

The British University in Egypt (BUE)

Faculty of Pharmacy

اللائحة الداخلية لبرنامج بكالوريوس الصيدلة (فارم دي - Pharm D) طبقا لنظام النقاط المعتمدة

كلية الصيدلة الجامعة البريطانية في مصر

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رؤية ورسالة وأهداف كلية الصيدلة - الجامعة البريطانية في مصر

الرؤية:

أن تكون كلية الصيدلة -الجامعة البريطانية في مصر نموذج متميز للتعليم الصيدلي على المستوى المحلي والإقليمي والدولي.

الرسالة:

تلتزم كلية الصيدلة -الجامعة البريطانية في مصر بتقديم مستوى تعليمي يحقق المعايير القومية الأكاديمية المرجعية من أجل تأهيل صيادلة أكفاء قادرين على المنافسة لإعلاء شأن الوطن في مجال الرعاية الصحية وصناعة الدواء، مع الارتقاء بالبحث العلمي والمشاركة الفعالة في خدمة المجتمع في ظل الالتزام بالقيم الأخلاقية والمهنية.

أهداف الكلية:

**الغاية الأولى: زيادة القدرة التنافسية في التعليم الصيدلي
الأهداف الاستراتيجية**

- 1-تحقيق كفاءة نظام القيادة والإدارة في ظل هيكل تنظيمي مكتمل وملائم لأنشطة الكلية.
- 2- تطوير كفاءة البنية الأساسية والإمكانيات المادية للكلية.
- 3- تطوير البرنامج التعليمي بما يتوافق مع المعايير المرجعية الأكاديمية القومية لتحقيق احتياجات سوق العمل.
- 4- تطبيق استراتيجية متطورة للتدريس والتعلم تحقق أهداف البرنامج التعليمي.
- 5- تحسين وتطوير الوضع التنافسي للكلية.

الغاية الثانية: الارتقاء بمستوى أداء الموارد البشرية ودعم الطلاب ونظم جودة التعليم

الأهداف الاستراتيجية

- 1- تحقيق التنمية المستمرة لقدرات أعضاء هيئة التدريس والهيئة المعاونة والجهاز الإداري.
- 2- تنمية وتطوير وسائل دعم ورعاية الطلاب والوافدين والخريجين.
- 3- تطبيق نظم جودة مؤسسات التعليم العالي.

**الغاية الثالثة: دعم البحث العلمي والابتكار وتطبيق برامج الدراسات العليا
الأهداف الاستراتيجية**

- 1- تحقيق التميز وزيادة فاعلية البحث العلمي.
- 2- توفير وسائل لتشجيع وتحفيز الباحثين.
- 3- تطبيق مرحلة الدراسات العليا.

**الغاية الرابعة: تعزيز المشاركة المجتمعية وتنمية البيئة
الأهداف الاستراتيجية**

- 1- تفعيل دور وممارسات الكلية لتحقيق رسالتها في مجال خدمة المجتمع وتنمية البيئة.
- 2- زيادة فاعلية مشاركة الأطراف المجتمعية في الكلية.

الأقسام العلمية:

تشتمل الكلية على الأقسام العلمية الآتية:

1. Pharmaceutical Chemistry (PMC).	1- قسم الكيمياء الصيدلانية (PMC).
2. Pharmacology (PCL) & Biochemistry (PBC).	2- قسم علم الأدوية (PCL) والكيمياء الحيوية (PBC).
3. Pharmaceutics & Pharmaceutical Technology (PCT).	3- قسم الصيدلانيات وتكنولوجيا الصيدلة (PCT).
4. Microbiology (PMB) & Pharmacognosy (PCG).	4- قسم علم الأحياء الدقيقة (PMB) والعقاقير (PCG).
5. Clinical Pharmacy Practice (PCP).	5- قسم ممارسة الصيدلة الإكلينيكية (PCP).

مقدمة عن برنامج بكالوريوس الصيدلة (فارم دي - Pharm D)

تشتمل الدراسة بالبرنامج على مقررات دراسية متطورة تهدف لإكساب الطالب مهارات دراسية متنوعة وتتضمن الآتي:

1. مقررات دراسية عامة تحقق متطلبات المرحلة الجامعية الأولى.

2. مقررات دراسية للعلوم الأساسية الصيدلانية والطبية.

3. مقررات دراسية متخصصة في علوم الصيدلة والعلوم الطبية ذات الصلة.

تطبيق إستراتيجيات التدريس والتعلم المتطورة وتطوير أساليب التقييم بما يحقق إكساب الطالب الجدارات والمهارات في المجالات المختلفة والقدرة على قياسها في ضوء المعايير الأكاديمية المرجعية للتعليم الصيدلي.

يشتمل البرنامج على تدريب ميداني أولي لمدة 100 ساعة تدريب فعلية في الصيدليات الأهلية والحكومية وصيدليات المستشفيات تتم خلال الإجازات الصيفية لسنوات الدراسة بعد نهاية المستوى الثالث.

تصميم برنامج سنة الامتياز (التدريب التخصصي) في شكل دورات تدريبية بشكل دوري تناوبي ليتمكن

الطالب من التدريب في العديد من مجالات الصيدلة المختلفة (مثل التصنيع الدوائي- الرقابة والتنظيم

الدوائي- البيع والتسويق- المستشفيات والمراكز الطبية....) كما يشمل دورة تدريبية واحدة في مجال

الصيدلة الإكلينيكية مع التركيز على المجال الذي يرغب الطالب التخصص به، كما يقدم الطالب مشروع تخرج في تخصص معين يساهم في تمهيد وإعداد الطالب للتوجه لهذا التخصص.

■ **أماكن التدريب:** - شركات ومصانع الأدوية البشرية والبيطرية - شركات ومصانع: المستلزمات والأجهزة

الطبية ومستحضرات التجميل والمكملات الغذائية والأعشاب - شركات التوزيع ومخازن الأدوية - مراكز

وهيئات الرقابة والمتابعة الدوائية المحلية والعالمية - مراكز البحوث الصيدلانية والطبية والإتاحة الحيوية

والدراسات السريرية - الأعلام والتسويق الدوائي.....- بالإضافة إلى المستشفيات والصيدليات الخاصة

والحكومية. ويمكن لمن يرغب في التخصص في المجال الأكاديمي (التدريس والبحث) قضاء فترة تدريبية في

كليات الصيدلة والمراكز البحثية .

■ **المسار المهني ومجالات العمل:** يمكن لخريج هذا البرنامج العمل في أي من المجالات الصيدلانية وله أن

يفضل العمل في مجال التخصص (الذي اختاره خلال فترة الأمتياز ومشروع التخرج) لمدة عام/عامين ليصبح

بعدها صيدلي متخصص في أحد التخصصات المهنية كما يمكنه العمل في الصيدليات الأهلية أو الحكومية

بالإضافة إلى المستشفيات ، ويمكنه العمل في المجال الأكاديمي (تدريس وبحث علمي) وتؤهله

للمسار الأكاديمي (ماجستير ودكتوراه).

رؤية ورسالة وأهداف برنامج بكالوريوس الصيدلة (فارم دي – Pharm D)

رؤية البرنامج

تعليم صيدلي مواكب لأحدث النظم التعليمية للعمل علي تطوير مهنة الصيدلة والبحث العلمي وخدمة المجتمع بما يسمح بتخريج صيادله أكفاء علمياً وعملياً.

رسالة البرنامج

المساهمة في رفع كفاءة المنظومة الصحية على المستوى المحلي والإقليمي من خلال إعداد كوادر من الصيادلة المؤهلين بأحدث المفاهيم الصيدلانية بجميع مجالات العمل الصيدلي من خلال تقديم الخدمات الصيدلانية بالصيدليات العامة والخاصة ومصانع وشركات الأدوية والمراكز البحثية بالإضافة إلى العمل في مجال الإعلام والتسويق الدوائي والمشاركة الفعالة في البحث العلمي لخدمة المجتمع مع التمسك بأخلاقيات المهنة.

أهداف البرنامج

- إعداد صيادله مؤهلين للعمل بجميع مجالات العمل الصيدلي (الصيدليات العامة والخاصة ومصانع وشركات الأدوية ومعامل الرقابة الدوائية وتحليل الأغذية والعمل في مجال الاعلام والتسويق و المراكز البحثية والجامعات).
- التأكيد علي دور الصيدلي في منظومة الرعاية الصحية بداخل المستشفيات وخارجها من خلال تثقيف وتقديم المشورة للأفراد والمجتمعات لتحسين النتائج العلاجية والحد من الإصابة بالامراض مع مراعاة أن يمارس المهنة بمسئولياتها وسلطاتها محترماً قوانينها وأخلاقياتها واحترام حقوق المرضى.
- إعداد صيدلي قادر علي تصنيع وتطوير المستحضرات الصيدلانية بالإضافة الى ان يكون متمكنا من مهارات التواصل الفعال والقيادة والإدارة وريادة الأعمال.
- تخريج صيادلة أكفاء لديهم القدرة علي التعليم المستمر مما يميزهم في سوق العمل على المستوى المحلي والإقليمي.
- المشاركة في خدمة المجتمع وتنمية البيئة وتوفير عائد إقتصادي من خلال ترشيد إستخدام الأدوية.
- الإلتزام بتحقيق معايير الجودة في التعليم الصيدلي من خلال التعليم التفاعلي والإهتمام بالتعلم الذاتي.

مواد اللائحة

مادة (1) : الدرجة العلمية التي تمنح للخريجين

يمنح مجلس الجامعة بناءً على طلب مجلس كلية الصيدلة درجة بكالوريوس الصيدلة (فارم دي - Pharm D) طبقاً لنظام النقاط المعتمدة.

مادة (2) : التأهيل للدرجات الأكاديمية الأعلى

تعتبر درجة بكالوريوس الصيدلة (فارم دي - Pharm D) هي الدرجة الجامعية الأولى في مجال الصيدلة اللازمة للحصول على ترخيص ممارسة المهنة في جميع المجالات الصيدلانية المتاحة كما تؤهل الخريج للتسجيل لدرجة الماجستير في أي من الأقسام الأكاديمية في الكلية.

مادة (3) : نظام الدراسة

- مدة الدراسة بالبرنامج خمس سنوات دراسية (خمس فرق دراسية على عشر فصول دراسية) طبقاً لنظام النقاط المعتمدة وسنة امتياز (تدريب تخصصي) في مواقع العمل (1+5). بالإضافة إلى عدد 100 ساعة تدريب ميداني أولى في الصيدليات الأهلية والحكومية وصيدليات المستشفيات تتم خلال الإجازات الصيفية لسنوات الدراسة بعد نهاية المستوى الثالث وقبل البدء في سنة الامتياز.

- ينقسم كل مستوى (عام) دراسي إلى فصلين دراسيين ومدة كل فصل دراسي خمسة عشر أسبوعاً.

- يتضمن كل فصل دراسي 55-60 نقطة معتمدة (أي ما يعادل 16.5 – 18 ساعة معتمدة) وعليه فإن دراسة البرنامج تتم باستكمال 590 نقطة معتمدة (وهو ما يعادل 177 ساعة معتمدة).

ملاحظة: النقطة المعتمدة هي وحدة تُستخدم لقياس عبء الدراسة كما تستخدم لتوفير دليل عن مقدار الجهد الذي قد يتطلبه المقرر الدراسي حيث تعادل النقطة المعتمدة الواحدة حوالي 10 ساعات جهد دراسي، بما في ذلك جميع أشكال الاتصال التدريسي المباشر ومهام التقييم والدراسة الخاصة لمستوى الطالب المتوسط). كما تم توضيح حساب النقاط المعتمدة وما يقابلها من ساعات معتمدة كالتالي: 10 نقطة معتمدة = 3 ساعات معتمدة، 5 نقطة معتمدة = 1.5 ساعات معتمدة

مادة (4) : تصميم البرنامج الدراسي

تم تصميم البرنامج الدراسي بحيث يكون التعلم عن طريق المحاضرات النظرية وحلقات النقاش والدروس العملية وورش العمل والتدريبات الميدانية وإجراء بحوث وتقديم العروض بالإضافة إلى التعاون مع المجتمع المحيط بالجامعة.

وتم تصميم البرنامج الدراسي ليتكون من: -

أولاً: عدد النقاط المعتمدة **570** نقطة معتمدة بالإضافة إلى متطلبات الجامعة **20** نقطة معتمدة.

ثانياً: عدد المقررات الاختيارية أربعة مقررات (**40** نقطة معتمدة بما يعادل **12** ساعة معتمدة) يتم اختيارها من القائمة التي تحددها الكلية.

ثالثاً: تم وضع وصف ومحتوى المقررات الدراسية (module description & content) من خلال الأقسام العلمية بالكلية طبقاً للمعايير الأكاديمية القومية المرجعية NARS 2017.

رابعاً: تم تصميم المقررات الاختيارية للطالب في المستويين الآخرين بحيث تحقق له جدارات ومهارات تساعده على التوجيه المهني والتخصصي وأن يكون أحد المقررات الاختيارية في إحدى المجالات الصيدلانية الإكلينيكية.

خامساً: هذا بالإضافة إلى 100 ساعة فعلية تدريب صيفي يبدأ بنهاية المستوى الثالث وقبل البدء في سنة الامتياز.

سادساً: سنة الامتياز (التدريب التخصصي) هي السنة السادسة للدراسة بالبرنامج.

مادة (5) : العبء الدراسي

- العبء الدراسي في السنة الدراسية الواحدة للطالب عبارة عن 110-120 نقطة معتمدة لانتهاه من المواد الدراسية المقررة له وتوزع إلى حوالي 55-60 نقطة معتمدة لكل فصل دراسي.
- يستوجب على الطلاب خلال فترة الدراسة (خمس سنوات) الالتزام بالحضور بنسبة محددة لكل من الدروس العملية والنظرية والمحاضرات وذلك حسب ما توافق عليه لجنة البرامج بالنسبة لكل مقرر ويتم تقييم الطلبة من جانب ممتحنين داخليين وخارجين ويشمل التقييم أعمال السنة، امتحانات عملية، امتحانات تحريرية وشفوية.

مادة (6): المواظبة وحضور الامتحانات

أ) المواظبة

على الطالب أن يواظب على حضور المحاضرات النظرية وحلقات النقاش والدروس العملية والتدريبات الميدانية ولمجلس الكلية بناءً على طلب مجالس الأقسام العلمية المختصة أن يحرم الطالب من التقدم للامتحان التحريري النهائي إذا تجاوزت نسبة غيابه 25% من إجمالي نسبة الحضور 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 راسباً في المقررات التي تغيب عن أداء الامتحان فيها.
- إذا قدم الطالب عذراً قهرياً يقبله مجلس الكلية يعتبر غائباً بعذر مقبول ويحسب له تقدير النجاح الذي يحصل عليه عند التقدم للامتحان.

مادة (7): لغة الدراسة

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

مادة (8) : التدريب الميداني:

أ-التدريب الميداني الأولي :

على الطالب أن يكمل فترة تدريب ميداني أولى بإجمالي عدد 100 ساعة تدريب فعلية في الصيدليات الأهلية والحكومية وصيدليات المستشفيات التي يقرها مجلس الكلية وذلك تحت إشراف عضو هيئة تدريس و يتم التدريب خلال الأجازات الصيفية لسنوات الدراسة بعد نهاية المستوى الثالث وقبل البدء في سنة الامتياز.

ب- التدريب الميداني المتقدم (سنة الامتياز):

تعتبر سنة الامتياز هي العام الأكاديمي السادس من الدراسة بالبرنامج الذي يخصص للتدريب الميداني بواقع 36 أسبوعاً (سنة أكاديمية بما يعادل 9 أشهر) وتتكون من عدد ست دورات تدريبية بواقع أربع دورات على الأقل في شركات ومصانع الأدوية البشرية والبيطرية - شركات ومصانع: المستلزمات والأجهزة الطبية ومستحضرات التجميل والمكملات الغذائية والأعشاب - شركات التوزيع ومخازن الأدوية - مراكز وهيئات الرقابة والمتابعة الدوائية المحلية والعالمية - مراكز البحوث الصيدلانية والطبية والإتاحة الحيوية والدراسات السريرية- الأعلام والتسويق الدوائي..... إلخ. وتخصص دورة واحدة للتدريب في مجال الصيدلة الإكلينيكية (مثل صيدليات المستشفيات والصيدليات الخاصة والحكومية.....) ويشتمل التدريب على برنامج تدريبي متكامل

وممنهج بطريقة دورية تناوبية مسجلة بالساعات والمهام التدريبية وتحت إشراف دقيق من الكلية وجهة التدريب. كما يقدم مشروع تخرج في تخصص معين يساهم في تمهيد وإعداد الطالب للتوجه لهذا التخصص.

مادة (9): شروط القبول

يشترط فيمن يتقدم للالتحاق بالبرنامج أن يستوفي كافة الشروط التي يحددها المجلس الأعلى للجامعات. يجوز قبول تحويل الطلاب المقيدون ببرنامج مماثل في إحدى كليات الصيدلة بالجامعات المصرية أو الأجنبية بشرط استيفاء الطالب لمتطلبات القبول بالكلية وتحسب للطالب المقررات التي درسها في الكلية المحول منها وفقاً للقواعد التي يحددها مجلس الكلية.

مادة (10): نظام التقييم

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 60% من مجموع درجات هذا المقرر ما عدا مقرري اللغة الإنجليزية والرياضيات فيكون الحد الأدنى للنجاح هو 50% من مجموع الدرجات لكل منهما (BUE University Regulations). ولا يكون الطالب ناجحاً في أي مقرر إلا إذا حصل على 30% من درجة الامتحان التحريري النهائي، وتكون النسبة المئوية للدرجات النهائية والتقديرية كما هو مبين بالجدول التالي:

نظام التقييم (الجامعة البريطانية في مصر)

Grade	Egyptian Equivalent %	GPA
A+	89 and above	4.0
A	87-88	3.9
A-	85-86	3.7
B+	82-84	3.5
B	79-81	3.1
B-	75-78	2.7
C+	72-74	2.5
C	69-71	2.3
C-	65-68	2.0
D+	60-64	1.8
All modules except English and Mathematics		
F	Less than 60	0
For English and Mathematics only		
D-	55-59	1.6
D	50-54	1.3
F	Less than 50	0

يتم احتساب التقدير العام لكل مستوى من خلال متوسط علامات كل مقرر لهذا المستوى منسوبة وفقاً لقيمة النقاط المعتمدة الخاصة بها وذلك وفقاً للمعادلة التالية. مع مراعاة ألا يزيد تقدير الطالب على مقبول (D) في المقرر الذي سبق أن رسب فيه أو تغيب عنه بعذر غير مقبول، أما إذا كان قد تغيب بعذر مقبول فيحسب له تقدير النجاح الذي يحصل عليه.

يتم حساب المعدل العام النهائي الشامل والتقدير العام والذي يحدد تصنيف مرتبة الشرف اعتماداً على متوسط كل مستويات الدراسة كما يتم ترتيبهم وفقاً لمتوسط النسبة المئوية العامة.

ويمنح الطالب مرتبة الشرف إذا كان تقديره النهائي ممتاز أو جيد جداً، وعلى الأقل التقدير العام في أي فرقة من فرق الدراسة عن جيد جداً ($GPA 2.7 = 75\%$) ويشترط لحصول الطالب على مرتبة الشرف ألا يكون قد رسب في أي امتحان تقدم له في أي فرقة، على أن لا يعتد بها عند ترتيب الطالب.

حساب النسبة المئوية (للفصل/للعام/المجموع التراكمي الكلي) $\text{weighted average} =$ [مجموع (نسبة نجاح كل مقرر X

النقاط المعتمدة للمقرر)] / مجموع النقاط المعتمدة (للفصل/للعام/لكافة الفصول الدراسية)

ويتم حساب المعدل التراكمي لكل الفصول وفقاً للجدول السابق

مادة (11): الحد الأقصى للبقاء في السنة الدراسية الواحدة

لا يجوز للطالب أن يبقى بالفرقة الأولى أكثر من سنتين وبالفرقة الثانية أكثر من ثلاث سنوات وبالفرقة الثالثة أكثر من أربع سنوات. أما بالنسبة للفرقة الرابعة والخامسة فإذا رسب الطالب فيما لا يزيد على نصف عدد مقررات هذه الفرقة وذلك بصرف النظر عن المقررات المختلفة من فرق سابقة يخصص له بالامتحان حتى يتم نجاحه.

مادة (12): الرسوب في المقررات

- في حالة تغيب الطالب بدون عذر عن أداء الامتحان التحريري النهائي.
- إذا حصل الطالب على أقل من 30% من درجة الامتحان التحريري النهائي.
- عدم تحقيق 60% على الأقل من مجموع درجات المقرر ما عدا مقرري اللغة الإنجليزية والرياضيات فدرجة النجاح 50% لكل منهما.

مادة (13): امتحانات الدور الثاني (Resit Exam)

يسمح للطالب أن يؤدي الامتحان في أي مقرر أثناء العام الأكاديمي الواحد مرتين: مرة أثناء الفصل الدراسي الأساسي الذي يتم فيه دراسة المقرر ومرة أثناء امتحانات الدور الثاني. يسمح للطالب أن يؤدي امتحان الدور الثاني بحد أقصى 60 نقطة معتمدة مع مراعاة ألا يزيد تقدير الطالب على مقبول في المقرر الذي سبق أن رسب فيه أو تغيب عنه بعذر غير مقبول، أما إذا كان قد تغيب بعذر مقبول فيحسب له تقدير النجاح الذي يحصل عليه. مع مراعاة ما ورد في المادة (10).

مادة (14): النقل للفرق الدراسية الأعلى بمواد (Trailing)

يسمح للطالب الانتقال للفرق الدراسية الأعلى بمواد بحد أقصى 20 نقطة معتمدة. يجب على الطالب المنقول للفرقة الدراسية الأعلى بمواد أن يجتاز درجة النجاح في هذه المواد في العام الأكاديمي التالي مباشرة. مع مراعاة ما ورد في المادة (10).

مادة (15): البقاء للإعادة (Repeat)

يكون الطالب باقياً للإعادة إذا كان راسباً في أكثر من 20 نقطة معتمدة من نقاط الدراسة في أي فرقة. مع مراعاة ما ورد في المادة (10).

مادة (16): تعويض الإنجاح (درجات الرأفة Compensation)

لا تعويض للإنجاح في أي مقرر في أي فصل دراسي.

مادة (17): متطلبات إتمام الحصول على درجة بكالوريوس الصيدلة (فارم دي - Pharm D)

يتطلب الحصول على درجة بكالوريوس الصيدلة (فارم دي - Pharm D) طبقاً لنظام النقاط المعتمدة كما يلي:

أولاً: دراسة واجتياز إجمالي عدد النقاط المعتمدة 570 (بما يعادل 171 ساعة معتمدة) بالإضافة إلى 20 نقطة معتمدة متطلبات جامعة بمجموع 590 نقطة معتمدة (بما يعادل 177 ساعة معتمدة) موزعة على عشرة فصول دراسية وتشمل متطلبات الكلية الاختيارية وتمثل عدد 40 نقطة معتمدة (بما يعادل 12 ساعات معتمدة).

ثانياً: اجتياز فترة التدريب الميداني الأولي بإجمالي عدد 100 ساعة تدريب فعلية في الصيدليات الأهلية والحكومية وصيدليات المستشفيات التي يقرها مجلس الكلية وذلك تحت إشراف عضو هيئة تدريس ويتم التدريب خلال الإجازات الصيفية لسنوات الدراسة بعد نهاية الفرقة الثالثة وأن يكمل سنة الامتياز (عام أكاديمي-9 أشهر) بعد الانتهاء من سنوات الدراسة، طبقاً للائحة التفصيلية الخاصة ببرنامج تدريب سنة الامتياز والتي تشمل مشروع التخرج في إحدى التخصصات المطروحة.

مادة (18): نظام تأديب الطلاب

الطلاب المقيدون بالبرنامج خاضعون للنظام التأديبي المبين في قانون تنظيم الجامعات المصرية رقم 49 لسنة 1972 ولائحته التنفيذية.

مادة (19): كود الأقسام ومقررات البرنامج الدراسي (أنظر مرفق رقم 1).

مادة (20): الخطة الدراسية (أنظر مرفق 2).

مادة (21): محتوى المقررات الدراسية (أنظر مرفق 3).

مادة (22): تحديث المقررات الدراسية

يجوز لمجلس الجامعة الموافقة على تحديث نسبة لا تتجاوز 20% من محتوى المقررات الدراسية بناء على اقتراح مجلس الكلية وذلك بعد موافقة اللجنة المختصة بالإشراف على البرنامج ومجلس القسم العلمي المعني وبعد إبداء المبررات اللازمة.

مادة (23): برنامج التدريب لسنة الامتياز

يتم وضع برنامج مفصل لسنة الامتياز (التدريب التخصصي) في شكل دورات تناوبية في ملحق به لائحة برنامج التدريب التناوبي بصورة منهجة تفصيلية (سيقدم كملحق لهذه اللائحة).

مادة (24): تطبيق أحكام هذه اللائحة

على الطلاب الملحقين بالكلية اعتباراً من العام الدراسي 2020/2019.

مادة (25): أحكام عامة

ما لم يرد به نص في هذه اللائحة تطبق القواعد المعمول بها بالجامعة البريطانية في مصر (General Academic Regulations - GAR).

مرفق 1

خاص بالمادة (19)

كود الأقسام العلمية والمقررات الدراسية

كود التخصصات العلمية

PMC	Pharmaceutical Chemistry
PCL	Pharmacology
PBC	Biochemistry
PCT	Pharmaceutics and Pharmaceutical Technology
PCG	Pharmacognosy
PMB	Microbiology
PCP	Clinical Pharmacy Practice

1. The letter 'P' means that the modules are offered to students of Pharmacy only.
2. The second and third letters refer to the speciality that offers the module.
3. The first digit represents the study year (1:5).
4. The second and third digits represent the module number within the speciality.

1. University Requirements

Code	Module	Year/ Semester	CR	CH
PHENGL01	English for Academic Purposes	1/1	10	3
PHENGL02	English and Academic Writing	1/2	10	3
Total			20	6

CR: Credits, CH: The equivalent Credit Hours.

2. Faculty Requirements

Code	Module	Year/ Semester	CR	CH
MTH101	Mathematics	1/1	10	3
Total			10	3

CR: Credits, CH: The equivalent Credit Hours.

3. Core Modules (P)

- Pharmaceutical Chemistry (PMC)

Code	Module	Year/ Semester	CR	CH
PMC101	Pharmaceutical Analytical Chemistry-1	1/1	10	3
PMC102	Pharmaceutical Organic Chemistry-1	1/1	10	3
PMC103	Pharmaceutical Organic Chemistry-2	1/2	10	3
PMC204	Pharmaceutical Analytical Chemistry-2	2/1	10	3
PMC205	Pharmaceutical Analytical Chemistry-3	2/2	10	3
PMC206	Pharmaceutical Organic Chemistry-3	2/2	10	3
PMC307	Instrumental Analysis	3/2	10	3
PMC308	Medicinal Chemistry-1	3/2	10	3
PMC409	Medicinal Chemistry-2	4/1	10	3
PMC510	Quality Control of Pharmaceuticals	5/2	5	1.5
PMC511	Drug Design	5/2	10	3
Total	Core		105	31.5

CR: Credits.

CH: The equivalent Credit Hours.

- Pharmacology (PCL)

Code	Module	Year/ Semester	CR	CH
PCL101	Integrated Body System-1	1/1	10	3
PCL102	Integrated Body System-2	1/2	10	3
PCL203	Integrated Body System-3	2/1	10	3
PCL204	Pharmacology-1	2/2	10	3
PCL305	Pharmacology-2	3/1	10	3
PCL306	Pharmacology-3	3/2	10	3
PCL407	Toxicology	4/1	10	3
PCL508	Research Methodology & Biostatistics	5/1	10	3
Total	Core		80	24

CR: Credits.

CH: The equivalent Credit Hours.

- Biochemistry (PBC)

Code	Module	Year/ Semester	CR	CH
PBC201	Biochemistry-1	2/1	10	3
PBC202	Biochemistry-2	2/2	10	3
PBC303	Clinical Biochemistry	3/1	10	3
Total	Core		30	9

CR: Credits.

CH: The equivalent Credit Hours.

- Pharmaceutics & Pharmaceutical Technology (PCT)

Code	Module	Year/ Semester	CR	CH
PCT101	Pharmacy Orientation, legislation & Ethics	1/1	5	1.5
PCT102	Physical Pharmacy	1/2	10	3
PCT203	Pharmaceutics-1	2/1	10	3
PCT204	Pharmaceutics-2	2/2	10	3
PCT305	Pharmaceutics-3	3/1	10	3
PCT406	Pharmaceutics-4	4/1	10	3
PCT407	Dosage Form Design	4/2	10	3
PCT408	Pharmaceutical Technology-1	4/2	10	3
PCT509	Biopharmaceutics & Pharmacokinetics	5/1	10	3
PCT510	Pharmaceutical Technology-2 & GMP	5/1	10	3
Total	Core		95	28.5

CR: Credits.

CH: The equivalent Credit Hours.

- Microbiology (PMB)

Code	Module	Year/ Semester	CR	CH
PMB201	General Microbiology	2/2	10	3
PMB302	Pharmaceutical Microbiology	3/1	10	3
PMB303	Immunology	3/1	5	1.5
PMB304	Medical Microbiology-1 (Parasitology & Virology)	3/2	10	3
PMB405	Medical Microbiology-2 (Bacteriology & Mycology)	4/2	10	3
PMB506	Biotechnology	5/1	5	1.5
PMB507	Public Health & Preventive Medicine	5/2	5	1.5
Total	Core		55	16.5

CR: Credits.

CH: The equivalent Credit Hours.

-Pharmacognosy (PCG)

Code	Module	Year/ Semester	CR	CH
PCG101	Pharmacognosy-1	1/2	10	3
PCG202	Pharmacognosy-2	2/1	10	3
PCG303	Phytochemistry-1	3/1	10	3
PCG304	Phytochemistry-2	3/2	10	3
PCG505	Phytotherapy & Aromatherapy	5/1	5	1.5
PCG506	Applied Pharmacognosy	5/2	5	1.5
Total	Core		50	15

CR: Credits.

CH: The equivalent Credit Hours.

- Clinical Pharmacy Practice (PCP)

Code	Module	Year/ Semester	CR	CH
PCP101	Scientific Thinking & Communication skills	1/2	5	1.5
PCP102	Human Rights and Fighting Corruption	1/2	5	1.5
PCP203	Psychology	2/1	5	1.5
PCP304	First Aid & Basic Life Support (BLS)	3/1	5	1.5
PCP305	Community Pharmacy Practice	3/2	10	3
PCP406	Hospital Pharmacy	4/1	10	3
PCP407	Clinical Pharmacy-1	4/1	10	3
PCP408	Drug Information & Pharmacovigilance	4/2	10	3
PCP409	Clinical Pharmacy-2	4/2	10	3
PCP510	Clinical Pharmacy-3	5/1	10	3
PCP511	Marketing & Pharmacoeconomics	5/2	10	3
PCP512	Clinical Pharmacokinetics	5/2	10	3
PCP513	Entrepreneurship	5/2	5	1.5
Total	Core		105	31.5

CR: Credits.

CH: The equivalent Credit Hours.

4. Optional Modules (O)

The Faculty of Pharmacy offers optional modules from which the students have the choice to select 40 credit points equivalent to 12 credit hours.

Department	Module Code	Module Title	Credits CR	Credit Hours		
				L	P/T	Total
Pharmaceutical Chemistry	PMCO12	Advanced Pharmaceutical Analysis	10	2	1	3
	PMCO13	Radiopharmaceutical Chemistry	10	2	1	3
	PMCO14	Nanochemistry	10	2	1	3
Biochemistry & Pharmacology	PBCO04	Molecular Biology & Gene Therapy	10	2	1	3
	PCLO09	Biological screening of drug activities	10	2	1	3
	PCLO10	High-Throughput Screening of Drug activities	10	2	1	3
	PCLO11	Evaluation of Safety of Drugs	10	2	1	3
	PCLO12	Neuroscience-1	10	2	1	3
	PCLO13	Neuroscience-2	10	2	1	3

Pharmaceutics and Pharmaceutical Technology	PCTO11	Advanced Drug Delivery and Nanopharmaceuticals	10	2	1	3
	PCTO12	Cosmetics	10	2	1	3
	PCTO13	Veterinary Pharmacy	10	2	1	3
Microbiology & pharmacognosy	PMBO08	Infection control and Antimicrobial stewardship	10	2	1	3
	PMBO09	Biopharmaceuticals and Immunological Products	10	2	1	3
	PMBO10	Bioinformatics, Genomics, Pharmacogenomics, and Pharmacomicrobiomics	10	2	1	3
	PMBO11	Diagnostic Microbiology	10	2	1	2
Clinical Pharmacy Practice	PCPO14	Health Media	10	2	1	3
	PCPO15	Personalized Medicine	10	2	1	3
	PCPO16	Palliative Care	10	2	1	3
	PCPO17	Paediatric and geriatric pharmacotherapy	10	2	1	3

L: Lecture

P: Practical

T: Tutorial

- لمجلس الكلية طرح المقررات الاختيارية من الأمثلة المذكورة بالجدول السابق في كل من الفصلين الدراسيين للمستويين الرابع والخامس وذلك بعد موافقة اللجنة المختصة بالإشراف وبعد أخذ رأي مجالس الأقسام المعنية. ويمكن للكلية إضافة مقررات اختيارية أخرى ويشترط موافقة مجلس الجامعة بعد إبداء المبررات اللازمة.

مرفق رقم 2

خاص بالمادة رقم (20)

Program Curriculum

الخطة الدراسية

Table (1)

Semester (1)

Code	Module title	Credit Hours			Credits	Examination Marks				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PHENGL01	English for Academic Purposes	3	-	3	10	50	-	50	-	100	2
MTH101	Mathematics	2	1	3	10	40	10	50	-	100	2
PMC101	Pharmaceutical Analytical Chemistry-1	2	1	3	10	10	30	50	10	100	2
PMC102	Pharmaceutical Organic Chemistry-1	2	1	3	10	10	30	50	10	100	2
PCL101	Integrated body system-1	2	1	3	10	10	30	60	-	100	2
PCT101	Pharmacy Orientation, legislation and Ethics	1+1*	-	1.5	5	25	-	75	-	100	2
Total	6			16.5	55						

*: One-hour lecture and one-hour tutorial for all students in the Lecture Hall

CW: Course work; P/T: Practical/Tutorial; U: Unseen final written exam; O: Oral.

Table (2)

Semester (2)

Code	Module title	Credit Hours			Credits	Examination Marks				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PHENGL02	English and Academic Writing	3	-	3	10	50	-	50	-	100	2
PMC103	Pharmaceutical Organic Chemistry-2	2	1	3	10	10	30	50	10	100	2
PCG101	Pharmacognosy-1	2	1	3	10	10	30	50	10	100	2
PCT102	Physical Pharmacy	2	1	3	10	10	30	50	10	100	2
PCL102	Integrated body system-2	2	1	3	10	10	30	60	-	100	2
PCP101	Scientific Thinking and Communication skills	1+1*	-	1.5	5	25	-	75	-	100	2
PCP102	Human Rights and Fighting Corruption	1+1*	-	1.5	5	25	-	75	-	100	2
Total	7			18	60						

*: One-hour lecture and one-hour tutorial for all students in the Lecture Hall

CW: Course work; P/T: Practical/Tutorial; U: Unseen final written exam; O: Oral.

Table (3)

Semester (3)

Code	Module title	Credit Hours			Credits	Examination Marks				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PCP203	Psychology	1	0.5	1.5	5	10	30	60	-	100	2
PBC201	Biochemistry-1	2	1	3	10	10	30	50	10	100	2
PCT203	Pharmaceutics-1	2	1	3	10	10	30	50	10	100	2
PCG202	Pharmacognosy-2	2	1	3	10	10	30	50	10	100	2
PCL203	Integrated body system-3	2	1	3	10	10	30	60	-	100	2
PMC204	Pharmaceutical Analytical Chemistry-2	2	1	3	10	10	30	50	10	100	2
Total	6			16.5	55						

Table (4)

Semester (4)

Code	Module title	Credit Hours			Credits	Examination Marks				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PCL204	Pharmacology-1	2	1	3	10	10	30	50	10	100	2
PMB201	General Microbiology	2	1	3	10	10	30	50	10	100	2
PMC205	Pharmaceutical Analytical Chemistry-3	2	1	3	10	10	30	50	10	100	2
PCT204	Pharmaceutics-2	2	1	3	10	10	30	50	10	100	2
PBC202	Biochemistry-2	2	1	3	10	10	30	50	10	100	2
PMC206	Pharmaceutical Organic Chemistry-3	2	1	3	10	10	30	50	10	100	2
Total	6			18	60						

CW: Course work; P/T: Practical/Tutorial; U: Unseen final written exam; O: Oral.

Table (5)

Semester (5)

Code	Module title	Credit Hours			Credits	Examination Marks				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PMB302	Pharmaceutical Microbiology	2	1	3	10	10	30	50	10	100	2
PCG303	Phytochemistry-1	2	1	3	10	10	30	50	10	100	2
PBC303	Clinical Biochemistry	2	1	3	10	10	30	50	10	100	2
PCL305	Pharmacology-2	2	1	3	10	10	30	50	10	100	2
PCT305	Pharmaceutics-3	2	1	3	10	10	30	50	10	100	2
PCP304	First Aid & Basic Life Support (BLS)	1	0.5	1.5	5	10	30	60	-	100	2
PMB303	Immunology	1	0.5	1.5	5	10	30	60	-	100	2
Total	7			18	60						

Table (6)

Semester (6)

Code	Module title	Credit Hours			Credits	Examination Marks				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PMB304	Medical Microbiology-1 (Parasitology & Virology)	2	1	3	10	10	30	50	10	100	2
PMC308	Medicinal Chemistry-1	2	1	3	10	10	30	50	10	100	2
PMC307	Instrumental Analysis	2	1	3	10	10	30	50	10	100	2
PCG304	Phytochemistry-2	2	1	3	10	10	30	50	10	100	2
PCL306	Pharmacology-3	2	1	3	10	10	30	50	10	100	2
PCP305	Community Pharmacy Practice	2	1	3	10	10	30	60	-	100	2
Total	6			18	60						

CW: Course work; P/T: Practical/Tutorial; U: Unseen final written exam; O: Oral

Table (7)

Semester (7)

Code	Module title	Credit Hours			Credits	Examination Marks				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PCP406	Hospital Pharmacy	2	1	3	10	10	30	60	-	100	2
PCL407	Toxicology	2	1	3	10	10	30	50	10	100	2
PCT406	Pharmaceutics- 4	2	1	3	10	10	30	50	10	100	2
PCP407	Clinical pharmacy-1	2	1	3	10	10	30	50	10	100	2
PMC409	Medicinal Chemistry-2	2	1	3	10	10	30	50	10	100	2
PxxO??	Optional	2	1	3	10	10	30	60	-	100	2
Total	6			18	60						

Table (8)

Semester (8)

Code	Module title	Credit Hours			Credits	Examination Marks				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PMB405	Medical Microbiology-2 (Bacteriology & Mycology)	2	1	3	10	10	30	50	10	100	2
PCT408	Pharmaceutical Technology-1	2	1	3	10	10	30	50	10	100	2
PCP408	Drug information and Pharmacovigilance	2	1	3	10	10	30	50	10	100	2
PCT407	Dosage Form Design	2	1	3	10	10	30	50	10	100	2
PCP409	Clinical pharmacy-2	2	1	3	10	10	30	50	10	100	2
PxxO??	Optional	2	1	3	10	10	30	60	-	100	2
Total	7			18	60						

CW: Course work; P/T: Practical/Tutorial; U: Unseen final written exam; O: Oral.

Table (9)

Semester (9)

Code	Module title	Credit Hours			Credits	Examination Marks				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PCP510	Clinical pharmacy-3	2	1	3	10	10	30	60	-	100	2
PMB506	Biotechnology	1	0.5	1.5	5	10	30	60	-	100	2
PCG505	Phytotherapy and Aromatherapy	1	0.5	1.5	5	10	30	50	10	100	2
PCT510	Pharmaceutical Technology-2 & GMP	2	1	3	10	10	30	50	10	100	2
PCT509	Biopharmaceutics and Pharmacokinetics	2	1	3	10	10	30	50	10	100	2
PCL508	Research Methodology & Biostatistics	2	1	3	10	10	30	60	-	100	2
PxxO??	Optional	2	1	3	10	10	30	60	-	100	2
Total	7			18	60						

CW: Course work; P/T: Practical/Tutorial; U: Unseen final written exam; O: Oral.

Table (10)

Semester (10)

Code	Module title	Credit Hours			Credits	Examination Marks				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PCP511	Marketing & Pharmacoeconomics	2	1	3	10	10	30	60	-	100	2
PCP512	Clinical Pharmacokinetics	2	1	3	10	10	30	50	10	100	2
PMB507	Public Health and Preventive Medicine	1	0.5	1.5	5	10	30	60	-	100	2
PCP513	Entrepreneurship	1+1*	-	1.5	5	25	-	75	-	100	2
PMC511	Drug Design	2	1	3	10	10	30	50	10	100	2
PCG506	Applied Pharmacognosy	1+1*	-	1.5	5	25	-	75	-	100	2
PMC510	Quality Control of Pharmaceuticals	1+1*	-	1.5	5	25	-	75	-	100	2
PxxO??	Optional	2	1	3	10	10	30	60	-	100	2
Total	8			18	60						

*: One-hour lecture and one-hour tutorial for all students in the Lecture Hall

CW: Course work; P/T: Practical/Tutorial; U: Unseen final written exam; O: Oral.

مرفق 3

خاص بالمادة (21)

محتوى المقررات الدراسية (Modules Content)

1) Core Modules

PHENGL01- English for Academic Purposes: (3+0)

The aim of this module is to develop students` English Language and academic skills necessary to meet the demands of undergraduate courses in an English-speaking academic environment. The module will focus on listening and lecture note-taking, reading strategies, academic writing and oral communication skills.

MTH101- Mathematics: (2+1)

This unit of study provides mathematical tools that are needed for other units of study in this degree. In the calculus component, the emphasis is on the behaviour of functions of various kinds, leading to the solution of differential equations. In all this provision, relevance to pharmacy applications as in pharmacokinetics of drugs will be elucidated.

PMC101- Pharmaceutical Analytical Chemistry-1: (2+1)

This module deals with introduction to general chemistry, Types of chemical reactions, Electrolytes, Equilibrium, calculations of concentrations of substances, stoichiometry. Analysis of anions, Analysis of cations, Analysis of mixture of anions and cations.

PMC102- Pharmaceutical Organic Chemistry-1: (2+1)

The objective of this module is to provide students with the basic knowledge in pharmaceutical organic chemistry, which will serve as

fundamentals for other modules offered during subsequent semesters. This module involves electronic structure of atom, chemistry of alkanes [nomenclature, synthesis and reactions (free radical reactions)], cycloalkanes, alkenes, alkadienes, alkynes, aromatic hydrocarbons (Kekule structure, Huckel rule, Electrophilic aromatic substitution and orientation) and arenes, alkyl halides (nomenclature, preparation and chemical reactions (SN1, SN2, E1, E2), and aryl halides, alcohols, phenols, ethers and epoxides.

PCL101- Integrated Body system-1: (2+1)

This module introduces human cell biology, anatomy, physiology, pathophysiology and medical terminology to students as integrated body system I. This aspect of the module focuses on health and normal structure and function. The taught sessions and learning materials will outline the core principles of human anatomy and histology. The physiology part will cover the physiology of body fluids, nerve and muscle, central and peripheral nervous system, special senses and autonomic nervous system. The Anatomy and the histology component will be integrated in the module as an introduction to the physiology of different organ system: tissues of the body, skeletal system, articular system, muscular system, central and peripheral nervous system and special senses. The pathophysiology will focus on cellular level related to injury, the self-defence mechanism, mutation, cellular proliferation and the pathological factors that influence the disease process. In addition to clinical manifestations associated with the diseased organ(s). The module also contains related elements of medical terminology.

PCT101- Pharmacy Orientation, Legislation & Ethics: (2+0)

This is a module 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, incompatibilities, sources of drugs, different dosage forms and various routes of administration. Also, pharmaceutical calculations. In addition to the history of pharmacy practice in various civilizations. In addition to, the module addresses the laws and regulations governing the profession and practice of pharmacy in drug stores and clinical settings.

PHENGL02- English and Academic Writing: (3+0)

The module will develop students` English language, reading, academic writing and presentation skills necessary to meet the demands of undergraduate courses in an English-speaking academic environment.

PMC103- Pharmaceutical Organic Chemistry-2: (2 +1)

The aims of this module are to ensure that students continue to acquire basic knowledge in organic chemistry in addition to that taught in organic chemistry I. This module involves different classes of organic compounds: aldehydes, ketones, carboxylic acid & acid derivatives, amino acid & peptides, sulphonic acids, and nitrogenous compounds. The module also aims to give the student principles in stereochemistry (Isomerism, optical isomers, racemic modification, nomenclature of configurations, geometrical isomerism and conformation of cyclohexane) and chemistry of carbohydrates.

PCG101- Pharmacognosy-1: (2+1)

Based on the Egyptian flora and other floras of wild and cultivated medicinal plants that are used in the pharmaceutical, cosmetic and food industries in the global & Egyptian market. Students should acquire knowledge concerning plant cytology, physiology. In this module, the student will study: importance of natural products, preparation of natural products-derived drugs including collection, storage, preservation and adulteration. Furthermore, the

module will introduce the students to the different classes of Primary & secondary metabolites. The module also deals with botanical drugs of leaves, flower & bark. 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.

PCT102- Physical Pharmacy: (2+1)

This module 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 solubility, dissolution, partition coefficient, surface and interfacial phenomena, surface active agents, adsorption and its application in pharmacy and rheological behavior of dosage forms.

PCL102- Integrated Body system-2: (2+1)

This module introduces human anatomy, physiology, pathophysiology and medical terminology to students as integrated body system II. This aspect of the module focuses on health and normal structure and function. The taught sessions and learning materials will outline the core principles of human anatomy and histology. The physiology part will cover the normal physiology of cardiovascular, respiratory and excretory systems. The Anatomy and the histology component will be integrated in the module as an introduction to the physiology of different organ system: cardiovascular, respiratory, excretory systems. The pathophysiology will focus on clinical manifestations associated with the diseased organ(s) and cancer. The module also contains related elements of medical terminology.

PCP101- Scientific thinking & Communication skills: (2+0)

The aim of this module is to focus on the value of scientific thinking and its relation to society, to foster an appreciation of scientific concepts and to understand the importance of functioning effectively in modern society. Moreover, the module aims to focus on concept and meaning of communication; verbal and nonverbal communication; active listening skills; communication styles and presentation skills. Communication skills in diverse pharmacy practice setting will be discussed.

PCP102- Human Rights and Fighting Corruption: (2+0)

This module covers the following topics: human rights in criminal law, human right to change nationality or abandon one of its nationalities, international agreements related to the protection of human rights. Moreover, it will highlight human rights in Islamic law; women's rights in labor law and social insurance; human rights in litigation, civil and political rights.

PCP203- Psychology: (1+0.5)

The aim of this module is to deliver different principles, theories and vocabulary of psychology as a science. The module also aims to provide students with basic concepts of social psychology, medical sociology and interpersonal communication which relate to the pharmacy practice system. Moreover, it aims to explore the strategies available in the treatment of psychological disorder.

PBC201- Biochemistry-1: (2+1)

The aim of this module is to demonstrate the basic concepts and fundamentals of Biochemistry. The chemical and biological importance of amino acids & proteins are studied in details. The module also focuses on enzyme action, kinetics and regulation. Structures and chemistry of

carbohydrates and lipids are also highlighted in the module. Nucleotides and nucleic acids (DNA and RNA) are studied in details with brief emphasis on biological important processes such as replication, transcription and translation. An overview of the Bioenergetics and oxidative phosphorylation will be covered. The module also includes porphyrin & bile pigment structure, synthesis, and metabolism. The laboratory work deals with the study of some biological fluids and secretions along with enzyme kinetics.

PCT203- Pharmaceutics 1: (2+1)

This module is concerned with all manufacturing formulations aspects, packaging, storage and stability of liquid dosage forms including solutions (aqueous and non-aqueous), suspensions, emulsions and colloids with emphasis on the technology and pharmaceutical rationale fundamental to their design and development. The incompatibilities occurring during dispensing are also considered.

PCG202- Pharmacognosy-2: (2+1)

The module introduces students to some botanical drugs of, seeds, fruits, subterranean, herbs, unorganized drugs of marine and animal origin. This will be taught based on the Egyptian flora and other floras of wild and cultivated medicinal plants that are used in the pharmaceutical, cosmetic and food industries in the global & Egyptian market. 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.

PCL203- Integrated Body system-3: (2+1)

This module introduces human anatomy, physiology, pathophysiology and medical terminology to students as integrated body system III. This aspect of the module focuses on health and normal structure and function. The taught sessions and learning materials will outline the core principles of human anatomy and histology. The physiology part will cover the physiology of endocrine, digestive and reproductive system. In addition to organic and energy metabolism; exercise and environmental stress. The Anatomy and the histology component will be integrated in the module as an introduction to the physiology of different organ system: endocrine, digestive and reproductive systems. The pathophysiology will focus on the clinical manifestations associated with the diseased organ(s). The module also contains related elements of medical terminology.

PMC204- Pharmaceutical Analytical Chemistry-2: (2+1)

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

PCL204- Pharmacology-1: (2+1)

This module provides students with the general principles of pharmacodynamics and pharmacokinetics together with detailed study of drugs acting on the autonomic nervous system and neuromuscular junction. The module will also introduce some drugs acting on renal and cardiovascular systems.

PMB201- General Microbiology: (2+1)

This module will introduce the students to the vast world of microorganisms, including both laboratory and theoretical experience. A basic understanding of the kingdoms of life, prokaryotic and eukaryotic cell structure and function. cellular metabolism and methods of reproduction. The module 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.

PMC205- Pharmaceutical Analytical Chemistry-3: (2+1)

This module provides the students with knowledge about Redox titrations, theory, oxidation potentials, Nernst equation, titration curves, redox indicators, selected oxidants and reductants, applications of redox titrations. Electrochemical methods, electrode potential, reference electrodes, indicator electrode, applications. Conductometric titration: ionic conductance, definition of cell constant, conductance, applications and voltammetry.

PCT204 -Pharmaceutics 2: (2+1)

This module covers the structure and function of the skin, target area of treatment after topical application to skin, basic principles of diffusion through membranes and factors affecting percutaneous absorption, enhancement of skin penetration, transdermal drug delivery systems (TDDS). It also describes the principles and techniques involved in the formulation and manufacturing of traditional dermatological semisolid dosage forms (creams, ointments, gels and pastes).

PBC202- Biochemistry-2: (2+1)

The aim of this module is to provide students with basic information about metabolic pathways and tissue utilization of carbohydrates, lipids and proteins, including mobilization of body stores of glycogen and fats, and regulation of blood glucose level and clinical correlations as well as integration of metabolism during feeding and fasting cycle across various organs of the body. The laboratory work deals with the study of blood parameters, assessment of disorders of plasma proteins, carbohydrates and lipid metabolism and how to interpret the changes in these parameters' levels related to different human pathologies.

PMC206- Pharmaceutical Organic Chemistry-3: (2+1)

The module aims to provide the student with an introduction to the use of different spectroscopic tools, including UV, infrared (IR), nuclear magnetic resonance (NMR) and mass spectrometry (MS) for the structural elucidation of organic compounds. The module also aims to give the student principles of heterocyclic chemistry.

PMB302- Pharmaceutical Microbiology: (2+1)

This module is designed to provide student with basic, practical and professional knowledge on antimicrobial agents, different sterilization methods and their application. The module explains the different groups of therapeutic antimicrobials which include antibacterial, antifungal and antiviral agents in addition to non-antibiotic antimicrobial agents (biocides). The module involves studying antimicrobials in relation to their classification, mechanism of action and resistance of microbes in addition to the new categories and new approaches to overcome bacterial resistance & antibiotics clinical abuse. This module also 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. Moreover, the module involves the study of sterilization, sterilization indicators, sterility testing, aseptic area, the microbiological quality of pharmaceuticals and validation of sterilization process.

PCG303- Phytochemistry-1: (2+1)

Based on complementary medicine and Egyptian medicinal plants that can be used as natural extracts, bioactive raw materials and phytochemical standards to serve the pharmaceuticals, cosmetics and food industries in Egypt. The module aims to gain the students the knowledge and experience that enable them to understand, describe and deal with the chemistry and pharmaceutical uses of, carbohydrates, glycosides, resins and resin combinations, and bitters of plant or animals as well as techniques for their, isolation, identification and determination from their respective sources. Clinical applications will be correlated with various clinical analyses.

PBC303- Clinical Biochemistry: (2+1)

This module aims to acquaint students with the biochemical mechanisms and changes associated with different diseases such as liver, cardiovascular and kidney in addition to lipids and carbohydrates disorders. The module will also include the inborn errors of metabolism, clinical enzymology, tumour markers, electrolytes, blood gases and acid-base balance with inclusion of various case studies. Students will also be able familiar with the use of various biomarkers in diagnosis, monitoring and prognosis of those diseases. Further information on techniques and applications of basic molecular biology and advances in clinical biochemistry will also be elaborated. Topics shall discuss the basic principles of

qualitative and quantitative analyses that are utilized in common clinical laboratory tests.

PCL305- Pharmacology-2: (2+1)

The module will cover the rest of drugs acting on the cardiovascular system. It will illustrate the pharmacology of drugs acting on the central nervous and respiratory systems. In addition to different classes of analgesics, anti-histaminics as well as drugs used for the treatment of gout and migraine.

PCT305 –Pharmaceutics-3: (2+1)

The module describes the principles and techniques involved in the formulation, and manufacturing of solid dosage forms including powders, granules, tablets, capsules and suppositories. An in-depth study on the formulation, manufacturing, quality control testing and applications of aerosols and other inhalation products is also accentuated.

PCP304- First Aid and Basic Life Support (BLS): (1+0.5)

The aim of this module is to get the students acquainted with induced human body changes in response to sudden/ emergent health disorders like chock, trauma & poisoning. Students will also learn necessary general first aid procedures of providing quick, effective & professional life saving premedical aid in case of respiratory emergencies, fractures and dislocations, bleeding and surgical emergencies, burns and scalds, animal bites and poisoning.

PMB303- Immunology: (1+0.5)

The module is a description of the profiles of the structure and functions of the human immune system in health and disease. This module will introduce the students to 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, immune system disorders as well as serological reactions are among the topics to be addressed by this module.

PMB304- Medical Microbiology-1 (Parasitology & Virology): (2+1)

This module acquaints the students with parasitic and viral infections of humans with knowledge concerning etiological, epidemiological and ecological aspects of parasites causing diseases to humans with emphasis on the different infestations or infections related diseases in Egypt.

The part of the module concerned with parasitology 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 cover laboratory diagnosis of the human parasitic infections.

The other part of the module 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 human viral infections caused by DNA and RNA viruses.

PMC307- Instrumental Analysis: (2+1)

This module aims to give knowledge regarding Spectroscopic methods of analysis which include uv/vis spectroscopy, principal, instrumentation, factors affecting absorption and applications in pharmaceutical analysis. Fluorimetric methods, principal instrumentation, factors affecting fluorescence intensity and applications in pharmaceutical analysis. Atomic spectroscopy; principal and instrumentation. Chromatographic methods for analytical chemistry which

includes: TLC, gel chromatography, column chromatography, HPLC, UPLC, TLC, gas chromatography, capillary electrophoresis.

PMC308- Medicinal Chemistry-1: (2+1)

This module introduces Autonomic nervous system drugs, Cardiovascular drugs. CNS drugs. opioid analgesics. Neurodegenerative disorder drugs. Antihistamines, Local anaesthetics. Non-steroidal (NSAIDs) and other drugs controlling pain and inflammation.

PCG304- Phytochemistry-2: (2+1)

The module aims to enable students to demonstrate knowledge of basic concepts of chemistry and bioactivities of volatile oils & alkaloids, applying different chromatographic techniques for their isolation and identification. The module emphasizes on drugs with valuable use in the Egyptian and worldwide markets, such as anti-cancer agents, drugs affecting CNS, drugs ameliorating liver diseases and anti-inflammatory agents. Finally, the module focuses on the structure activity relationships (SAR) of these natural products derived compounds and their pharmacophoric features. Clinical applications will be correlated with various clinical analyses.

PCL306- Pharmacology-3: (2+1)

This module deals with the basic principles of chemotherapy including antibacterial, antiviral and anticancer agents. A part of the module is devoted to endocrine disorders and drugs used to treat them. Moreover, this module will include pharmacology of GIT disorders such as peptic ulcer, diarrhea, constipation and vomiting.

PCP305- Community Pharmacy Practice: (2+1)

This module includes the study of clinical situations that can be handled by the pharmacist in the community pharmacy (referral or using OTC medications) including upper respiratory tract, gastrointestinal, and musculoskeletal symptoms, skin, eyes, and ears, and childhood symptoms.

PCP406- Hospital Pharmacy: (2+1)

This module aims to provide the student with the knowledge about the organization and structure of a hospital pharmacy, hospital pharmacy facilities and services (inpatient and outpatient services). Moreover, the module will provide information about hospital formulary, pharmacy and therapeutic committee, I.V. admixtures and incompatibilities. It will also cover parenteral nutrition, enteral feeding, handling of cytotoxic drugs and outline the procedure of controlling acid base and electrolytes.

PCL407- Toxicology: (2+1)

The aim of this module is to set-up the concept of toxicology with relation to defining its general rules, measurement, types of toxic agents; environmental pollutants, drugs; house-hold stuff; heavy metals, animal, plant and marine poisons, pesticides as well as drug abuse are included. Antidotes and measures/regulations to minimize toxicity will be likewise driven. Identification and managements of toxic agents will be also studied. Also, an overview will be provided on teratology and common drugs posing such a risk during pregnancy. Post-mortem sampling for detection of poisons, methods of detection, interpretation of results are also covered.

PCT407- Pharmaceutics-4: (2+1)

The module introduces the students to the kinetics of drug decomposition including rate and order of the reaction, determination of the half-life, expiry date and shelf-life by different methods, stability testing, and in-vitro possible

drug/excipients interactions. This module also 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 module also covers the basic principles of formulation, sterilization, packaging and applications of radiopharmaceuticals in pharmacy and medicine.

PCP407- Clinical pharmacy-1: (2+1)

This module aims to provide the student with the knowledge in cardiovascular system, respiratory system, endocrine and renal diseases. This module will focus on epidemiology, aetiology, pathophysiology, clinical manifestation, investigations, treatment, monitoring, and patient counselling of dyslipidaemias, hypertension, ischemic heart diseases, heart failure, dysrhythmias. Moreover, the module will cover bronchial asthma, chronic obstructive pulmonary disease and different endocrinology disorders (Diabetes, thyroid disorder, Cushing syndrome). Moreover, it will provide information about acute and chronic renal failure.

PMC409- Medicinal Chemistry-2: (2+1)

This module provides the students with knowledge regarding Antibiotics and antimicrobials, Chemotherapeutic agents including antifungal, antiviral, antiparasitic, and anticancer agents. PPIs and other GIT drugs. Steroid hormones. Endocrine related drugs (Diabetes, thyroid, etc).

PMB405- Medical Microbiology-2 (Bacteriology and Mycology): (2+1)

This module presents a systematic clinical description of bacterial and fungal diseases and their characteristics. It explains etiology and clinical manifestation, mode of transmission, management, control and techniques in

detection and identification of pathogenic microorganisms. Gram positive cocci & bacilli, Gram negative cocci & bacilli and mycobacteria as well as other types of bacteria of major significance to public health will be studied. In the same way the most common mycotic infections will be studied.

PCP408- Drug information & Pharmacovigilance: (2+1)

This module aims to provide the students with the knowledge to be able to identify the concept of drug information services and to utilize skills in receiving, classifying and analysing a drug information request in a logical order in drug and poison information centre. The module will enable the students to understand different drug information resources (primary, secondary, and tertiary sources), use of the internet for drug and research information, and evaluating information on the web. The module will enable the students to retrieve, analyse, and interpret professional and scientific literature and define clinical practice guidelines & evidence-based medicine.

This module also provides the students with basic knowledge on Pharmacovigilance and risk benefit balance of marketed products based on their knowledge of the pharmacological background of the drugs. Also, students are educated about the different drug-related problems, adverse drug reactions reporting, drug safety signals, safety communication and risk minimization strategies for the best therapeutic outcomes. Applying the aforementioned knowledge should allow the students to cope with the new era of medicines control.

PCT407- Dosage form design: (2+1)

A continued study of pharmaceutical dosage forms with emphasis on novel and targeted drug delivery systems. Discussions focusing on transforming proteins, genes, and other biotechnology driven compounds into therapeutic products including the role of molecular modeling and new drug therapies in

fabricating rational drug delivery systems are included. and gene delivery systems, and to understand how to represent molecules in computers, and describe how bio/chemo informatics tools can be used in drug delivery and targeting research. Study of the basics of computer assisted dosage form design as a new approach in drug delivery will also be tackled, with calculation of the properties (descriptors) of potential drugs, and their correlation to target protein interactions through bio/chemo-informatical modelling. It also covers the application of polymers and excipients to solve problems/issues concerning the optimization of absorption, selective transport, and targeting.

PCT408- Pharmaceutical Technology 1: (2+1)

The module provides students with an introduction to industrial pharmacy. It deals with the principles of various unit operations such as coating, heat transfer, drying, distillation, filtration, crystallization, extraction, size reduction, size separation, size analysis and size enlargement. 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. As well as the materials used for plant construction.

PCP409- Clinical pharmacy-2: (2+1)

The aims of this module are to enable the students to understand cancer aetiology, risk factors, cancer staging and grading, diagnosis, prognosis, optimizing chemotherapeutic regimens. It will cover also different types of tumours and their management, toxicities of chemotherapy, supportive treatment, pharmaceutical care and patient's support measures (nutritional and psychological support). Moreover, the module aims to enable the students to understand hepatic disorders including viral hepatitis, peptic ulcer, gastro-oesophageal reflux disease, inflammatory bowel diseases and irritable bowel syndrome. This module aims to spot the light on some neuropsychiatric diseases

(dissociative disorders, mental health disorders, schizophrenia, depression, anxiety, seizure disorders, parkinsonism, migraines, dementia and Alzheimer's disease).

PCP510- Clinical pharmacy-3: (2+1)

This module aims to provide the student with the knowledge in 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). Moreover, it deals with sexually transmitted diseases, male infertility, and women health. Musculoskeletal disorders are also included.

Besides that, this module provides the knowledge and skills enabling the students to develop professional competencies in the recognition and discussion of the pharmacological aspects of drug-drug, drug-chemical, drug-herb or drug-food interactions and their clinical significance as well as the application of that knowledge to minimize the risk and outcome of interactions. It covers different types of drug interaction including pharmaceutical interactions. The module is designed to familiarize students with the major types of drug interactions (Pharmacokinetic, pharmacodynamic and pharmacogenetic interactions) in the clinical setting, in addition to drug food and drug disease interactions.

PMB506- Biotechnology: (1+0.5)

This module aims to provide students with the fundamentals, scope and applications in biotechnology through studying fermentation technology, upstream, downstream, scaling up and down processes and use of molecular techniques. This module will emphasize on the use of biotechnology in pharmaceutical production of drugs (cytokines, growth factors, hormones, and antibodies) and their clinical applications, in addition to other major classical

biotechnological products, biotransformation, bioremediation, bioleaching, bioinsecticides, biosurfactants and biopolymer production. The module further provides the recent advances techniques in applied genetic engineering and their use in the medical field.

PCG505- Phytotherapy and Aromatherapy: (1+0.5)

Upon successful completion of this module, 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 module 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.

PCT509- Biopharmaceutics & Pharmacokinetics: (2+1)

The module 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.

PCT510- Pharmaceutical Technology-2 and GMP: (2+1)

This module 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.

In addition to 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.

PCL508- Research Methodology & Biostatistics: (2+1)

This module will aim to train students to conduct biomedical pharmaceutical research whether basic or clinical. It is tailored to deliver the fundamental steps for any research project to enable the students to explore resources and literature, addressing questions and filling in the scientific gaps for generation of hypotheses. The module will also include the basics of various study designs. It will also introduce students to fundamentals of biostatistics such as data analysis, descriptive statistics, elementary probability theory,

sampling methods, statistical inference, hypothesis testing, correlation and regression, analysis of variance, etc. This module will enable students to execute their graduation research project in year 6.

PCP511- Marketing & Pharmacoeconomics: (2+1)

The aim of this module is to develop the appropriate knowledge and implementation of marketing research, specifically in the pharmaceutical field and to apply marketing principles in organizational decision-making. The module will also deal with pharmacoeconomics within a wider range of health economics due to the fact that health care reform and rising costs are driving a demand for resources that better inform health care decisions. Health economics and outcomes research represent an interdisciplinary set of tools and concepts for assessing the value of everyday decisions made in complex health care settings. This module will provide the students with a comprehensive set of theories, tools and analytic approaches to understand health care markets and systems. The students will be able to apply health economics principles to health care practices and policies and evaluate the cost and effectiveness of medical treatments, interventions and technologies through outcomes research. Upon completion of this module students will be able assess the strengths and weaknesses of the different methods for economic evaluation in health care; evaluate approaches to preference-based measures of patient quality of life; understand cost and outcomes modelling techniques for economic evaluation; create an introductory Decision Analysis Model and Markov Model using spreadsheet software; critically evaluate cost-effectiveness studies; develop effective presentations of economic evaluations; and understand the role of economic evaluation in healthcare decision-making and health policy.

PCP512- Clinical Pharmacokinetics: (2+1)

The aims of this module are to enable the students to understand the kinetics of drug absorption, distribution, metabolism and elimination. Different

pharmacokinetic models of different drugs (e.g. antibiotics, cardiovascular medications, antiepileptic, chemotherapy and immunosuppressant) will be discussed. This module prepares the students to utilize dosage individualization of drugs of narrow therapeutic index especially in patients with compromised renal and hepatic function. Specialized software applications will be employed to assess doses, their time intervals and frequency via various routes of administration.

PMB507- Public Health & preventive Medicine: (1+0.5)

The provision of this module defines the framework concept of health and understanding all scientific disciplines required for health education and promotion directed to the community health. Further, it illustrates how diseases occur, spread and transfer. It also includes the fundamentals of epidemiology, communicable and non-communicable diseases and their control. Also, the module explains the significance of immunity and immunization, types of immunological products and their dose schedules. 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 are all topics to be studied. Furthermore, it delineates the principles of disease control and prevention, hospital acquired infection, prevention and control. Besides, students will also gain insight into disinfection and its role in limiting infections and contamination.

PCP513- Entrepreneurship: (2+0)

This module 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 module will teach the

participants a comprehensive set of critical skills needed to develop a profitable business project. This module 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.

PCG506- Applied Pharmacognosy: (2+0)

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

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

PMC510- Quality Control of Pharmaceuticals: (2+0)

This module introduces Quality control & quality assurance of pharmaceuticals, Good Analytical Practice and Sampling: Introduction, Sampling of pharmaceuticals and related materials, Types of sampling tools, Sampling plans, Documentation and its types, Validation and Drug stability studies.

PMC511- Drug Design: (2+1)

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

2) Optional modules (O):

PMCO12- Advanced Pharmaceutical Analysis: (2+1)

This module presents many applications related to analytical methods as water analysis, lipids, cosmetics, food, vitamins, pharmaceuticals and biological samples in addition to principles of method development and new advanced techniques.

PMCO13- Radiopharmaceutical chemistry: (2+1)

This course aims at introducing the students to a basic background of nuclear pharmacy and nuclear medicine. Besides, the course aims at making the students familiar with basics of nuclear chemistry, fundamentals of operating a nuclear pharmacy, the most common clinical applications of nuclear medicine, personnel protection from radiation sources and production, quality control and GMP procedures involved in nuclear pharmacy practice.

PMCO14- Nanochemistry: (2+1)

This course aims at introducing the students to basics of nano-medicine and organometallic chemistry. Besides, the course aims at making the students familiar with basics of metal chemistry, synthesis of metallic nanoparticles, synthesis of polymeric nanoparticles, pharmacokinetics and pharmacodynamics of nanoparticle and clinical applications of nanoparticles.

PBCO04- Molecular Biology & Gene Therapy: (2+1)

This module provides students with basic information about gene therapy as a promising tool for treating various gene dysregulation associated diseases such as cancer. FDA approved drugs for gene therapy will also be discussed. The module also covers a wide range of recent molecular biology tools that have been introduced for DNA manipulation. Genetic mutations and SNPs, chromosomal abnormalities, DNA repair, DNA and RNA extraction and PCR related techniques will be explained.

PCLO09- Biological screening of drug activities: (2+1)

This module develops the appropriate knowledge, skills and understanding of the role and techniques of pharmacological assays in the process of drug discovery. It deals with the biological methods employed in the identification (screening) and quantitative estimation (bioassay) of the different

pharmacological activities of new molecules. The students will understand the theoretical aspects of these assays as well as apply this knowledge to evaluate and criticise the results of published research papers utilising these biological screening methods.

PCLO10- High-Throughput Screening of Drug activities: (2+1)

High-throughput screening (HTS) is a method for scientific experimentation especially used in drug discovery. High-Throughput Screening allows a researcher to quickly conduct millions of chemical, genetic or pharmacological tests. Through this process one can rapidly identify active compounds, antibodies or genes which modulate a particular biomolecular pathway. The results of these experiments provide starting points for drug design and for understanding the interaction or role of a particular biochemical process in biology. A screening facility typically holds a library of stock plates, whose contents are carefully catalogued, and each of which may have been created by the lab or obtained from a commercial source.

PCLO11- Evaluation of Safety of Drugs: (2+1)

This module will deal with all required preclinical experimental studies performed on new investigational drugs and chemicals. This include acute, dermal, sub-acute, chronic toxicity tests including testing for mutagenic, teratogenic and carcinogenic potential of chemicals and drugs.

PCLO12- Neuroscience-1: (2+1)

The module describes how the brain works and how much there is still to learn. Its study involves scientists and medical doctors from many disciplines, ranging from molecular biology through to experimental psychology, as well as the disciplines of anatomy, physiology and pharmacology as well as neuro

degenerative diseases. Their shared interest has led to a new discipline called neuroscience – the science of the brain.

PCLO13- Neuroscience-2: (2+1)

This module complements Neuroscience-I. It discusses how the brain develops; especially clear insights have emerged in recent years by virtue of the genetic revolution. Special focus is also given to elucidating various mechanisms of plasticity, the neurobiology of memory and learning as well as the information retrieval. Shedding light upon the brain-immune system interactions, besides how the brain generates a coordinated chemical response to stress. Explaining the importance of the sleep/wake cycle as one of a number of rhythmic activities of the body and brain.

PCTO11- Advanced Drug Delivery and Nanopharmaceuticals: (2+1)

Nanosciences and nanotechnologies are at the forefront of today's science and technology, engineering both matter and living systems at the scale of molecules and atoms. Their unique applications, products, markets and profitable revenue sources can bring new benefits and challenges to both society and economy.

This module explains the differences between Classical and quantum physics that distinguish the different non-intentionally nanomaterials in nature, accordingly describes the physicochemical principles controlling the formulation and performance of nanocarriers. Discusses different methods of preparation & evaluation of nanovesicles, in addition, explains the differences between microcapsules, niosomes, liposomes, silver nanoparticles & nanoemulsions and their applications in Pharmacy, Pharmaceutical industry and regenerative medicine.

PCTO12- Cosmetics: (2+1)

The module aims not only to provide the student a good knowledge about how to formulate different types of cosmetics and cosmeceutical preparations and their applications but also the physiology and pathophysiology behavior behind each condition like acne, cellulite, sun burn, dandruff, hair loss and how these could affect cosmetics products formulation, ingredients and selection.

PCTO13- Veterinary Pharmacy: (2+1)

Prepare students for specialized activity in the field of veterinary pharmacy including General features of Veterinary dosage forms, Routes of veterinary drugs administration, Economic aspects of veterinary drug usage, Health-hygienic aspects of veterinary drug usage, and Biological data on the important animal species. In addition to veterinary dose calculation.

PMBO08- Infection Control and Antimicrobial Stewardship: (2+1)

This module aims to provide students with comprehensive information pertaining to infection control, including the guidelines of how to minimize a healthcare provider's risk for acquiring a communicable disease and identifying the elements of the chain of infection. It will also discuss factors that influence the transmission of infections and describe the procedures for cleaning, disinfecting and sterilizing items used in patient care, in addition it will identify the standard precautions for blood and body fluids and body-substance isolation in hospitals and the associated pharmacist and patient implications. The module is designed also to introduce students to the principles of Antimicrobial Stewardship to facilitate rational antimicrobial selection, stewardship interventions that have been reported in the literature, quality improvement methods, as well as program development, implementation and evaluation.

PMBO09- Biopharmaceuticals and Immunological Products: (2+1)

This module will focus on the pharmaceutical industry and market switching to one with great weight placed on biological products (protein/recombinant protein drugs, and monoclonal antibodies, other immunological products such as whole and partial). This module covers also the biological action, mechanism of action, production (small and large scale), quality assurance and quality control of biological pharmaceutical and immunological products. It emphasizes on their clinical importance and the application of each of these drugs.

PMBO10- Bioinformatics, Genomics, Pharmacogenomics, and Pharmacomicrobiomics: (2+1)

This module covers the basic principles of bioinformatics and sequence analysis, with emphasis on the microbiological and pharmaceutical aspect and application of the field. It places emphasis on the bioinformatics of infectious diseases, tracing epidemics, drug target analysis and computational drug design. This module also covers the emerging fields of genomics and metagenomics, with a pharmaceutical and pharmacological focus. Thus, it covers the principles of DNA sequencing, high-throughput sequencing, genome analysis starting from sequence quality control to pre-processing to assembly and ending with annotation and comparative genomics. The module also includes a module of pharmacogenomics and pharmacomicrobiomics, which are the impact of human genome and microbiome variations, respectively, on drug action, predisposition and toxicity.

PMBO11- Diagnostic microbiology: (2+1)

This module is completely dedicated to diagnostic techniques in a laboratory setting. The module prepares the student to manage and conduct all

possible microbiological, serological and parasitology laboratory tests, with focus on good laboratory practices, quality control and quality assurance.

PCPO14- Health Media: (2+1)

This module offers students the opportunity to critically examine the intersection of the fields of health communication. The module will critically evaluate the impact of communication and media on the health communication process from different perspectives. This Module focuses on the use of mass media to help health workers expand their audience reach, which is crucial considering the fact that face-to-face channels of communication often require too many human resources and reach only a small number of people in large, underserved rural areas.

PCPO15- Personalised Medicine: (2+1)

This module demonstrates an understanding of fundamental Pharmacogenomic concepts and nomenclature, an understanding of how genetic variation contributes to inter-individual variability in drug pharmacokinetics, pharmacodynamics, and adverse effects. The students will obtain pharmacogenomic information via popular web-based resources (e.g., PharmGKB) and they will be able to recommend, evaluate and apply pharmacogenomic testing, when appropriate, to aid in drug and dose selection. Students will critically evaluate the pharmacogenomics literature, including genome-wide association studies and use evidence-based guidelines. Student will educate health care professionals and patients about the indications and clinical utility of pharmacogenomic testing.

PCPO16- Palliative Care: (2+1)

The module will focus on the philosophy and principles of hospice and palliative care that can be integrated across settings to improve symptoms,

management and quality of care through chronic illness and at the end of life. It will also cover pain management, communication strategies and ethical issues that occur at the end-of –life.

PCPO17-Paediatric and geriatric pharmacotherapy: (2+1)

This course includes age-related pharmacokinetic and pharmacodynamic changes in older adults and how to evaluate the pharmacotherapeutic regimens of older adults to support optimal physical and mental function. Identify inappropriate medication prescribing in older adults, recommend appropriate pharmacotherapy for patients with dementia and evaluate the risks and benefits of antipsychotic use in older adults with dementia. Moreover, differentiate among the types of urinary incontinence and recommend appropriate treatments. Recommend appropriate analgesic therapy for older adults with osteoarthritis and discuss the risks and benefits of medication classes used to treat rheumatoid arthritis. Also, this course aims to cover the nutritional requirements in neonates and infants, nutritional disorders, neonatology, infectious diseases in paediatrics, congenital heart diseases, endocrine, neurological, hematologic, renal, and respiratory disorders, paediatric emergencies.