 Advanced Analytical Chemistry – Spectroscopy

In this course the pharmaceutical applications of different analytical spectroscopic techniques including UV, Visible spectrometry, Flourimetry, IR, NMR and MS in the quality control laboratories will be studied. A brief introduction about the instrumentation of these analytical spectroscopic techniques will be presented as well.

## PA E07 Environmental Analysis

In this context, analysis of different environmental samples such as water, sewage, air, dust particles will be covered. Different analytical techniques which are closely associated with the environmental analysis will be discussed in details.

## PA E08 Forensic analysis

Herein, an introduction about different forensic samples including criminal and overdosage samples and ecstasy tablets will be presented. Importantly, different methods of the analysis of these samples will be covered including portable approaches.

## PR 101 Pharmaceutical Organic Chemistry I

Types of reactions and reagents. Chemical, physical and nomenclature of hydrocarbons (alkanes, cycloalkanes, alkenes and alkynes). Stereochemistry (Optical isomers, racemic modification, nomenclature of configurations) and pharmaceutical applications. Aromaticity, aromatic ions and compounds. Eelectrophilic aromatic substitution and orientation, alkylbenzenes and sulfonic acid, polynuclear aromatic compound. pharmaceutical application. The practical sessions-Lab. Safety, basic lab. Techniques to purify and identify organic compounds.

## PR 202 Pharmaceutical Organic Chemistry II

Nomenclature, physical and chemical properties of alkyl halides ($S_N1$, $S_N2$, E1 and E2), dynamic stereochemistry, aryl halides, Alcohols, Phenols, ethers, epoxides, amines, aldehydes, ketones, carboxylic acid, acid derivatives. Chemistry of carbohydrates and amino acids are also studied.

## PR 303 Pharmaceutical Organic Chemistry III

Nomenclature, chemical and physical properties of compounds with active methylene and heterocyclic compounds. Chemistry of six-membered rings; pyridine. Chemistry of Five-membered ring; pyrrole, thiophene and furan. Fused heterocyclic compounds; indole, quinoline, isoquinoline. Heterocycles with two or more nitrogen atoms. Pharmaceutical applications. An introduction to the use of IR spectroscopy for structural elucidation.

## PR 404 Basic Spectroscopy

An introduction to nuclear Magnetic Resonance ($^{1}H$ and $^{13}C$ NMR) and Mass spectrometry as tools for structural elucidation of organic compounds; principal, instrumentation, factors affecting absorption, chemical shift, fragmentation, interpretation of spectra and applications in structural characterization of raw materials and drugs.

## PR E05 Recent techniques of structure elucidation

This course focuses on the identification and structure determination of organic molecules by modern spectroscopic techniques. Problem solving and interpretation of 2D-NMR and mass spectrometry spectra will be emphasized.

## PR E06 Green Chemistry

This course focuses on the application of innovative technology to established industrial processes, environmentally improved routes to important products, design of new green chemicals and materials, sustainable resources, biotechnology alternatives, evaluation of environmental impact. Students will understand how to assess the environmental impact of chemical operations and understand the methods for their minimization and be able to suggest alternative green methods to current processes.

## PR E07 Advanced Levels of Drug Synthesis

This course presents an integrated and insightful look at successful drug synthesis in the drug discovery market. The course includes an introduction on how chemical synthesis, the art and science of constructing molecules shapes our world. Also, This course includes examples of practical methods to make drugs currently in use or in clinical phases.

## PC 501 Medicinal Chemistry I

This course includes introduction to Medicinal chemistry with respect to the basic terminology, drugs classification and nomenclature. In addition, the course focuses on the chemical, biochemical and pharmacological aspects of medicinal agents that belong to, ANS, CNS drugs, CVS drugs and drugs affecting neurotransmission as well as drugs acting on immune system and neuromuscular disorders. It is constructed to allow understanding of the basics of drugs actions on the molecular levels, metabolism, methods of synthesis & assay. In addition structure activity relationship of the aforementioned drug classes should be clearly acknowledged.

## PC 602 Medicinal Chemistry II

The course includes the medicinal chemistry aspects of chemotherapeutic agents: classes of antibiotics and antimicrobials, antiviral, antifungals and antiparasitics. Additionally various anticancer therapies are also covered. It is designed to afford a comprehensive understanding of the structural features; mechanism of action and SAR of the known chemotherapeutic classes. The structural modification to attenuate and enhance the activity of the studied drug classes will be discussed

## PC 703 Medicinal Chemistry III

The course handles overview of the medicinal chemistry of NSAIDs, opioids, steroidal hormones, peptide hormones , GIT drugs, antihistaminics and other related drugs. It is designed to afford a comprehensive understanding of the structural features; mechanism of action and SAR of the nominated drug classes. The structural modification to attenuate and enhance the activity of the studied drug classes will be discussed.

## PC 804 Drug Design

The course deals with studying the physicochemical aspects of drugs in relation to biological action, pharmacodynamics, pharmacokinetic ADME and the biotransformation of drugs. The prime objective of the course is to include the concept of drug design including lead generation, optimization, prodrugs. The basic concepts of CADD: docking pharmacophore and QSAR. The course will emphasize a combination of fundamentals and applications of drug design and development. The course involves the molecular aspects of drug action (chemical, physical, and biological) and the general metabolic pathways as basic knowledge for understanding some approaches of drug design. Overall, the course is designed to meet the needs Pharmacy students seeking profession in health sciences, and will offer unique opportunities to correlate structure of biomolecules to medicinal chemistry and drug design

## PC E05 Computer-Aided molecular Design

This course affords advanced aspects of the drug design and discovery. Specifically, it will handle molecular modelling, protein data bank, Pharmacophore building & alignment. QSAR; rational drug design, and combinatorial chemistry.

## PC E06 Medicinal chemistry of supplementary drugs and Nutraceuticals

The increasingly emerge of several substances as supplementary drugs and nutraceuticals necessitates that pharmacists should understand the basic knowledge underlying the therapeutic aspects of the mentioned substances. This elective course will afford pharmacy students with the

medicinal chemistry aspects of supplementary drugs; nutraceuticals; Vitamins; Antiaging, and antiobesity agents.

## PC E07 Nanochemistry and related aspects

This course focused on the chemical aspects underlying nano- and radiotherapy as main aspects. Related topics involving chemical delivery systems; biotechnology drugs; and Diagnostic agents will be also discussed. The course contents should reflect the basic knowledge concerning the design, analytical and synthetic aspects involved in the development of these new drugs classes.

## PB 201 Cell Biology

The course aims at studying the structure and function of prokaryotic and eukaryotic cells, cell membrane and transport mechanisms, DNA and cell division, cell cycle regulation, apoptosis and autophagy. It include also, expression of genetic information (transcription and translation), and post-translational modification. In addition, the neural cell, action potential, mechanical molecules, cellular energetics and integrating cells into tissues will be covered.

## PB 402 Biochemistry I

It is an introductory course that covers the biochemical properties and biological importance of biomolecules including carbohydrates, lipids, and proteins, nucleic acids, nucleoproteins and porphrins, in addition to biochemistry of enzymes. Also, immunoglobulins will be covered.

## PB 503 Biochemistry II

It is course to study the biological oxidations and related biochemical processes, metabolism of carbohydrates, proteins and lipids and their regulations, role of hormones in metabolism regulation, integration of metabolism and metabolic disorders. Mineral metabolism, Biochemistry of cancer and free radicals and antioxidants.

## PB 704 Clinical Biochemistry

This course will focus on the biochemistry of body fluids and how to use samples of them in Bio Lab. It will present the biochemical changes of body fluids occurring in human body to evaluate the functional state of liver, kidney, heart, bone, gastrointestinal tract, endocrine glands and to give interpretation of the results in relation to health and disease. In addition to clinical enzymology and acid- base balance, homeostasis and biochemical aspects of hematology and blood analysis , urine analysis, tumor markers and recent diagnostic biomarkers, will be covered.

## PB E05 Cancer Biology

This course will cover the different types of carcinogenic agents and how these carcinogenic agents can affect DNA, the mechanism of chemical carcinogenesis, molecular basis of cancer, the mechanisms of activations of proto-oncogenes and their roles in carcinogenesis, the regulators of cell cycle and how the actions of P53 protein and pRb as negative regulators of cell cycle and suppressors of cancer with emphasis of the effects of P53 in stimulating DNA repair and apoptosis. In addition, the tumor markers and their role in diagnosis and evaluation of progression and treatment of cancer will be studied. Biochemical basis of current anticancer treatments will be clarified.

## PB E06 Radioisotopes in biochemistry and medicine

This course will cover the types of isotopes, radioactive decay, half life, measurement and their units. Radioisotope techniques in biochemistry. Research, diagnostic and treatment applications of isotopes will be studied. Biological effects of radiation will be clarified.

## PB E07 Clinical Nutrition

The aim of the course is designed to provide the student with understanding of the fundamentals of nutrition, roles of carbohydrates, proteins, fats, water, minerals and vitamins in clinical nutrition and how these components promote and maintain of optimal health. Nutritional assessment and management of patients requiring specialized nutrition support, enteral nutrition, and parental nutrition. Nutritional therapy in specific diseases (cardiovascular, cancer, gastrointestinal diseases, malnutrition and genetic diseases) is covered.

## PB E08 Tissue metabolism

This course will cover the biochemistry of erythrocytes, the blood plasma protein- coagulation and fibrinolysis, role of liver in metabolism, the metabolism of muscle at rest and during exercise, the metabolism of the nervous system and the extracellular matrix and connective tissue

## PG 101 Medicinal Plants

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 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. 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.

## PG 202 Pharmacognosy I

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, 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

After completion of the course the student should have the knowledge and skills that enable the student to differentiate between different organs of 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) , including identify 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 I

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. Also, the students should become aware of different chromatographicmethods used for isolation and analysis of different plant constituents and their pharmacological actions and medicinal uses.

## PG 605 Phytochemistry II

In continuation with Pharmacognosy 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.

## PG 706 Applied & Forensic Pharmacognosy

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 provide the student with basic knowledge about the application of plant biotechnology for the production of pharmaceutically active materials. The course also include 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 907 Phytotherapy and Aromatherapy

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 E08 Biotechnology of Medicinal Plants

This course will focus on biotechnological approaches for the production of promising natural products (secondary metabolites) including cell culture, engineered microbial hosts for heterologous expression of plant natural product genes and pathways, and transgenic medicinal plants research (approaches, importance, and application).

## PG E09 Complementary and Alternative Medicinal Therapies

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 E10 Quality Control of Herbal Drugs

Quality control of herbal drugs includes: Introduction, history of quality control, Factors affecting production of herbal medicine, Quality evaluation of herbal medicine (structural standards analytical standards, physical and biological evaluation), Insuring herbal product quality by determination of common pollutants as pesticide residue heavy metals, radioactive contamination etc.

## PT 101 Pharmacy Orientation

The course covers fields of job activities and pharmacy practice, routes of administration, prescription, pharmaceutical dosage forms, pharmaceutical calculations, weights and measures, pharmacists code of ethics, history of pharmacy and pharmacy profession.

## PT 202 Physical Pharmacy

This course covers principles of physical pharmacy including rheology and flow of fluids, solutions, their properties, solubility, complexation, state of matter, kinetics of drug reaction and thermodynamics.

## PT 303 Pharmaceutics I

This course covers incompatibilities, buffer systems and isotonicity, surface active agents, liquid dosage forms (oral solutions, elixirs, linctures, mixtures, topical liquids; ear and nasal drops and lotions), dispersed systems (colloids and suspensions and emulsions).

## PT 404 Pharmaceutics II

This course covers topical formulation; ointments, creams, pastes, gels, suppositories, transdermal drug delivery systems and cosmetics.

## PT 505 Pharmaceutics III

This course covers solid dosage forms (tablets introduction, types, evaluation, additives, methods of manufacturing, tablet coatings), capsules (hard and soft, QC tests and microencapsulation), preformulation study (micromeritics, powders and granules), diffusion and dissolution study.

## PT 606 Pharmaceutics IV

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 607 Biopharmaceutics and Pharmacokinetics

This course covers drug absorption, distribution, elimination, pharmacokinetics models, pharmacokinetics following IV and oral administration, bioavailability and bioequivalence, assessment of bioavailability and correlation between in vitro dissolution and in vivo absorption.

## PT 008 Advanced Drug Delivery Systems

This course covers nanoformulations, advanced drug delivery systems for transdermal and oral delivery, site-specific, stimuli-responsive drug delivery systems and targeted drug delivery systems.

## PT E09 Drug Targeting

This course introduces the different technologies that can be employed to enhance the drug accumulation at their target sites. It emphasizes the biological limitations and barriers to drug transport across the membranes, the importance of new excipients and new drug formulations, the possibilities of drug targeting by modern formulation techniques, and how to improve bioavailability of drugs produced by biotechnology.

## PT E10 Nanotechnology

This course provides an overview of the the field of nanotechnology. It will give an insight into the major advantages of nanotechnology over conventional treatment and approaches for treating various diseases. It focuses on concepts, types, formulation, characterization of nanopharmaceuticals, and their applications in medicine (e.g., for imaging, diagnosis and drug delivery).

## PT E11 Cosmetic Preparations

This course provides broad-based knowledge about cosmetic products and their types, classification, ingredients, formulation, uses, quality control and packaging.

## PT E12 Clinical Pharmaceutics

This course considers the role of basic pharmaceutics in determining or modifying clinical outcomes. It deals with the behavior of medicines within the body and how adverse drug reactions can result from nature of formulation, dosage forms and devices as well as excipients rather than from the drug. It focuses on dealing with formulation/excipient-related problems, tailoring of formulations for specific populations, and how this affects the treatment outcome. The course depends mainly on examples and case studies.

## PI 701 Industrial Pharmacy I

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.

## PI 802 Industrial Pharmacy II

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.

## PI 903 Good Manufacturing Practice

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.

## PI E04 Drug Manufacturing

The course provides students with the basic understanding in the area of preformulation study, manufacturing of capsules, fundamentals and importance of liposomes, nanoparticles, sterile area, target drug delivery systems, stability, and good laboratory practice.

## PM 401 General Microbiology and Immunology

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 onHost 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 502 Pharmaceutical Microbiology

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.

## PM 603 Medical Microbiology

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 microorganismscaused by Gram positive cocci& bacilli, Gram negative cocci& bacilli and mycobacteria of major significance to public health

will be studied. The course provides students with the essential knowledge to recognize the epidemiology, mechanisms of pathogenesis, clinical picture, methods of laboratory diagnosis, treatment, prevention and control measures of RNA and DNA viral infections in humans

## PM 904 Pharmaceutical Biotechnology

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. The course will provide specialist in-depth training and hands-on experience of the growing range of new analytical techniques used in the Biotechnology sector and also the computational skills used to maximise the information gained from these methods. The use of advanced spectroscopic techniques such as Circular Dichroism (CD) and protein NMR, High-Performance Liquid Chromatography (HPLC) and Capillary Electrophoresis (CE) to study biomolecules and address concerns such as product quality, purity, contaminant detection, and batch consistency will be covered.

## PM E05 Antimicrobial stewardship

This course provides basic concepts of the emergence and spread of resistance of microorganisms to different antimicrobial drug classes. The specific goal of this course is to provide cutting-edge approaches for detection of resistance and antimicrobial discovery. In addition, chemical optimization, and usage that minimizes the development of resistance will be examined.

## PM E06 Infection Control

This course aims to ensure that students are well prepared to direct the infection control services, to develop and to supervise infection programs in different health care facilities. Also, this course will provide students with knowledge about basic guidelines of infection control, outbreak investigations, surveillance techniques as well as prevention of health care-associated infections. Tthis course will help students to work within the hospital team and in the integrated programs of quality management.

## PM E07 Molecular Biology and Epigenetic

The course aims to provide students with fundamental of molecular biology techniques. It also discusses the molecular mechanisms for regulating gene expression and new techniques used to modulate gene expression. The class will discuss the mechanisms of epigenetic regulation including

DNA methylation and posttranslational modification of histones and the roles of chromatin assembly modifying complexes, noncoding RNAs and nuclear organization.

## PO 101 Medical Terminology

This course provides introduction to medical and pharmaceutical terminologies and medical abbreviations. Affixes including suffixes, prefixes as well as roots of different medical terms pertaining to various body systems will be covered.

## PO 502 Pharmacology-I

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, neuromuscular and autacoids.

## PO 603 Biostatistics

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 604 Pharmacology-II

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

## PO 705 Pharmacology-III

This course integrates principles of pharmacology with conceptual knowledge of pathophysiology disease processes regarding drugs acting on endocrine system. Chemotherapeutic drugs including antimicrobials and anticancer. Immunosuppressant's. anti-inflammatory, analgesics as well as gout and rheumatoid treatments are within the scope of the course. Recent information on stem cell therapy and nanopharmacology are also included.

## PO 806 Toxicology & Forensic Chemistry

This course provides basics concepts of toxicology including the mechanism of toxicity, target organ toxicity and its treatment. General principles of poison management will be discussed. Toxic groups including heavy metals, toxic gases, natural poisons, and pesticides 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 007 Drug Interactions

The course is designed to familiarize students with the major types of drug interactions (Pharmacokinetic, pharmacodynamic and pharmacogentic interactions) in the clinical setting, in addition to drug food and drug disease interactions. The course compromises digitalis drug interactions, anticoagulants, hypoglycemic interactions, antineoplastic drug interactions, antihypertensive interactions and anticonvulsant Interactions. Students will be expected to determine whether a given interaction is clinically significant or required pharmacist intervention, make rational, scientifically recommendations for management of drug interactions.

## PO E08 Biological Standardization

This course covers the biological and biochemical evaluation of various drugs that lead identification of the mode of action, safety and hazards of newly developed drugs compared with already available drugs. The first part will cover a brief introduction on biological assay and drug discovering system. The second part is concerned with most recent available analytical techniques used routinely in drugs evaluation in both experimental and clinical labs. The third part covers screening methods and new technologies used for pharmacological evaluation of novel compounds acting on autonomic nervous system, CVS and CNS, endocrine, GIT and respiratory systems.

## PP 701 Drug Information

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. Drug information centers (function, structure, service, and documentation), systematic approach to answering queries, and communicating the response. Ethical and legal issues in providing drug information, evidence-based medicinerecommendations to support medication-use practices.

## PP 802 Clinical Pharmacokinetics

This course provides basic principles of pharmacokinetics and their application to the clinical setting. Single Intravenous bolus and oral kinetics, IV infusion, multiple IV bolus, short infusion &oral dosing, non-linear pharmacokinetics, pharmacokinetic models. Sources of variability in pharmacokinetics, dosage regimen and dosage adjustment in children, obese, elderly patients and chronic disease states.Therapeutic drug monitoring and pharmacogenomics approaches.

## PP 803 Community Pharmacy

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, counseling, 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 904 Clinical Pharmacy I

Definition and concepts of clinical pharmacy and pharmaceutical care, and qualification to become a clinical pharmacy. Patient history, medication reconciliation, therapeutic planning and drug-related problems. Interpretation of clinical laboratory data and physical examination. Providing Medication Therapy management services. Principles of special care populations (geriatric, pediatric, renal and hepatic patients, obesity &pregnancy& lactation). The course also introduces the student to the principles of management and supportive care of oncological diseases,blood disorders and nutritional deficiencies.

## PP 805 Hospital Pharmacy

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: preparation of Intravenous (IV) admixtures, total parenteral nutrition (TPN) fluids, renal dialysis fluids, dispensing and safe handling of radiopharmaceuticals, cytotoxic drugs, and medical gases.

## PP 006 Clinical Pharmacy II

The course introduces the student to the principles of pharmacotherapeutics & management of the common disease states (e.g. cardiovascular diseases, gastrointestinal diseases, respiratory diseases, endocrine diseases, obstetrics and gynecology, rheumatic diseases, renal diseases, CNS diseases).

## PP 007 Clinical research, Pharmacoepidemiology and Pharmacovigilance

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 student's with understanding of pharmacovigilance importance, concept, processes, systems, global safety standards and regulations and reporting systems

## PP E08 Precision Pharmacy

This course covers all aspects of precision medicine, the basic understanding of genetic disease, molecular diagnostic methods and principles for personalized medicine. The course also investigates the mechanisms for interindividual variability in drug response, ethical, legal and regulatory and issues of pharmacogenetics and best practices to ensure the effectiveness of genomic medicine.

## PP E09 Advanced Pharmaceutical Care

The course provides the student with the foundations of pharmaceutical care, principles and skills necessary for patient care process. This course allows students to apply didactic knowledge to direct patient care activities, patient specific pharmacotherapy, evidence based medicine, and effective communication with patients and healthcare professionals

## PP E10 Pharmacy Administration and Management

This course deals with the basic concepts and skills in pharmacy administration and management needed for pharmacy students to work in a variety of fields. Managerial issues that pharmacists face including strategies, finance, accounting, systems, and levels of management. The course familiarizes the students with people working within pharmaceutical organizations, modern pharmacy practice and customer behavior

## MD 201 Anatomy& Histology

*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 302 Pathology

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. 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 303 Physiology I

Physiology is the study of how the body works, specifically, how cells, tissues, and organisms function. Physiology is a biological science that provides the foundation upon which we build our knowledge of what “life” is, how to treat disease, and how to cope with stresses imposed upon our bodies by different environments. The course is focusing on advanced studies in cellular and molecular physiology, membrane biophysics and transport physiology, respiratory physiology, neurophysiology, endocrinology, digestive physiology, physiology of metabolism, and the interfaces between these fields..

## MD 404 Physiology II

Physiology is the study of how the body works, specifically, how cells, tissues, and organisms function. Physiology is a biological science that provides the foundation upon which we build our knowledge of what “life” is, how to treat disease, and how to cope with stresses imposed upon our bodies by different environments. The course is focusing on advanced studies in cellular and molecular physiology, general mechanism of muscle contraction and excitation, general autonomic supply, their roles and abnormalities, body fluid components and hematological function and pathophysiology, cardiovascular physiology and its disorders and renal physiology and its pathophysiology.

## MD 405 Parasitology

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.

## PM 906 Public Health

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

## MD 007 First Aid

Basic life support, bleeding, shock, medical emergencies, poisoning, bones and joints, soft tissue injuries, rescue and transportation

## NP 101 Information Technology

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.
Pharmacy Informatics is concerned with the use of technology to improve patient care as well as increasing patient safety. Informatics deals with data generated by software used in patient care, not only the storage of data but also the retrieval of data as meaningful clinical reports and the management of information systems to assure patient safety and optimal medical outcomes.

## NP 102 Mathematics

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 303 Scientific Writing

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 Communication skills

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 and Ethics

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 806 Marketing & Pharmacoeconomics

**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 evaluation, 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 007 Entrepreneurship

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. This course outlines the process of designing, launching and running a new business, which is often initially a 18. The people who create these businesses are called entrepreneurs.

## UR 101 English Language

Training in reading, comprehension, basic grammatical rules, writing and translation. The course adopts a systematic approach to proper eassy writing such as idea development, paragraph structure, introduction, support and conclusions.

## UR 202 Psychology

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 203 Human Rights and Fighting Corruption

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 الاقتصاديةوالاجتماعيةوالثقافية للإنسان، حقوق الإنسان فى الشريعة الإسلامية، حقوق المرأةفى قانونى العمل والتأمين الاجتماعى، حقوق الإنسان فى التقاضى، الحقوق المدنية والسياسية للإنسان