

Faculty of Pharmacy bylaws

**Faculty of pharmacy -The British University in
Egypt**



اللائحة الداخلية لمرحلة بكالوريوس صيدلة

(Pharm D Clinical)

كلية الصيدلة - الجامعة البريطانية في مصر

The British University in Egypt (BUE)

Faculty of Pharmacy

اللائحة الداخلية لبرنامج

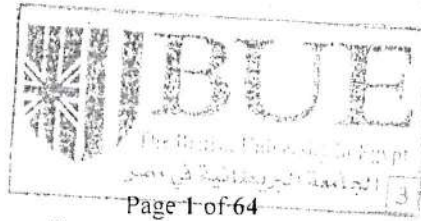
بكالوريوس الصيدلة (فارم دي - Pharm D) (صيدلة إكلينيكية)

Program of Pharm D (Clinical Pharmacy)

طبقاً لنظام النقاط المعتمدة

كلية الصيدلة

الجامعة البريطانية في مصر



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رؤية ورسالة وأهداف كلية الصيدلة - الجامعة البريطانية في مصر

رؤية الكلية:

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

رسالة الكلية:

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

غايات وأهداف الكلية:

الغاية الأولى: زيادة القدرة التنافسية في التعليم الصيدلي

الأهداف الاستراتيجية

- 1- تطوير البرنامج التعليمي بما يتوافق مع المعايير المرجعية الأكاديمية القومية لتحقيق احتياجات سوق العمل.
- 2- تطبيق استراتيجية متطورة للتدريس والتعلم تحقق أهداف البرنامج التعليمي.
- 3- تنمية وتطوير وسائل دعم ورعاية الطلاب والوافدين والخريجين.
- 4- تطوير كفاءة البنية الأساسية والإمكانيات المادية للكلية.
- 5- تطبيق نظم جودة التعليم لتحسين وتطوير الوضع التنافسي للكلية.

الغاية الثانية: الارتقاء بمستوى أداء الموارد البشرية

الأهداف الاستراتيجية

- 1- تحقيق كفاءة نظام القيادة والإدارة في ظل هيكل تنظيمي مكتمل وملامح لأنشطة الكلية.
- 2- ضمان كفاية وكفاءة أعضاء هيئة التدريس والهيئة المعاونة والجهاز الإداري.

الغاية الثالثة: الابتكار في البحث العلمي واستحداث برامج الدراسات العليا

الأهداف الاستراتيجية

- 1- تحقيق التميز وزيادة فاعلية البحث العلمي لحل المشاكل المجتمعية.
- 2- دعم الإنتاج البحثي والأنشطة العلمية المتنوعة.
- 3- استحداث برامج الدراسات العليا بالكلية وفق احتياجات سوق العمل.

الغاية الرابعة: تعزيز المشاركة المجتمعية وتنمية البيئة

الأهداف الاستراتيجية

- 1-التوسع في مجال خدمة المجتمع وتنمية البيئة.
- 2- زيادة فاعلية مشاركة الأطراف المجتمعية في أنشطة الكلية المختلفة.

الأقسام العلمية بالكلية:

تتكون الكلية من عدد (5) من الأقسام العلمية تشمل جميع تخصصات التعليم الصيدلي بما يضمن تحقيق المعايير الأكاديمية المرجعية المتبناه ومواكبة متطلبات سوق العمل الصيدلي بجميع مجالاته على المستوى المحلي والإقليمي. وتتمثل الأقسام العلمية بالكلية في الآتي:

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

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

Program of Pharm D (Clinical Pharmacy)

- تتضمن الدراسة بالبرنامج على مقررات دراسية متطورة تهدف لإكساب الطالب مهارات دراسية متنوعة ومواكبة تطورات سوق العمل الصيدلي. ويمكن تقسيم المقررات الدراسية بالبرنامج كالتالي:
 1. مقررات دراسية عامة تحقق متطلبات المرحلة الجامعية الأولى.
 2. مقررات دراسية للعلوم الأساسية الصيدلانية والطبية.
 3. مقررات دراسية متخصصة في علوم الصيدلة والصيدلة الإكلينيكية والعلوم الطبية ذات الصلة.
- تطبيق استراتيجيات 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.
- تم تصميم البرنامج بحيث يسمح للطالب ممارسة مهنة الصيدلة في أي من مجالات العمل الصيدلي مع إتاحة الفرصة للطالب التركيز على مجال العمل التخصصي الذي يرغب التوظيف به بعد التخرج من خلال المقررات الاختيارية في المراحل النهائية للبرنامج مجال التدريب ومشروع التخرج.
- تصميم برنامج سنة الامتياز (التدريب التخصصي) في شكل دورات تدريبية بشكل دوري تناوبي ليتمكن الطالب من التدريب في العديد من مجالات الصيدلة الإكلينيكية المختلفة كما يشمل دورة تدريبية واحدة في مجال صناعة الدواء (التصنيع - الرقابة والتنظيم الدوائي-... إلخ) 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.
- يشتمل البرنامج على تدريب ميداني أولي لمدة 100 ساعة تدريب فعلية في الصيدليات الأهلية والحكومية وصيدليات المستشفيات تتم خلال العطلات الصيفية لسنوات الدراسة بعد نهاية المستوى الثالث.
- أماكن التدريب: المستشفيات الحكومية والخاصة بأقسامها المختلفة والمراكز الطبية ومراكز الدراسات الإكلينيكية ومراكز البحوث الصيدلانية والطبية والإتاحة الحيوية والدراسات السريرية وتخصص دورة واحدة للتدريب في مجال الممارسات الصيدلانية الأخرى مثل شركات ومصانع الأدوية البشرية والبيطرية والمستلزمات والأجهزة الطبية ويمكن لمن يرغب في التخصص في المجال الأكاديمي (التدريس والبحث) قضاء فترة تدريبية في كليات الصيدلة ومراكز البحوث.
- المسار المهني ومجالات العمل: يمكن لخريج هذا البرنامج العمل في مجال الصيدلة الإكلينيكية وأي من المجالات الصيدلانية الأخرى ويمكنه العمل في مجال التخصص (الذي اختاره خلال فترة الامتياز ومشروع التخرج) لمدة عام/عامين ليصبح بعدها صيدلي متخصص في أحد التخصصات المهنية (التخصصات الإكلينيكية المختلفة بالإضافة إلى أي من مجالات الممارسة الصيدلانية المختلفة بما في ذلك العمل في الصيدليات الأهلية أو الحكومية، ويمكنه العمل في المجال الأكاديمي (تدريس وبحث علمي) وتؤهله للعمل بالمسار الأكاديمي (ماجستير ودكتوراه)

رؤية ورسالة وأهداف برنامج بكالوريوس الصيدلة (فارم دي - Pharm D) (صيدلة إكلينيكية)

رؤية البرنامج:

تحقيق التميز العلمي والتطوير المستمر لخدمة المنظومة الصحية العلاجية والوصول لمكانة مرموقة عالمياً في مجال الصيدلة الإكلينيكية.

رسالة البرنامج:

المساهمة في رفع كفاءة المنظومة الصحية على المستوى المحلي والإقليمي من خلال إعداد كوادر من الصيادلة المؤهلين بأحدث المفاهيم الصيدلانية والإكلينيكية التي تمكنهم من التعامل مع الفريق الطبي في المستشفيات وأيضاً تقديم الخدمات الصيدلانية بمستوى متميز من المهارة والاحتراف بالصيدليات العامة والخاصة وشركات الأدوية ومعامل الرقابة الدوائية وتحليل الأغذية بالإضافة إلى العمل في مجال الإعلام والتسويق الدوائي والمشاركة الفعالة في البحث العلمي من خلال مراكز البحوث والجامعات لخدمة المجتمع.

أهداف البرنامج:

- ترسيخ أهمية دور الصيدلي في تقديم الرعاية الصحية المناسبة للمريض بداخل المستشفيات وخارجها من خلال متابعة النظام الدوائي له ودراسة مبادئ حركية الدواء الإكلينيكية وتطبيقاتها في العلاج في الحالات المرضية المختلفة وإيجاد الأنظمة العلاجية المناسبة وذلك بالتعاون مع الطبيب المعالج مما ينتج عنه تحسين الرعاية الصحية للمرضى وتقليل مخاطر وتفاعلات الأدوية.
- تخريج صيدلي متميز مؤهل للعمل بالصيدليات العامة والخاصة وشركات الأدوية ومعامل الرقابة الدوائية وتحليل الأغذية والعمل في مجال الإعلام والتسويق الدوائي والبحوث والعمل الأكاديمي.
- زيادة القدرة التنافسية لخريجي البرنامج على المستوى المحلي والإقليمي من خلال تطبيق وسائل تدريس وتعلم مواكبة لمتطلبات سوق العمل ومن خلال زيادة فرص التدريب والممارسة الفعلية لمجالات مهنة الصيدلة.
- المشاركة في خدمة المجتمع وتنمية البيئة وتوفير عائد اقتصادي ملموس من خلال ترشيد استخدام الأدوية في المستشفيات وزيادة الوعي لدى المواطنين وتطوير أبحاث وصناعة الدواء.

التعليم الصيدلي من خلال التعليم التفاعلي والاهتمام 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) (صيدلة إكلينيكية) Program of Pharm D (Clinical Pharmacy) طبقاً لنظام النقاط المعتمدة.

مادة (2): التأهيل للدرجات الأكاديمية الأعلى

تعتبر درجة بكالوريوس الصيدلة (فارم دي- Pharm D) (صيدلة إكلينيكية) 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 أو في كليات مناظرة.

مادة (3): نظام الدراسة

- مدة الدراسة بالبرنامج خمس سنوات دراسية (خمس مستويات دراسية على عشر فصول دراسية) طبقاً لنظام النقاط المعتمدة وسنة امتياز (تدريب تخصصي) في مواقع العمل (5+1). بالإضافة إلى عدد 100 ساعة تدريب ميداني أولي في الصيدليات الأهلية والحكومية والمستشفيات وشركات ومصانع الأدوية تتم خلال عطلات منتصف ونهاية العام الدراسي وذلك 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 يمكن توضيح حساب النقاط المعتمدة وما يقابلها من ساعات معتمدة كالتالي:

10 نقطة معتمدة = 3 ساعة معتمدة ، 5 نقطة معتمدة = 1.5 ساعة معتمدة

- يجوز لمجلس الكلية بعد أخذ رأي القسم العلمي المختص وحسب طبيعة المقررات الدراسية أن يقرر تدريس مقرر أو أكثر بنمط التعليم الهجين، بحيث تكون الدراسة في المقرر بنسبة 50% وجهاً لوجه - مخصصة لمناقشة الطلاب الجاهل أن النقطة - وبنسبة 50% بنظام التعليم عن بعد - مخصصة للمحاضرات

والدروس النظرية - أو بأي نسبة أخرى، وذلك وفقاً لمكونات المقرر الدراسي باللائحة الداخلية، على أن يتم عرض ذلك على مجلس شئون التعليم والطلاب بالجامعة للموافقة عليه ورفعها إلى مجلس الجامعة لاعتماده.

مادة (4): تصميم البرنامج الدراسي

تم تصميم البرنامج الدراسي بحيث يشمل أساليب تدريس وتعلم متنوعة تتمثل في: المحاضرات النظرية وحلقات النقاش والدروس العملية والإكلينيكية 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 للبرنامج **570** نقطة معتمدة بما يعادل **171** ساعة معتمدة تتضمن هذه النقاط (30 نقطة معتمدة بما يعادل 9 ساعات معتمدة) مخصصة لعدد أربعة من المقررات الاختيارية. بالإضافة إلى متطلبات الجامعة والتي تمثل **20** نقطة معتمدة بما يعادل **6** ساعات معتمدة.

ثانياً: تم وضع وصف ومحتوى المقررات الدراسية (Module description & content) من خلال الأقسام العلمية بالكلية طبقاً للمعايير القومية الأكاديمية المرجعية للتعليم الصيدلي الإصدار الثاني **NARS 2017**.

ثالثاً: تم تصميم المقررات الاختيارية للطالب في المستويين الرابع والخامس بحيث تحقق له جدارات ومهارات تساعده على التوجيه المهني والتخصصي.

رابعاً: هذا بالإضافة إلى **100** ساعة فعلية تدريب ميداني أولي يبدأ بنهاية المستوى الثالث وقبل البدء في سنة الامتياز.

خامساً: 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 للانتهاء من المواد الدراسية المقررة له، وتوزع إلى **55-60** نقطة معتمدة (بما يعادل **16.5-18** ساعة 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 اللجان المختصة بالإشراف على البرنامج التعليمي

بالنسبة لكل مقرر ويتم تقييم الطلبة من جانب ممتحنين داخليين وخارجيين 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 والإكلينيكية، 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 لجميع المقررات الدراسية ما لم يذكر خلاف ذلك في توصيف المقرر.

مادة (8): التدريب الميداني

أ-التدريب الميداني الأولي (الصيفي):

- على الطالب أن يكمل فترة تدريب ميداني أولي بإجمالي عدد 100 ساعة تدريب فعلية في الصيدليات الأهلية والحكومية والمستشفيات وشركات ومصانع الأدوية والجهات البحثية التي يقرها مجلس الكلية وذلك تحت إشراف عضو من أعضاء هيئة التدريس بالكلية ويتم التدريب خلال عطلات نهاية ومنتصف العام الدراسي وذلك 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 داخل مستشفيات تقوم بتطبيق ممارسة الصيدلة الإكلينيكية، وتخصص دورة واحدة للتدريب في مجال صناعة الدواء (التصنيع - الرقابة الدوائية - التسويق... الخ) ويشتمل التدريب على برنامج تدريبي متكامل وممنهج بطريقة دورية تناوبية مسجلة بالساعات والمهام التدريبية وتحت إشراف دقيق من الكلية وجهة التدريب. كما يقدم الطالب مشروع تخرج في تخصص معين يساهم في تمهيد وإعداد الطالب للتوجه لهذا التخصص.
- تم تصميم البرنامج التدريبي ليشتمل على تخصصات إكلينيكية مختلفة (مثل: أمراض القلب - السرطان - الأمراض النفسية والعصبية - التغذية - العناية الفائقة - وحدة معلومات الدواء - اقتصاديات الدواء - الأبحاث السريرية....) حسب إمكانيات الجامعة وأولويات الاحتياجات المجتمعية. (يتم إعداد لائحة تفصيلية خاصة ببرنامج تدريب سنة الامتياز كملحق لهذه اللائحة).

مادة (9): شروط القبول بالبرنامج

يشترط فيمن يتقدم للالتحاق بالبرنامج أن يستوفي كافة الشروط التي يحددها المجلس الأعلى للجامعات واللائحة الداخلية للجامعة البريطانية في مصر. 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 Undergraduate Academic Regulations). ولا يكون الطالب ناجحاً في أي مقرر

إلا إذا حصل على 30% من درجة الامتحان التحريري النهائي، وتكون النسبة المئوية للدرجات النهائية والتقدير كما هو مبين بالجدول التالي:

نظام التقييم

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

- يتم احتساب التقدير العام للطالب لكل مستوى من خلال متوسط علامات كل مقرر لهذا المستوى مناسبة وفقاً لقيمة النقاط المعتمدة الخاصة بها.

مع مراعاة ألا يزيد تقدير الطالب على مقبول (D^+ 60%) في جميع المقررات الذي سبق أن رسب فيه أو تغيب عنه بعذر غير مقبول (عدا مقررات اللغة الانجليزية والرياضيات يحصل الطالب على مقبول D^- 50%)، 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 ألا يقل التقدير العام في أي مستوى من مستويات 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 مستوى، على أن لا يعتد بها عند ترتيب الطالب.

- حساب النسبة المئوية (الفصل/للعام/المجموع التراكمي الكلي) = weighted average [مجموع (نسبة نجاح كل مقرر \times النقاط المعتمدة للمقرر)] / مجموع النقاط المعتمدة (الفصل/للعام/لكافة الفصول الدراسية) ويتم حساب المعدل التراكمي لكل الفصول وفقاً للجدول السابق.

- يجوز لمجلس الكلية بعد أخذ رأي القسم العلمي المختص وحسب طبيعة المقررات الدراسية أن يقرر عقد الامتحان إلكترونياً في مقرر أو أكثر، كما يجوز عقد الامتحان في كل المقرر أو جزء منه بما يسمح بتصحيحه إلكترونياً. كما يجوز لمجلس الكلية أن يقرر إجراء الامتحانات الشفهية مع الطلاب من خلال المنصات الإلكترونية الرسمية، على أن يتم عرض ذلك على مجلس شئون التعليم والطلاب بالجامعة للموافقة عليه ورفعها إلى مجلس الجامعة لاعتماده.

مادة (11): الحد الأقصى للفرص المتاحة للتقدم للامتحانات

وفقاً لقانون تنظيم الجامعات ولائحته التنفيذية واللائحة الداخلية للجامعة البريطانية في مصر لا يجوز للطلاب أن يبقى في المستوى الأول (السنة الدراسية الأولى) لأكثر من عامين دراسيين. ويجوز لطلاب المستوى الثاني دخول الامتحانات لمدة سنتين منتظمتين وسنة من الخارج. ويجوز لطلاب المستويات الثالثة والرابعة والخامسة دخول الامتحانات لمدة سنتين منتظمتين وسنتين من الخارج ويستثنى من ذلك طلاب المستوى الخامس (السنة النهائية) الذين اجتازوا نصف عدد المقررات الدراسية الخاصة بالفرقة النهائية حيث يرخص لهم دخول الامتحانات حتى يتم النجاح.

وإذا تخلف الطالب عن دخول الامتحان بعذر قهري يقبله مجلس الكلية فلا يحسب غيابه رسوباً، ويعتبر الطالب المتغيب عن الامتحان بغير عذر مقبول راسباً.

مادة (12): الرسوب في المقررات

- في حالة تغيب الطالب بدون عذر يقبله مجلس الكلية 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.
- إذا رسب الطالب في أي مقرر إجباري أو إختياري فعليه دراسة ذات المقرر حتى ينجح فيه طبقاً للقواعد الأكاديمية بالجامعة (BUE – Undergraduate Academic Regulations).

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 للمستوى الأعلى ب مواد (Trailing)

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

مادة (15): البقاء لإعادة (Repeat)

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

مادة (16): درجات الرأفة (Compensation)

لا يطبق نظام درجات الرأفة لرفع نتيجة الطلاب سواء على مستوى المقررات أو المستويات الدراسية.

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

يتطلب الحصول على درجة بكالوريوس الصيدلة (فارم دي- Pharm D) (صيدلة إكلينيكية) طبقاً لنظام

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 المقررات الاختيارية والتي تمثل عدد 30 نقطة معتمدة (بما يعادل 9 ساعات معتمدة) على الأقل المجموع التراكمي عن 60 % (D+).

ثانياً: اجتياز فترة التدريب الميداني الأولي بإجمالي عدد 100 ساعة تدريب فعلية في الصيدليات الأهلية والحكومية والمستشفيات ومصانع وشركات الأدوية والجهات البحثية التي يقرها مجلس الكلية وذلك تحت إشراف عضو من أعضاء هيئة التدريس بالكلية ويتم التدريب خلال عطلات نهاية ومنتصف العام الدراسي وذلك بعد نهاية المستوى الثالث. 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 اللائحة الداخلية للجامعة البريطانية في مصر وفقاً لقانون تنظيم الجامعات المصرية ولائحته التنفيذية.

مادة (19): أكواد وتوزيع المقررات الدراسية بالبرنامج التعليمي (مرفق 1).

مادة (20): الخطة الدراسية (مرفق 2).

مادة (21): وصف المحتوى العلمي للمقررات الدراسية (مرفق 3).

مادة (22): تحديث المقررات الدراسية

يجوز لمجلس الكلية الموافقة على تحديث نسبة لا تتجاوز 20 % من محتوى المقررات الدراسية بناءً على اقتراح مجلس القسم العلمي المعني - بعد إبداء المبررات - وبموافقة اللجان المختصة بالإشراف على البرنامج التعليمي ومجلس الجامعة.

مادة (23): طرح المقررات الاختيارية

يقوم مجلس الكلية بطرح المقررات الاختيارية المحددة في هذه اللائحة خلال الفصلين الدراسيين للمستوى الرابع والخامس وذلك بعد موافقة مجالس الأقسام المعنية واللجان المختصة بالإشراف على البرنامج. ويمكن

للكلية إضافة مقررات اختيارية أخرى بعد موافقة مجلس الجامعة ووزارة التعليم العالي والبحث العلمي. ويتم طرح المقررات الاختيارية طبقاً لتوافر الإمكانيات البشرية والمادية اللازمة بالأقسام العلمية.

مادة (24): برنامج التدريب لسنة الامتياز

يتم وضع برنامج مفصل لسنة الامتياز (التدريب التخصصي) في شكل دورات تناوبية في أماكن العمل الصيدلي بصورة منهجية تفصيلية (سيقدم كملحق لهذه اللائحة).

مادة (25): تطبيق أحكام اللائحة

تطبق أحكام هذه اللائحة على الطلاب الملتحقين بالكلية عند الموافقة عليها ووفقاً لقرار المجلس الأعلى للجامعات.

مادة (26): أحكام عامة

ما لم يرد به نص في هذه اللائحة تطبق القواعد المعمول بها بالجامعة البريطانية في مصر (- BUE Undergraduate Academic Regulations) وكذلك أحكام قانون تنظيم الجامعات المصرية ولائحته التنفيذية.

مرفق 1

خاص بالمادة (19)

أكواد وتوزيع المقررات الدراسية بالبرنامج التعليمي

Key for Module Abbreviations

PMCcxxx	Pharmaceutical Chemistry
PCLcxxx	Pharmacology
PBCcxxx	Biochemistry
PCTcxxx	Pharmaceutics and Pharmaceutical Technology
PCGcxxx	Pharmacognosy
PMBcxxx	Microbiology
PCPcxxx	Clinical Pharmacy Practice

1. The code is presented as 4 letters and 3 digits.
2. The first letter "P" refers to modules offered to students of Pharmacy only.
3. The second and third letters refer to the specialty that offers the module.
4. The fourth letter "c" refers to the Program of Pharm D (Clinical Pharmacy).
5. The first digit represents the academic year number (1 – 5).
6. The second and third digits represent the module number.

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: Credit Point, CH: The equivalent Credit Hours.

2. Faculty Requirements

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

CR: Credit Point,

CH: The equivalent Credit Hours

3. Core Modules (P)

- Pharmaceutical Chemistry (PMC)

Code	Module	Year/ Semester	CR	CH
PMcC101	Pharmaceutical Analytical Chemistry-1	1/1	10	3
PMcC102	Pharmaceutical Organic Chemistry-1	1/1	10	3
PMcC103	Pharmaceutical Organic Chemistry-2	1/2	10	3
PMcC204	Pharmaceutical Analytical Chemistry-2	2/1	10	3
PMcC205	Instrumental Analysis	2/2	10	3
PMcC206	Pharmaceutical Organic Chemistry-3	2/2	10	3
PMcC307	Medicinal Chemistry-1	3/2	10	3
PMcC408	Medicinal Chemistry-2	4/1	10	3
PMcC509	Quality Control of Pharmaceuticals	5/2	5	1.5
Total	Core		85	25.5

CR: Credit Point

CH: The equivalent Credit Hours

- Pharmacology (PCL)

Code	Module	Year/ Semester	CR	CH
PCLc101	Integrated Body System-1	1/1	10	3
PCLc102	Integrated Body System-2	1/2	10	3
PCLc203	Integrated Body System-3	2/1	10	3
PCLc204	Pharmacology-1	2/2	10	3
PCLc305	Pharmacology-2	3/1	10	3
PCLc306	Pharmacology-3	3/2	10	3
PCLc407	Toxicology	4/1	10	3
PCLc508	Research Methodology & Biostatistics	5/1	10	3
Total	Core		80	24

CR: Credit Point

CH: The equivalent Credit Hours

- Biochemistry (PBC)

Code	Module	Year/ Semester	CR	CH
PBCc201	Biochemistry-1	2/1	10	3
PBCc202	Biochemistry-2	2/2	10	3
PBCc303	Clinical Biochemistry	3/1	10	3
PBCc504	Clinical Nutrition	5/2	5	1.5
Total	Core		35	10.5

CR: Credit Point

CH: The equivalent Credit Hours

- Pharmaceutics & Pharmaceutical Technology (PCT)

Code	Module	Year/ Semester	CR	CH
PCTc101	Pharmacy Orientation, legislation & Ethics	1/1	5	1.5
PCTc102	Physical Pharmacy	1/2	10	3
PCTc203	Pharmaceutics-1	2/1	10	3
PCTc204	Pharmaceutics-2	2/2	10	3
PCTc305	Pharmaceutics-3	3/1	10	3
PCTc406	Biopharmaceutics & Pharmacokinetics	4/1	10	3
PCTc407	Pharmaceutical Technology	4/2	10	3
PCTc408	Dosage Form Design	4/2	10	3
Total	Core		75	22.5

CR: Credit Point

CH: The equivalent Credit Hours

- Microbiology (PMB)

Code	Module	Year/ Semester	CR	CH
PMBc201	General Microbiology and Immunology	2/2	10	3
PMBc302	Pharmaceutical Microbiology	3/1	10	3
PMBc303	Public Health & Preventive Medicine	3/1	5	1.5
PMBc304	Medical Microbiology-1 (Parasitology & Virology)	3/2	10	3
PMBc405	Medical Microbiology-2 (Bacteriology & Mycology)	4/2	10	3
PMBc506	Biotechnology	5/1	5	1.5
Total	Core		50	15

CR: Credit Point

CH: The equivalent Credit Hours.

- Pharmacognosy (PCG)

Code	Module	Year/ Semester	CR	CH
PCGc101	Pharmacognosy-1	1/2	10	3
PCGc202	Pharmacognosy-2	2/1	10	3
PCGc303	Phytochemistry-1	3/1	10	3
PCGc304	Phytochemistry-2	3/2	5	1.5
PCGc505	Phytotherapy & Aromatherapy	5/1	5	1.5
Total	Core		40	12

CR: Credit Point, CH: The equivalent Credit Hours.

- Clinical Pharmacy Practice (PCP)

Code	Module	Year/ Semester	CR	CH
PCPc101	Scientific Thinking & Communication skills	1/2	5	1.5
PCPc102	Human Rights & Fighting Corruption	1/2	5	1.5
PCPc203	Psychology	2/1	5	1.5
PCPc304	First Aid & Basic Life Support (BLS)	3/1	5	1.5
PCPc305	Pharmacotherapy of Cardiovascular Diseases	3/2	10	3
PCPc306	Pharmacotherapy of Respiratory Diseases	3/2	5	1.5
PCPc307	Community Pharmacy Practice	3/2	10	3
PCPc408	Pharmacotherapy of Endocrine and Renal Diseases	4/1	10	3
PCPc409	Pharmacotherapy of Gastrointestinal Diseases	4/1	10	3
PCPc410	Hospital Pharmacy	4/2	10	3
PCPc411	Pharmacotherapy of Neuropsychiatric Diseases	4/2	10	3
PCPc512	Drug Information & Pharmacovigilance	5/1	10	3
PCPc513	Pharmacotherapy of Dermatological, Reproductive and Musculoskeletal Diseases	5/1	10	3
PCPc514	Pharmacotherapy of Pediatric Diseases	5/1	10	3
PCPc515	Entrepreneurship	5/1	5	1.5
PCPc516	Marketing & Pharmacoeconomics	5/2	10	3
PCPc517	Clinical Pharmacokinetics	5/2	10	3
PCPc518	Pharmacotherapy of Oncological Diseases and Radiopharmacy	5/2	10	3
PCPc519	Pharmacotherapy of Critical Care Patients	5/2	5	1.5
PCPc520	Clinical Pharmacy Practice	5/2	10	3
Total	Core		165	49.5

CR: Credit Point, CH: The equivalent Credit Hours.

4- Optional Modules (O)

4- المقررات الاختيارية

The Faculty of Pharmacy offers optional modules from which the students are free to select 30 credit points equivalent to 9 credit hours.

Department	Module Code	Module Title	Year	Credit Hours		
				L	P/T	Total
Pharmaceutical Chemistry	PMcC010	Advanced Pharmaceutical Analysis	4	2	1	3
	PMcC011	Radiopharmaceutical Chemistry	5	1	0.5	1.5
	PMcC012	Nanochemistry	5	1	0.5	1.5
	PMcC013	Drug Design	4	2	1	3
Pharmacology & Biochemistry	PBCc005	Molecular Biology & Gene Therapy	4	2	1	3
	PCLc009	Biological Screening of Drug Activities	4	2	1	3
	PCLc010	High-Throughput Screening of Drug activities	5	1	0.5	1.5
	PCLc011	Evaluation of Safety of Drugs	5	1	0.5	1.5
	PCLc012	Neuroscience-1	4	2	1	3
	PCLc013	Neuroscience-2	5	1	0.5	1.5
Pharmaceutics & Pharmaceutical Technology	PCTc009	Advanced Drug Delivery & Nanopharmaceuticals	4	2	1	3
	PCTc010	Cosmetics	4	2	1	3
	PCTc011	Veterinary Pharmacy	5	1	0.5	1.5
Microbiology & Pharmacognosy	PMBc007	Infection Control & Antimicrobial Stewardship	5	1	0.5	1.5
	PMBc008	Biopharmaceuticals & Immunological Products	5	1	0.5	1.5
	PMBc009	Bioinformatics, Genomics & Pharmacomicrobiomics	5	1	0.5	1.5
	PMBc010	Diagnostic Microbiology	5	1	0.5	1.5
	PCGc006	Aromatherapy & Herbal Cosmetics	5	1	0.5	1.5
Clinical Pharmacy Practice	PCPc021	Health Media	5	1	0.5	1.5
	PCPc022	Precision Medicine	5	1	0.5	1.5
	PCPc023	Palliative Care	4	2	1	3

L: Lecture, P: Practical, T: Tutorial

Table (2)

Semester (2)

المستوى الأول

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
PMCC103	Pharmaceutical Organic Chemistry-2	2	1	3	10	15	25	50	10	100	2
PCGC101	Pharmacognosy-1	2	1	3	10	15	25	50	10	100	2
PCTc102	Physical Pharmacy	2	1	3	10	15	25	50	10	100	2
PCLc102	Integrated Body System-2	2	1	3	10	15	25	60	-	100	2
PCPc101	Scientific Thinking & Communication Skills	1 + 1*	-	1.5	5	25	-	75	-	100	2
PCPc102	Human Rights & 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 (1)

المستوى الثاني

Code	Module title	Credit Hours			Credits	Examination Marks %				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PCPc203	Psychology	1	0.5	1.5	5	15	25	60	-	100	2
PBCc201	Biochemistry-1	2	1	3	10	15	25	50	10	100	2
PCTc203	Pharmaceutics-1	2	1	3	10	15	25	50	10	100	2
PCGc202	Pharmacognosy-2	2	1	3	10	15	25	50	10	100	2
PCLc203	Integrated Body System-3	2	1	3	10	15	25	60	-	100	2
PMCc204	Pharmaceutical Analytical Chemistry-2	2	1	3	10	15	25	50	10	100	2
Total	6			16.5	55						

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

Table (4)

Semester (2)

المستوى الثاني

Code	Module title	Credit Hours			Credits	Examination Marks %				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PCLc204	Pharmacology-1	2	1	3	10	15	25	50	10	100	2
PMBc201	General Microbiology & Immunology	2	1	3	10	15	25	50	10	100	2
PMcC205	Instrumental Analysis	2	1	3	10	15	25	50	10	100	2
PCTc204	Pharmaceutics-2	2	1	3	10	15	25	50	10	100	2
PBCc202	Biochemistry-2	2	1	3	10	15	25	50	10	100	2
PMcC206	Pharmaceutical Organic Chemistry-3	2	1	3	10	15	25	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 (1)

المستوى الثالث

Code	Module title	Credit Hours			Credits	Examination Marks %				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PMBc302	Pharmaceutical Microbiology	2	1	3	10	15	25	50	10	100	2
PCGc303	Phytochemistry-1	2	1	3	10	15	25	50	10	100	2
PBCc303	Clinical Biochemistry	2	1	3	10	15	25	50	10	100	2
PCLc305	Pharmacology-2	2	1	3	10	15	25	50	10	100	2
PCTc305	Pharmaceutics-3	2	1	3	10	15	25	50	10	100	2
PMBc303	Public Health & Preventive Medicine	1	0.5	1.5	5	15	25	60	-	100	2
PCPc304	First Aid & Basic Life Support (BLS)	1	0.5	1.5	5	15	25	60	-	100	2
Total	7			18	60						

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

Table (6)
Semester (2)
المستوى الثالث

Code	Module title	Credit Hours			Credits	Examination Marks %				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PMBc304	Medical Microbiology-1 (Parasitology & Virology)	2	1	3	10	15	25	50	10	100	2
PMc307	Medicinal Chemistry-1	2	1	3	10	15	25	50	10	100	2
PCPc305	Pharmacotherapy of Cardiovascular Diseases	2	1	3	10	15	25	50	10	100	2
PCPc306	Pharmacotherapy of Respiratory Diseases	1	0.5	1.5	5	15	25	50	10	100	2
PCGc304	Phytochemistry-2	1	0.5	1.5	5	15	25	50	10	100	2
PCLc306	Pharmacology-3	2	1	3	10	15	25	50	10	100	2
PCPc307	Community Pharmacy Practice	2	1	3	10	15	25	60	-	100	2
Total	7			18	60						

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

Table (7)
Semester (1)
المستوى الرابع

Code	Module title	Credit Hours			Credits	Examination Marks %				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PCLc407	Toxicology	2	1	3	10	15	25	50	10	100	2
PCTc406	Biopharmaceutics & Pharmacokinetics	2	1	3	10	15	25	50	10	100	2
PCPc408	Pharmacotherapy of Endocrine and Renal Diseases	2	1	3	10	15	25	50	10	100	2
PCPc409	Pharmacotherapy of Gastrointestinal Diseases	2	1	3	10	15	25	50	10	100	2
PMCc408	Medicinal Chemistry-2	2	1	3	10	15	25	50	10	100	2
PXXcO??	Optional-1	2	1	3	10	15	25	60	-	100	2
Total	6			18	60						

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

Table (8)
Semester (2)
المستوى الرابع

Code	Module title	Credit Hours			Credits	Examination Marks %				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PMBc405	Medical Microbiology-2 (Bacteriology & Mycology)	2	1	3	10	15	25	50	10	100	2
PCTc407	Pharmaceutical Technology	2	1	3	10	15	25	50	10	100	2
PCPc410	Hospital Pharmacy	2	1	3	10	15	25	60	-	100	2
PCTc408	Dosage Form Design	2	1	3	10	15	25	50	10	100	2
PCPc411	Pharmacotherapy of Neuropsychiatric Diseases	2	1	3	10	15	25	50	10	100	2
PXXcO??	Optional-2	2	1	3	10	15	25	60	-	100	2
Total	6			18	60						

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

Table (9)
Semester (1)
المستوى الخامس

Code	Module title	Credit Hours			Credits	Examination Marks %				Total Marks	Final Exam. Hours
		L	P/T	Total		CW	P/T	U	O		
PCPc512	Drug Information & Pharmacovigilance	2	1	3	10	15	25	50	10	100	2
PMBc506	Biotechnology	1	0.5	1.5	5	15	25	60	-	100	2
PCGc505	Phytotherapy & Aromatherapy	1	0.5	1.5	5	15	25	50	10	100	2
PCPc513	Pharmacotherapy of Dermatological, Reproductive and Musculoskeletal Diseases	2	1	3	10	15	25	50	10	100	2
PCPc514	Pharmacotherapy of Pediatric Diseases	2	1	3	10	15	25	50	10	100	2
PCPc515	Entrepreneurship	1 + 1*	-	1.5	5	25	-	75	-	100	2
PCLc508	Research Methodology & Biostatistics	2	1	3	10	15	25	60	-	100	2
PXXcO??	Optional-3	1	0.5	1.5	5	15	25	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.

Table (10)
Semester (2)
المستوى الخامس

Code	Module title	Credit Hours			Credits	Examination Marks %				Total Marks	Final Exam Hours
		L	P/T	Total		CW	P/T	U	O		
PCPc516	Marketing & Pharmacoeconomics	2	1	3	10	15	25	60	-	100	2
PCPc517	Clinical Pharmacokinetics	2	1	3	10	15	25	50	10	100	2
PBCc504	Clinical Nutrition	1 + 1*	-	1.5	5	25	-	75	-	100	2
PCPc518	Pharmacotherapy of Oncological Diseases and Radiopharmacy	2	1	3	10	15	25	50	10	100	2
PCPc519	Pharmacotherapy of Critical Care Patients	1	0.5	1.5	5	15	25	60	-	100	2
PCPc520	Clinical Pharmacy Practice	2	1	3	10	15	25	60	-	100	2
PMCc509	Quality Control of Pharmaceuticals	1 + 1*	-	1.5	5	25	-	75	-	100	2
PXXcO??	Optional-4	1	0.5	1.5	5	15	25	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)

وصف المحتوى العلمي للمقررات الدراسية

1. Core Modules Content

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.

PMCC101 Pharmaceutical Analytical Chemistry-1: (2+1)

Introduction to general chemistry, types of chemical reactions, electrolytes, equilibrium, calculations of concentrations of substances, stoichiometry, analysis of anions, analysis of cations and analysis of mixture of anions and cations are all topics to be studied in this module.

PMCc102 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 (S_N1 , S_N2 , E_1 , E_2), and aryl halides, alcohols, phenols, ethers and epoxides.

PCLc101 Integrated Body System-1 : (2+1)

This module introduces human anatomy, physiology, pathophysiology and medical terminology to students as integrated body system-1.

The aspect of this 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-defense 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.

PCTc101 Pharmacy Orientation, Legislation & Ethics: (1+1*)

The first part of the module is 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

The second part of the module will give 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.

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.

PMCc103 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 pharmaceutical organic chemistry-1. 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.

PCGc101 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 and 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.

PCTc102 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 behaviour of dosage forms.

PCLc102 Integrated Body System-2 : (2+1)

This module introduces human anatomy, physiology, pathophysiology and medical terminology to students as integrated body system-2. The aspect of this 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.

PCPc101 Scientific Thinking & Communication Skills: (1+1*)

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 their 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.

PCPc102 Human Rights & Fighting Corruption: (1+1*)

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.

PCPc203 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.

PBCc201 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.

PCTc203 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.

PCGc202 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 will learn to identify examples of these drugs in their entire and powdered forms. Students will learn about the major constituents, folk uses, clinically proven uses, benefits, precautions of those medicinal plants and possible herbal-drug interactions of selected examples of these drugs.

PCLc203 Integrated Body System-3 : (2+1)

This module introduces human anatomy, physiology, pathophysiology and medical terminology to students as integrated body system-3.

The aspect of this 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 systems. 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.

PMCc204 Pharmaceutical Analytical Chemistry-2: (2+1)

This module explains acid-base theory, titration curves, indicators, and applications. The precipitometric titrations, solubility product principle, titration curves and Mohr's method will be studied. The module will introduce Volhard's method, Fajans' method and pharmaceutical applications. Complexometric titrations and oxidation-reduction titrations (electrical properties of redox systems, Nernst equation factors affecting oxidation potential, redox titration curves, pharmaceutical application on redox reaction) will also be explained.

PCLc204 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.

PMBc201 General Microbiology and Immunology: (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, function and 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 of microbial growth, cultivation and reproduction. The module also includes 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 emphasis on host parasite relationship, non-specific and specific immunity, mechanism of protective immunity. In addition to molecular and cellular immunology, including antigen and antibody structure, function and reaction between them, effector mechanisms, complement, and cell mediated immunity. Other topics introduced include active and passive immunization, hypersensitivity, in-vitro antigen antibody reactions, immunodeficiency disorders, autoimmunity and auto-immune diseases and organs

transplantation. In addition, the module will introduce students to the different serological reactions.

PMCc205 Instrumental Analysis: (2+1)

This module introduces Electrochemistry (potentiometry, conductometry), spectroscopic methods of analysis which include uv/vis spectroscopy, its principal, instrumentation, factors affecting absorption and applications in pharmaceutical analysis. This module will also cover fluorimetric methods, principal instrumentation, factors affecting fluorescence intensity and applications in pharmaceutical analysis. Atomic spectroscopy; principal and instrumentation will also be introduced. This module describes the chromatographic methods for analytical chemistry which includes: TLC, gel chromatography, column chromatography, HPLC, UPLC, TLC, gas chromatography and capillary electrophoresis.

PCTc204 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). It also describes the principles of sterile products. It also concerns with radio pharmaceuticals.

PBCc202 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.

PMCc206 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.

PMBc302 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.

PCGc303 Phytochemistry-1: (2+1)

Based on complementary medicine and naturopathic medicine, Egyptian medicinal plants rich in carbohydrates, glycosides, and volatile oils that can be used as natural therapies in the form of extracts, bioactive raw materials and phytochemical standards to serve the pharmaceuticals, cosmetics and food industries in Egypt will be illustrated. The module aims to gain the students the knowledge and experience that enable them to understand, describe and recognize the chemistry and pharmaceutical uses of carbohydrates, glycosides and volatile oils of plant or animals as well as techniques for their preparation, isolation, identification and determination from their respective sources. In addition, special emphasis on the biosynthesis of the different classes is also concerned. Moreover, their application in medicine and pharmaceutical industries. Clinical applications will be correlated with various clinical analyses.

PBCc303 Clinical Biochemistry: (2+1)

The aim of this module is 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, tumor markers, electrolytes, blood gases and acid-base balance with inclusion of various case studies. Students will also be 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.

PCLc305 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.

PCTc305 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. It also concerns with principle of aerosols.

PMBc303 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.

PCPc304 First Aid & 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.

PMBc304 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, the module also covers 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.

PMCC307 Medicinal Chemistry-1: (2+1)

This module introduces the chemistry and the basis of structural activity relationship of autonomic nervous system drugs, cardiovascular drugs. CNS drugs and opioid analgesics, neurodegenerative disorder drugs antihistamines local anesthetics non-steroidal (NSAIDs) and other drugs controlling pain and inflammation will also be studied.

PCPc305 Pharmacotherapy of Cardiovascular Diseases: (2+1)

This module aims to provide the student with the knowledge in epidemiology, etiology, pathophysiology, clinical manifestation, investigations, treatment, monitoring, and patient counseling of cardiovascular disorders including dyslipidemias, hypertension, coronary artery disease, acute coronary syndromes, heart failure, dysrhythmias, thromboembolic disorders, and stroke.

PCPc306 Pharmacotherapy of Respiratory Diseases: (1+0.5)

This module aims to provide the student with the knowledge in epidemiology, etiology, pathophysiology, clinical manifestation, investigations, treatment, monitoring, and patient counseling of bronchial asthma, chronic obstructive pulmonary disease, pulmonary hypertension, cystic fibrosis, upper and lower respiratory tract infections, and drug-induced respiratory problems.

PCGc304 Phytochemistry-2: (1+0.5)

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.

PCLc306 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.

PCPc307 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.

PCLc407 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. Postmortem sampling for detection of poisons, methods of detection, interpretation of results are also covered.

PCTc406 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.

PCPc408 Pharmacotherapy of Endocrine and Renal Diseases: (2+1)

This module aims to provide the student with the knowledge in epidemiology, etiology, pathophysiology, clinical manifestation, investigations, treatment, monitoring, and patient counseling of different endocrinology disorders (Diabetes, thyroid disorder, Cushing syndrome). Moreover, it will provide information about different renal disorders and related fluid and electrolyte disturbances (acute and chronic renal failure, uremic syndrome, kidney stones...). The module develops the students' ability to design, monitor, refine safe and cost-effective treatment plans and provide appropriate information to patient, caregivers, and health professionals.

PCPc409 Pharmacotherapy of Gastrointestinal Diseases: (2+1)

The aims of this module are to enable the students to understand hepatic disorders including viral hepatitis, pancreatitis, gastrointestinal bleeding, peptic ulcer, gastro-esophageal reflux disease, inflammatory bowel diseases and irritable bowel syndrome as well as gastrointestinal symptoms including nausea, vomiting, constipation, and diarrhea.

PMcC408 Medicinal Chemistry-2: (2+1)

This module provides information about the chemistry and the bases of structural activity relationship of antibiotics and antimicrobials, chemotherapeutic agents including antifungal, antiviral, antiparasitic, and anticancer agents. Moreover, PPIs and other GIT drugs, steroid hormones, endocrine related drugs (Diabetes, thyroid, ... etc) will also be studied.

PMBc405 Medical Microbiology-2 (Bacteriology & 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.

PCTc407 Pharmaceutical Technology: (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.

PCPc410 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.

PCTc408 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 modeling. It also covers the application of polymers and excipients to solve problems/issues concerning the optimization of absorption, selective transport, and targeting.

PCPc411 Pharmacotherapy of Neuropsychiatric Diseases: (2+1)

This module aims to provide the student with the knowledge in epidemiology, etiology, pathophysiology, clinical manifestation, investigations, treatment, monitoring, and patient counseling of neuropsychiatric diseases (dissociative disorders, mental health disorders, schizophrenia, depression, anxiety, seizure disorders, parkinsonism, migraines, dementia and Alzheimer's disease). Also, it will cover the appropriate use of sedative and hypnotics, general anesthetics, and opioid analgesics.

PCPc512 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.

PMBc506 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 focusing on their uses in the medical field.

PCGc505 Phytotherapy & 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 the Egyptian market.

PCPc513 Pharmacotherapy of Dermatological, Reproductive and Musculoskeletal Diseases: (2+1)

The aims of this module are to enable the students to understand skin structure and function, primary and secondary lesions, most popular skin diseases; infective and non-infective types and their differentiation. Sexually transmitted diseases, male infertility, and women health, as well as musculoskeletal disorders are also included.

PCPc514 Pharmacotherapy of Pediatric Diseases: (2+1)

The aims of this module are to enable the students to understand the nutritional requirements in neonates and infants, nutritional disorders, neonatology, infectious diseases in pediatrics, congenital heart diseases,



endocrine, neurological, hematologic, renal, and respiratory disorders, pediatric emergencies.

PCPc515 Entrepreneurship: (1+1*)

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.

PCLc508 Research Methodology & Biostatistics: (2+1)

This module aims 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.





PCPc516 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. This module will outline the process of designing, launching and running a new business. 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. 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 to 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 modeling 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.



PCPc517 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.

PBCc504 Clinical Nutrition: (1+1*)

In this module the students will understand the relationship between nutrition and human wellbeing and how to develop a healthy lifestyle. The module will cover the different types of macronutrients and micronutrients and their recommended daily allowance (RDA) and how they provide the body energy needs and their role in health and disease. Students will be acquainted with the basal metabolic rate (BMR) and the difference between nutritional and caloric values, along with the food pyramid. Students will learn how to nutritionally manage problematic weight, diabetic, hepatic, renal, cardiovascular, and cancer patients. The assessment and nutritional management of ICU patients as well as the principles of the use of various nutrition supplements in different clinical situations will be covered. By the end of this module, students will learn how to deal with complicated and advanced cases to achieve the best results in disease management.

A detailed description of how counseling and behavior modification can affect nutrition in different situations is also explained. The nutritional needs of different critical life cycle stages are examined, such as maternal nutrition throughout pregnancy and lactation, as well as the pediatric and the geriatric stage. The role of nutritional support in different sports and physical activities is recognized and examined. Guidelines for dietary planning are also explained and discussed.

PCPc518 Pharmacotherapy of Oncological Diseases and Radiopharmacy: (2+1)

The aims of this module are to enable the students to understand cancer etiology, risk factors, cancer staging and grading, diagnosis, prognosis, optimizing chemotherapeutic regimens, different types of tumours and their management, toxicities of chemotherapy, supportive treatment, pharmaceutical care and patient's support measures (nutritional and psychological support). This module also includes studying radioactive isotopes which process medical applications and precautions of their usage.

PCPc519 Pharmacotherapy of Critical Care Patients: (1+0.5)

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



PCPc520 Clinical Pharmacy Practice: (2+1)

The aim of this module is to promote the standards of professionalism in pharmacy practice and to educate students about various aspects of patient-centered pharmaceutical care including performing different pharmacy practice-related calculations, physical examination and diagnostic procedures, drug administration techniques, adherence and compliance issues, managing adverse drug reactions and allergies, clinical drug monitoring, patient counseling, pain management and immunizations. It will also provide information about principles of special care populations, drug-related problems, drug interactions and interpretation of clinical laboratory data and physical examination.

PMCc509 Quality Control of Pharmaceuticals: (1+1*)

Quality control & quality assurance of pharmaceuticals, good analytical practice and sampling; sampling of pharmaceuticals and related materials, types of sampling tools, sampling plans, documentation and its types, validation and drug stability studies are all topics to be studied in this module.



2. Optional Modules:

PMCcO10 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.

PMCcO11 Radiopharmaceutical Chemistry: (1+0.5)

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.

PMCcO12 Nanochemistry: (1+0.5)

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.

PMCcO13 Drug Design: (2+1)

The prime objective of this module is to prepare the students for professional practice by understanding 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).

PBCcO05 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.

PCLcO09 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.

PCLcO10 High-Throughput Screening of Drug activities: (1+0.5)

This module provides students with the basic and applied information about high-throughput screening (HTS), which 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.

PCLcO11 Evaluation of Safety of Drugs: (1+0.5)

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.

PCLcO12 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.

PCLcO13 Neuroscience-2: (1+0.5)

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.

PCTcO09 Advanced Drug Delivery & 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.

PCTcO10 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.

PCTcO11 Veterinary Pharmacy: (1+0.5)

This module prepares students for specialized activity in the field of veterinary pharmacy including general features of primary 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.

PMBcO07 Infection Control & Antimicrobial Stewardship: (1+0.5)

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.

PMBcO08 Biopharmaceuticals & Immunological Products: (1+0.5)

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.

**PMBcO09 Bioinformatics, Genomics & Pharmacomicrobiomics:
(1+0.5)**

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 part about pharmacogenomics and pharmacomicrobiomics, which are the impact of human genome and microbiome variations, respectively, on drug action, predisposition and toxicity.

PMBcO10 Diagnostic Microbiology: (1+0.5)

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.

PCGcO06 Aromatherapy & Herbal Cosmetics: (1+0.5)

This optional module aims to enable students to attain the systematic approach for evidenced based herbal drugs rich in volatile oil in the treatment of various clinical disorders & herbal cosmetics. All the studied herbal drugs should be approved by World Health Organization (WHO). This module also covers the isolation of the volatile oil from their respective herbs by different techniques as well as their identification. The students will also acquire knowledge for incorporation of the volatile oil in suitable dosage forms i.e. nanoparticles, creams, lotion, soaps...etc.

PCPcO21 Health Media: (1+0.5)

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.

PCPcO22 Precision Medicine: (1+0.5)

This module provides pharmacy students with an overview of precision medicine. The content of the course covers all aspects of precision medicine.



with an emphasis on Pharmacogenomics. Students will learn the basics of molecular genetic basis of disease and molecular diagnostic methods to diagnose germline and somatic mutations and apply these strategies across a wide range of clinical conditions including diagnostic testing and health forecasting. The module will include detailed instruction on how to interpret genomic variation and how to effectively communicate this information to patients in ways that are effective, efficient, and that scale. The module will address questions of clinical implementation, including measuring cost-effectiveness, clinical utility and will address the ethical, legal, and social issues presented by precision medicine. Finally, the module will give clinical examples for how the pharmacist recommend specific alternative therapies and/or doses of specific medications based on pharmacogenomics results.

PCPcO23 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.





**اللائحة الداخلية لمرحلة بكالوريوس صيدلة
(Pharm D)**

كلية الصيدلة – الجامعة البريطانية في مصر

The British University in Egypt

Faculty of Pharmacy

PharmD Program

(August – 2019)



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Vision, Mission and Goals of Faculty of Pharmacy – The British University in Egypt

Vision:

The Faculty of Pharmacy at the BUE seeks to be an outstanding model for pharmacy education locally, regionally and internationally.

Mission:

The Faculty of Pharmacy at the BUE is committed to providing higher education following the National Academic Reference Standards (NARS) to qualify competent and competitive pharmacists who can contribute to the development of their country in the field of health care and pharmaceutical industry, in addition to producing high impact scientific research and contributing effectively to community service in line with ethical and professional values.

Faculty Goals:

First Goal: Increase Competitiveness in Pharmaceutical Education

Objectives

- 1- Ensure the effectiveness and efficiency of leadership and administrative systems within a suitable organizational framework.
- 2- Improve and upgrade the faculty infrastructure and facilities.
- 3- Develop the educational program in accordance with the national academic reference standards and to meet the needs of the labor market.
- 4- Implementation of an advanced teaching and learning strategy to achieve the goals of the educational program.
- 5- Improve and develop the faculty competitive status.

Second Goal: Improve Human Resources and Student Support and Quality of Education

Objectives

- 1- Achieve continuous development of the capabilities of academic and administrative staff.
- 2- Develop and enhance means of support for students and alumni.
- 3- Implement higher education quality systems.

Third Goal: Support Scientific Research and Innovation and Implement Postgraduate Studies Program

Objectives

- 1- Achieve excellence and enhance effectiveness of scientific research.
- 2- Provide means of support and encouragement for researchers.
- 3- Implement postgraduate studies program.

Fourth Goal: Promote Community Service and Environment Development

Objectives

- 1- Activate the role of the faculty in community service and environment development.
- 2- Promote the participation of community members in the faculty activities.

The Faculty includes the following academic departments:

1. Pharmaceutical Chemistry (PMC)
2. Pharmacology (PCL) and Biochemistry (PBC)
3. Pharmaceutics & Pharmaceutical Technology (PCT)
4. Microbiology (PMB) and Pharmacognosy (PCG)
5. Clinical Pharmacy Practice (PCP)



Introduction to PharmD Program

- The program is designed based on 5 academic years and a final intern year of specialized training.
- The program includes advanced courses that aim at providing the students with various skills and it includes the following:
 1. General courses that fulfill the requirements of the primary university level.
 2. Basic pharmaceutical and medical sciences courses.
 3. Specialized courses in pharmaceutical sciences and relevant medical sciences.
- Implementation of advanced teaching and learning strategies and advancing the methods of assessment to equip the students with various skills and competencies in accordance with the National Academic Reference Standards (NARS) of Pharmaceutical education.
- The program also includes a 100-hour primary field training in community, governmental and hospital pharmacies during the summer holidays of the academic years after finishing the third level.
- The program is designed to allow students to work in different fields of pharmacy while offering the students the chance to focus on areas that they would prefer to specialize in through optional courses in the final years of the program and through the field of training and the graduation project.
- A program is designed for the final intern year (specialized training) in the form of training rotations that allow the student to get training in different fields of pharmacy (like pharmaceutical manufacturing – drug control – sales and marketing – hospitals and medical centers...) including one rotation in the field of clinical pharmacy, while allowing the students to focus on their area of interest. Also, the students present a graduation project in a certain specialty that will help prepare them to work in that field.
- Training sites: pharmaceutical companies and factories – companies and factories of medical devices and supplies, cosmetics, nutritional supplements and herbs – pharmaceutical distribution companies – national and international drug control and monitoring authorities and centers – pharmaceutical and medical research centers, bioavailability and clinical studies centers – health media and pharmaceutical marketing... in addition to public and private pharmacies and hospitals. For those who prefer the academic field (teaching and research), a rotation can be done at faculty of pharmacy or research centers.
- Career path and job opportunities: graduates of this program can work in any of the fields of pharmacy. They can work in their area of specialization (chosen during the intern year and the graduation project) for one or two years to become a specialized pharmacist in one of the professional pharmacy specialties. They can also work in community or governmental pharmacies and hospitals. They can work in the academic field (teaching and research) which qualifies them for the academic path (masters and doctorate).

PharmD Program Vision, Mission and Goals

Program Vision

Pharmaceutical education in line with the latest educational systems in order to advance the pharmacy profession, scientific research and community service through graduating scientifically and professionally qualified pharmacists.

Program Mission

Contribute to raising the efficiency of the healthcare system locally and regionally through preparing highly qualified pharmacists equipped with the latest pharmaceutical concepts in all fields of pharmacy who can offer high quality pharmaceutical services in public and private pharmacies, pharmaceutical companies, research centers in addition to working in the fields of health media, pharmaceutical marketing and the effective participation in scientific research to serve the community while adhering to professional ethics.

Program Goals

- Prepare pharmacists who are qualified to work in all fields of pharmacy (public and private pharmacies, pharmaceutical companies, drug control and food analysis laboratories, health media, pharmaceutical marketing, research centers and universities.
- Emphasize the importance of the role of the pharmacist in the healthcare system inside and outside hospitals through educating and counseling patients in order to improve therapeutic outcomes while acting responsibly and respecting the professional rules and ethics and patient rights.
- Prepare pharmacists capable of manufacturing and developing pharmaceutical products in addition to effective communication, leadership, management and entrepreneurship.
- Provide efficient pharmacists capable of continued learning and standing out in the job market nationally and regionally.
- Participation in community service and environment development and achieving significant healthcare cost savings through rational drug use.
- Achieving quality standards in pharmaceutical education through interactive learning and promoting self-learning.

Bylaw Articles

Article (1):

Academic Degree Awarded to Graduates

The university board, based on the faculty council request, awards PharmD Degree according to the credit system.

Article (2):

Qualification for Higher Academic Degrees

PharmD Degree is the first academic degree in pharmacy that's required to earn a professional license to work in all the available fields of pharmacy and it also qualifies the graduate to register for a master's degree in any of the faculty academic departments.

Article (3):

Academic System

- The program consists of five academic years (five levels divided into 10 semesters) following the credit system and an intern year of advanced field training (specialized training) (5+1), in addition to a 100-hour field training in community, governmental and hospital pharmacies during the summer holidays of the academic years after finishing the third level and before starting the intern year.
- Each level (year) is divided into two semesters (15 weeks each)
- Each semester includes 55-60 credits (equivalent to 16.5-18 credit hours), and hence the program is completed upon earning 590 credits (equivalent to 177 credit hours)

N.B. A credit is a unit used to measure the academic load and it's also used as an indicator of the amount of effort required for a course where one credit is equivalent 10 hours of study effort including all forms of direct teaching contact, assessment and private study for an average student level. Credits and its equivalent credit hours are calculated as follows: 10 credits = 3 credit hours, 5 credits = 1.5 credit hours

Article (4):

Academic Program Design

The program is designed so that module provision involves lectures, group discussions, tutorials, practical periods, workshops, field training, research and presentations in addition to collaborating with surrounding university environment.

The program design includes:

First: 570 credits in addition to university requirements of 20 credits.

Second: Four optional courses (40 credits equivalent to 12 credit hours) that are selected from the list of optional courses provided by the faculty.

Third: Course description and content is set through the academic departments in accordance with the National Academic Reference Standards (NARS 2017).

Fourth: The optional courses in the last two levels are designed to provide the students with the competencies and skills that would help them decide their professional specialties where one of the optional courses will be in one of the clinical pharmacy fields.

Fifth: a 100-hour summer training is done after finishing the third level and before starting the intern year.

Sixth: The intern year (specialized training) is the sixth academic year of the program.

Article (5):

Academic Load

The course load per academic year consists of 110 – 120 credits divided into 55 – 60 credits per each semester.

During their period of study (5 years), students must achieve a specified percentage of attendance in lectures, practical periods and tutorials in accordance with the percentage set by the programs committee for each course. Students are assessed by internal and external examiners. The assessment includes coursework, practical, written and/or oral exams.

Article (6):

A) Attendance

Students must attend lectures, discussion groups, practical periods, clinical and field training. The faculty council, upon the request of the academic departments, has the right to bar students from entering the final written exam if they miss more than 25% of the total attendance required for each course.

B) Exams Attendance and Absence

Students must attend the final written exams at the specified times according to the announced academic calendar of each semester and students who miss the final written exam of any course fail the course. If a student misses the exam with a compelling excuse and accepted impaired performance claim, he doesn't fail the course and his actual grade shall be counted upon retaking the exam.

Article (7):

Language of Study

Study in the program is in English, but some courses can be taught in Arabic upon the recommendation of the academic department and the approval of the faculty council and university board.

Article (8):

Field Training

(A) Primary Field Training

Students have to complete a 100-hour period of field training in community, governmental and hospital pharmacies, approved by the faculty council and under the supervision of an academic staff member, during the summer holidays of the academic years after finishing the third level and before starting the intern year.

(B) Intern Year (Advanced Field Training)

The intern year is the sixth academic year of the program which is dedicated for field training for 36 weeks (one academic year equivalent to 9 months). It consists of 6 rotations including at least 4 rotations in pharmaceutical companies and factories – companies and factories of medical devices and supplies, cosmetics, nutritional supplements and herbs – pharmaceutical distribution companies – national and international drug control and monitoring authorities and centers – pharmaceutical and medical research centers, bioavailability and clinical studies centers – health media and pharmaceutical marketing etc. while one rotation should be done in the field of clinical pharmacy (like hospital pharmacies, private and governmental pharmacies...). A systematic and integrated training program will be outlined for the intern year in the form of training rotations with registered hours and training tasks under the close supervision of the faculty and training

entity. Also, the students present a graduation project in a certain specialty that will help prepare them to work in that field.

Article (9):

Admission Requirements

Students who apply for admission in the program should fulfill all the requirements set by the supreme council of universities. Transfer can be allowed for students enrolled in a similar program in one of the Egyptian or foreign universities upon fulfilling the admission requirements of the faculty and the courses studied at the previous university are counted in accordance with the rules set by the faculty council.

Article (10):

Assessment System

The overall module mark consists of the sum of the marks of coursework, practical, written and oral exams as shown in the program curriculum tables. The minimum overall module mark for pass and award of credit at the specified level in each module shall be 60% except for English and Mathematics modules where the minimum passing mark is 50% according to the BUE General Academic Regulations (GAR). The student does not pass a module unless 30% of the final (unseen) written exam mark is achieved. The grading scale is shown in the following table:

BUE Grading Scale

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

The overall grade for each level of study is calculated on the basis of the average mark of all modules for that level, weighted according to their credit value where the student cannot get more than (D) grade in modules that were failed or missed with an unaccepted excuse. However, if the student was absent with an accepted impaired performance claim or appeal, then his actual grade shall be counted.

The final overall average and grade, which determines the Honors classification, is calculated as an average of all study levels and students are ranked according to the overall average percentage grade.

An "Honors" standing is granted to the student provided that his overall grade is Excellent or Very Good and his year average has not fallen below "Very Good" (GPA 2.7 = 75 %) in any single year of the program and he has not failed any modules during his program of study, while it shall not be considered in the student ranking.

Weighted Average (per semester/year/overall cumulative total) = [Sum of (each module percentage x module credits)] / Total credits (per semester/year/all semesters)

The cumulative average for all semesters is calculated according to the previous table.

Article (11):

Maximum Registration Period per Degree Year

Students have a maximum of two years of study in Degree Year One; three years of study in Degree Year Two; four years of study in Degree Year Three, while students in their final two years of study who fail in no more than half of their study load, regardless of the trailing modules, shall be allowed an unlimited number of attempts to pass the remaining credits.

Article (12):

Failure

- In case a student is absent from the final written exam without an excuse.
- If a student gets less than 30% of the final written exam mark.
- Not achieving at least 60% of the total module marks with the exception of English and Mathematics modules where the passing mark is 50%.

Article (13):

Resit Exams

Students shall be permitted a maximum of two opportunities of assessment in a given academic year for all modules: normally the first opportunity shall be during the relevant semester, and the second during the resit period. The maximum number of credits that students may attempt during the resit period is 60 credits where the module will be capped at the passing mark in modules that were failed or missed with an unaccepted excuse. However, if a module was missed due to accepted impaired performance claim, then his actual grade shall be counted in accordance with the aforementioned rules in article (10).

Article (14):

Progression with Trailing Modules

A student is allowed to progress their studies carrying a deficiency of up to 20 credits. A student who is allowed to progress their studies trailing a module(s) is required to complete that module by the end of the following academic year in accordance with the aforementioned rules in article (10).

Article (15):

Repeat

A student is considered a repeater if more than 20 credits were failed in any level in accordance with the aforementioned rules in article (10).

Article (16):

Condonement

There is no condonement for failure for any course in any semester.

Article (17):

PharmD Degree Requirements

PharmD Degree requirements according to the credit system include:

First: Studying and passing a total of 570 credits (equivalent to 171 credit hours) in addition to 20 credits of university requirements with a total of 590 credits (equivalent to 177 credit hours) divided onto 10 semesters including faculty requirements of optional courses of 40 credits (equivalent to 12 credit hours).

Second: Doing a 100-hour period of primary field training in community, governmental and hospital pharmacies, approved by the faculty council and under the supervision of an academic staff member, during the summer holidays of the academic years after finishing the third degree year in addition to completing the intern year (academic year – 9 months) after finishing the years of study according to the detailed specification of the intern year that includes a graduation project in a certain specialty.

Article (18):

Student Disciplinary System

Students enrolled in the program are subject to the disciplinary system set out in the Egyptian universities organization law no. 49 (1972) and its implementation regulations.

Article (19):

Department and Course Codes (Appendix 1)

Article (20):

Program Curriculum (Appendix 2)

Article (21):

Course Content (Appendix 3)



Article (22):

Updating Course Contents

University board is allowed to update not more than 20% of the course contents upon the recommendation of the faculty council following the approval of the program supervising committee and the academic department council after explaining the reasons.

Article (23):

Intern Year Training Program

A detailed training program is set for the final (intern) year in the form of rotations in an appendix including the rotations program in a detailed systematic approach (will be presented as a supplement to this bylaw).

Article (24):

Implementation of Bylaw Rules

The rules of this bylaw will be implemented starting from the academic year 2019/2020.

Article (25):

General Rules

Unless mentioned otherwise in this bylaw, the BUE General Academic Regulations (GAR) will be implemented.



Appendix 1

Department and Course Codes

Department Codes

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
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		ter		
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 & Pharmacoconomics	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
Microbiol	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

- The optional modules will be offered for Degree Years 4 and 5 based on Faculty council selection from the previous table. The Faculty also can add other optional module(s) after approval of the University council provided that the necessary justifications were provided.

Appendix 2

Program Curriculum

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/MT	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	50	-	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.

Appendix 3 (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)

The aim of this module is 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, Caushing 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.