



(Company No. 101067-P)

الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
يُونَيْتِي سَلَامٌ أَنْتَارَا بِيحْسَابًا مِلْسِيَا

Garden of Knowledge and Virtue

LEADING THE WAY
KHALĪFAH • AMĀNAH • IQRA' • RAḤMATAN LIL-ĀLAMĪN

Kulliyyah of Pharmacy
Curriculum Structures
Bachelor's Degree in Pharmacy (Hons.)
(Intake 2016/17, 2017/18 and 2018/19 onwards)

The core courses are compulsory for all students in the Pharmacy Programme. Students are required to register and pass all of these courses. Students who fail in any of these courses have to repeat the course. A total of 157 credit hours must be registered by the end of study period for the purpose of graduation. The curriculum structures are as follows:

PROGRAMME REQUIREMENT

Subject Classification	Credit Value
Kulliyyah Core Courses	121 CH
Elective Courses	14 CH
Kulliyyah Required Courses	2 CH
University Required Courses	20 CH

CORE COURSE

Year 1, Semester I		
Course	Subject	CH
<i>PHM 1113</i>	<i>Islamic Input in Pharmacy</i>	<i>3</i>
<i>PHM 1122</i>	<i>Basic Anatomy & Histology</i>	<i>2</i>
<i>PHM 1133</i>	<i>Fundamentals of Physiology</i>	<i>3</i>
<i>PHMP 1143</i>	<i>Intro to Pharmacy Practice</i>	<i>3</i>
<i>PHM 1153</i>	<i>Physical Pharmacy I</i>	<i>3</i>

Year 1, Semester II		
Course	Subject	CH
<i>PHM 1214</i>	<i>Organic Chemistry</i>	<i>4</i>
<i>PHMM 1223</i>	<i>Pharmaceutical Microbiology</i>	<i>3</i>
<i>PHM 1233</i>	<i>Medical Biochemistry</i>	<i>3</i>
<i>PHM 1243</i>	<i>Fundamentals of Pharmacology</i>	<i>3</i>
<i>PHM 1253</i>	<i>Pharmaceutical Analysis I</i>	<i>3</i>

Year 2, Semester I		
Course	Subject	CH
PHMM 2113	Pharmacology of the Peripheral Nervous System	3
PHMC 2122	Fundamentals of Medicinal Chemistry	2
PHM 2133	Anti - infectives Agents	3
PHM 2143	Physical Pharmacy II	3
PHMP 2152	Community Pharmacy Practice	2
PHMC 2162	Pharmaceutical Analysis II	2
PHMM 2242	General Pathology	2
PHMM 2182	Immunology	2

Year 2, Semester II		
Course	Subject	CH
PHMM 2213	Body System I : Cardiovascular & Haematology	3
PHMM 2222	Body System II : Respiratory & Urinary System	2
PHMM 2232	Body System III : Musculoskeletal System & Sensory Organs	2
PHM 2263	Dosage Design I	3
PHM 2273	Sterilisation and Aseptic Technology	3
Elective courses		
Course	Subject	CH
PHMT 2292	Nutraceutical	2
PHMT 2182	Cosmetics & Cosmeceuticals	2
PHMC 2202	Computer Aided Drug Design And Discovery	2

Year 3, Semester I		
Course	Subject	CH
PHMC 3113	Research in Pharmacy (Biostatistic & Pharmacoepidemiology)	3
PHM 3122	Pharmacokinetics and Biopharmaceutics	2
PHM 3132	Hospital Pharmacy Practice	2
PHMP 3142	PT I: CVS, haematology & respiratory disorders	2
PHM 3152	Body System IV: Gastrointestinal & Hepatobiliary Systems	2
PHM 3163	Body System V: Endocrine & Reproductive Systems	3
PHM 3173	Dosage Design II	3
Elective courses		
Course	Subject	CH
PHM 3012	Research Project - Literature Search	2
PHMC 2172	Nuclear Pharmacy	2

Year 3, Semester II		
Course	Subject	CH
PHMC 3212	Herbal Medicine	2
PHMM 3223	Body System VI: Central Nervous System	3
PHM 3232	PTII: GIT, Hepatobiliary, GUT & MSK	2
PHMP 3242	Pharmacy Management and Administration	2
PHMP 3252	Pharmacy Ethics and Law	2
PHMC 3263	Pharmacognosy	3
PHM 3272	Anti-Cancer Chemotherapy	2
Elective courses		
Course	Subject	CH
PHM 3012	Research Project - Literature Search	2
PHM 3282	Drug Abuse	2
PHM 3022	Research Project - Practical I **	2

Year 3, Semester III		
Course	Subject	CH
PHM 3324	Hospital Attachment	4

Year 4, Semester I		
Course	Subject	CH
PHM 4112	Quality Assurance	2
PHM 4123	Pharmaceutical Biotechnology & Biopharmaceutical	3
PHM 4133	Clinical Pharmacokinetics	3
PHMP 4142	Pharmacoeconomics	2
PHM 4152	Innovations in Pharmacy Practice	2
PHMP 4162	PT III: Endocrine, CNS, Psychiatry & other diseases	2
Elective courses		
Year 4, Semester I		
Course	Subject	CH
PHM 4012	Research Project- Practical II***	2
PHMT 4122	Advanced Drug Delivery System	2
PHM 4202	Veterinary Pharmacy	2
PHM 4272	Clinical Toxicology	2
PHM 4172	Renal Pharmacy	2
PHMP 4183	E-commerce	3

Year 4, Semester II		
Course	Subject	CH
PHMP 4214	Pharmacotherapeutic Attachment	4
PHMP 4224	Community Pharmacy Posting	4
PHMT 4234	Industrial Pharmacy	4

KULLIYAH REQUIRED COURSES

Course	Subject	CH
<i>LM 2026K</i>	<i>Bahasa Melayu Kerjaya (Sains dan Teknologi)</i>	<i>2</i>

UNIVERSITY REQUIRED COURSES

Course	Subject	CH
<i>CCFM 2052K/ CCTH 1022K</i>	<i>Family Management and Parenting/ Tahfiz 2</i>	<i>0.5</i>
<i>CCLM 2051K/ CCRH 1021K</i>	<i>Leadership and Management / Tahfiz 1</i>	<i>0.5</i>
<i>CCUB 1621K</i>	<i>Usrah 1 (BUDI)</i>	<i>0.5</i>
<i>CCUB 2621K</i>	<i>Usrah 2 (BUDI)</i>	<i>0.5</i>
<i>CCUB 3621K</i>	<i>Usrah 3 (BUDI)</i>	<i>1</i>
<i>CCUB 4621</i>	<i>Usrah 4 (BUDI)</i>	<i>1</i>
<i>LE 4000K</i>	<i>English for Academic Purposes</i>	<i>3</i>
<i>LM 1030K</i>	<i>Bahasa Melayu 1 Untuk Pelajar Antarabangsa (Non Malaysian) - Bukan Nusantara</i>	<i>1</i>
<i>LM 1031K</i>	<i>Bahasa Melayu II Untuk Pelajar Antarabangsa (Non Malaysian) - Bukan Nusantara</i>	<i>1</i>
<i>LQ 1008K</i>	<i>Quranic Language 1</i>	<i>0.5</i>
<i>LQ 2008K</i>	<i>Quranic Language 2</i>	<i>0.5</i>
<i>MPU 3112K</i>	<i>Hubungan Etnik</i>	<i>2</i>
<i>MPU 3122</i>	<i>Tamadun Islam dan Tamadun Asia (TITAS)</i>	<i>2</i>
<i>S/T</i>	<i>SKILL 1 / Tahfiz 3</i>	<i>0.5</i>
<i>S/T</i>	<i>SKILL 2 / Tahfiz 4</i>	<i>0.5</i>
<i>S/T</i>	<i>Tahfiz 5</i>	<i>0.5</i>

Course	Subject	CH
<i>TQS 1001K/2001K</i>	<i>Tilawah 1 / Tilawah 2</i>	<i>0.5</i>
<i>TQS 2001K</i>	<i>Tilawah 1 / Tilawah 2</i>	<i>0.5</i>
<i>UNGS 2011K</i>	<i>Creative Thinking and Problem Solving</i>	<i>2</i>
<i>UNGS 2080K</i>	<i>Ethics and Fiqh for Contemporary Issues</i>	<i>2</i>
<i>UNGS 2090K</i>	<i>The Islamic Worldview & Civilization</i>	<i>2</i>

Core Courses

PHM 1113 Islamic Input in Pharmacy

This course focuses on the basic principles of Islamic Ethics and health problems. Emphasis on the understanding of the important and current scientific and health issues from Islamic perspective. The course also identifies the principles of Prophetic Medicinal treatment, thinking and solving problems with scientific knowledge.

PHM 1122 Basic Anatomy and Histology

This course is to provide basic knowledge on structures and functions of cells, tissues and organ/systems in the body and how they relate to each other. The knowledge acquired will provide solid foundation for understanding and visualising the human body as a whole and subsequently assist the understanding of the disease as well as treatment of the diseases.

PHM 1133 Fundamentals of Physiology

This course is to equip the students with the various concepts in physiology, to enable the students to discuss the relationship between structure and functions in the human body and its regulation.

PHM 1153 Physical Pharmacy 1

This course is an introduction to the physical principles that are used as the bases of pharmaceutical sciences and applied in the practice of pharmacy. It emphasises the importance of physical as well as chemical characteristics relating to drugs and their dosage forms.

PHM 1214 Organic Chemistry

The course has been designed to introduce pharmacy student to the basic concepts of organic chemistry as well as to provide students with a wide experience in practical works related to the theory course. This course consists of a series of lecturer, tutorials, laboratory, classes, group discussions and quizzes. The course covers a wide area in basic and advanced organic chemistry, beginning with electronic configuration, molecular structure and bonding in organic chemistry and stereochemistry followed by a variety of functional groups substituted in to the aliphatic and aromatic molecules. Some methods for their synthesis, characteristic reactions and mechanisms involved are discussed in some detail. The knowledge acquired from this course should help students to appreciate more complex pharmaceuticals and the reactions mechanism they are likely to encounter in understanding medicinal chemistry.

PHM 1233 Medical Biochemistry

This course introduces students to basic biochemistry related with medical and pharmaceutical fields and it is fundamental and importance for Clinical Pharmacy. The various biochemical pathways highlight the enzyme actions how genetics errors happen in enzyme synthesis leading to genetic disorders and that are linked closely with Physiology, Pharmacology and Pathology. At the end of the course, students will be able to apply the knowledge they obtained from this course to any related problems in order to appreciate diseases management, treatment and pharmaceutical care.

PHM 1243 Fundamentals of Pharmacology

The course consists of a series of lectures, tutorial, laboratory practical, group discussions and quizzes. Student will be introduced various aspects of pharmacokinetics and pharmacodynamics of drug disposition. This will include the absorption, distribution, metabolism and excretion of the drugs taken. Subsequently, student will be taught the concept of drug receptor theories, drug effects to the body. Student also will be taught on the importance of drug variation factors, drug discovery process and the role of chemical mediators.

PHM 1253 Pharmaceutical Analysis I

The course consists of a series of lectures, tutorial, practical in the laboratory, quizzes and a final examination. Students will obtain basic knowledge on various important techniques and instruments used in pharmaceutical analysis and the principals involved thereof. Students will also be taught on the important pharmaceutical calculations.

PHM 2133 Anti-Infective Agents

This course introduces the medicinal chemistry aspects and the principles of therapy and clinical usages of various anti-infective agents. The students will be exposed to methods in identifying pathogens that are responsible for infectious diseases, selecting the suitable agents for treatment, describing the major indication of their usage and monitoring the efficacy and toxicity of the treatment.

PHM 2143 Physical Pharmacy II

This course is a continuation of Physical Pharmacy 1. The underlying principles in drug preparation, their fluid properties and factors affecting the stability of the colloidal/disperse systems will be emphasised.

PHM 2263 Dosage Design I

This course provides an understanding on the scientific and physicochemical principles that are important in designing and processing various pharmaceutical dosage forms in order to develop safe, high-quality, and efficacious pharmaceutical products.

PHM 2273 Sterilisation and Aseptic Technology

Many pharmaceutical products are in sterile form. The production requirement of sterile products is difference from those of non-sterile. This course provides knowledge on formulation of sterile pharmaceutical, essential criteria on the design of the manufacturing facility, sterile processing and testing, which are important for all pharmacists.

PHM 3122 Pharmacokinetics and Biopharmaceutics

This course is to provide an understanding on general principles of drug pharmacokinetic: absorption, distribution, metabolism and excretion of drugs. Introduction to the factors that influence drug disposition will also be taught. Students will be given the opportunity to appreciate the application of pharmacokinetic principles in the practical session and hands on calculation drills in tutorial sessions.

PHM 3132 Hospital Pharmacy Practice

This course describes in greater depth on scope of the various services of hospital pharmacy with focus on management, administration and work process thus exposing students to daily tasks and the various roles undertaken by a hospital pharmacist. The services that the students will be exposed to are ambulatory pharmacy, in-patient pharmacy, drug information, pharmaceutical storage and procurement manufacturing, aseptic dispensing on parenteral nutrition and cytotoxic drug reconstitution as well as radiopharmacy.

PHM 3152 Body System IV: Gastrointestinal & Hepatobiliary Systems

This course is a continuation of Anatomy & Histology and Fundamentals of Physiology. Emphasis is on the relationship between the structure and function of the GIT, it identifies some of the common diseases of the GIT and it discusses the principles of treatment of the diseases.

PHM 3163 Body System V: Endocrine & Reproductive System

This course introduces the students to Endocrine and Reproductive system that is fundamental and importance for Pharmacotherapeutics. It is also integrated with Medicinal Chemistry and Pharmacotherapeutics. At the end of the course, students will be able to resolve any related problems in order to appreciate disease management, treatment and pharmaceutical care.

PHM 3173 Dosage Design II

Emphasis is given to the various aspects of designing and developing different pharmaceutical dosage forms for various drug delivery strategic to meet the requirement of therapeutic efficacy, stability and safety.

PHM 3232 Pharmacotherapeutics II (Gastrointestinal, Hepatobiliary, Genitourinary and Musculoskeletal)

This course considers applying the prior knowledge of body systems and pharmacology into disease management by identifying, solving and preventions actual or potential drug related problems and provision of holistic pharmaceutical care.

PHM 3272 Anti-Cancer Chemotherapy

A course on the principles of the treatment of cancer, medicinal chemistry, pharmacology and therapeutic aspects of cytotoxic agents in treating cancer. Cancer chemotherapy protocol is introduced in order to make students understanding the drug combination, its rationale and advantages. The role of pharmacist in cancer management including monitoring, supportive care and safe handling of cytotoxic drug is also illustrated.

PHM 4112 Quality Assurance

This course introduces the concept of QA and QC and their related standard guidelines applicable to pharmaceutical industries or any other healthcare institutions. The course will be focused on the quality management system required by pharmaceutical industries and others highlighting the importance of Good Laboratory Practice (GLP), Good manufacturing Practice (GMP), Good Storage and Distribution Practice (GSP), Good Regulatory Practice (GRP), ISO and MS 2424 in order to assure that the quality of the product and service are maintained. Proper disposal of chemicals and drugs is also included which is relevant to regulatory requirement. Students will be guided to construct the standard operation procedure and also perform internal audit.

PHM 4123 Pharmaceutical Biotechnology & Biopharmaceutical

Pharmaceutical biotechnology and biopharmaceutical describe basic principles of biotechnology used in pharmaceuticals and their use in drug therapy. It is transforming proteins and genes into drugs (biopharmaceuticals). It also describes production (manufacturing), analytical and delivery aspect of biopharmaceuticals. This course also offers therapeutic and clinical application of selected biopharmaceuticals.

PHM 4133 Clinical Pharmacokinetics

Students will be given the opportunity to integrate their knowledge in clinical pharmacy and therapeutics with clinical pharmacokinetics. Students will gain knowledge and provide solution to actual cases from the Therapeutic Drug Monitoring Unit. This will prepare the students to provide clinical pharmacokinetic services.

PHM 4152 Innovations in Pharmacy Practice

This course provides students with the introduction of various extended services that are currently available in Malaysia. Services available include Medication Adherence Therapy (MTAC), Methadone Maintenance Therapy (MMT) and Traditional & Complementary Services in Malaysian Hospitals. At the same time students are taught the concepts of other services such as palliative care, disaster management, home medication review (HMR) and immunisation and smoking cessation programme which are practices elsewhere globally. In this course, students will appreciate the role of pharmacist in each different service.

PPP 3332 Community Pharmacy Attachment

Student will be attached to a community pharmacy in Malaysia for 8 hours per day, 5 days per week for duration of 2 weeks. The students will have an opportunity to observe the work of a community pharmacist and perform certain activities under supervision of the pharmacist preceptor. These include procurement of goods procedure, prescription screening, dispensing, customer services, counselling, merchandising, drugs/products consultation, acquiring drug information, wholesaling (if any) and business-related activities. The students will be given the opportunity to familiarise with the range of products which can be sold over the counter (OTC), non-prescription medicines (NPM), prescription medicines, psychotropics (if any), dangerous drug (if any), health care products, skin care, cosmetics, rehabilitation products, wound dressing and first aid items.

PHMC 2122 Fundamentals of Medicinal Chemistry

This course is introduced to enable the pharmacy students to understand how drug are discovered and developed. It will support the students' knowledge in medicinal chemistry related to disease management by identifying, solving and preventing actual or potential drug related problems.

PHMC 2162 Pharmaceutical Analysis II

Students will be introduced with the theory and background of modern instrumental techniques and their importance in pharmaceutical analysis. The course will be focused on the principle of atomic absorption spectroscopy, liquid chromatography, mass spectrometry and nuclear magnetic resonance spectroscopy. Students will be familiarising with the principle and instrumentation part of different modern analytical instrument. Laboratory session is designed to help student to apply their knowledge of instrumental techniques for the analysis of pharmaceutical products.

PHMC 3113 Research In Pharmacy

This is research methodology course with the emphasis on applied knowledge and practical for higher study. Students will be introduced to various branches of new research fields. The students will learn on how to do literature search, write proposals, research reports followed by writing of research manuscripts. This course integrates pharmacoepidemiology and pharmacovigilance principles and their specific study designs along with statistical analysis, source of data methodological issues and their application. The course encompasses wide range of research topics and foster foundational knowledge and skills in different research methodologies.

PHMC 3212 Herbal Medicine

In this course, students are guided to make an informed decision on proper selection and usages of herbs as an alternative treatment. The quality, safety and efficacy aspects are prioritised by focusing on herbs with evidence-based in various teaching-learning activities. Assessment on the quality and safety of selected herbal products related to their regulatory aspects is also included.

PHMC 3263 Pharmacognosy

The course has been designed to introduce students to the fundamentals of pharmacognosy and its scope, the study of drugs of natural origin including plant, animal, fungal or bacterial sources, it will covers the major classes of medicinally active natural products, their structure, origin, biosynthesis and mode of action (where known) as well safety and quality control aspects and special emphasis will be made on those products used in pharmacy as prescription medicine, controlled drugs or OTC. The project presentation on current drugs/drug-preparation which are available in the market or some potential application of medicinal plant used as drugs/drug-preparation and reflective diary as a result of a field study to botanical garden/herbal manufacture.

PHMM 1223 Pharmaceutical Microbiology

To enable the students to acquire knowledge on medically important organisms in different areas; bacteriology, virology, parasitology and mycology, which provides basis for valuable management of infectious diseases and to integrate this knowledge with anti-infective, sterilisation & disinfection, pharmacotherapeutics, body systems and others related courses in pharmacy.

PHMM 2113 Pharmacology of the Peripheral Nervous System

This course consists of a series of lectures, tutorials, laboratory practical sessions, group discussions on case studies and quizzes. This course provides understanding on the general anatomy, the organisational structures, synthesis of the neurotransmitter involved, function of peripheral nervous system and drugs that affects the peripheral nervous system, their clinical uses and side effects.

PHMM 2182 Immunology

This course is designed to provide understanding on the structure, function and significance components of the immune system. Students should also benefit for this course by learning and comparing knowledge on the mechanisms of immune responses in healthy and diseased conditions. This is important for immune-related disorders.

PHMM 2213 Body System I: Cardiovascular System & Haematology

This course has been introducing to enable students to acquire knowledge on properties and electrical events in the heart, to comprehend pathophysiology of blood-pressure abnormalities, disorders of cardiovascular system and its consequences, in order to appreciate disease management, treatment and pharmaceutical care.

PHMM 2222 Body System II: respiratory and Urinary System

This course is a continuation of Anatomy & Histology and fundamentals of Physiology. It identifies some of the common diseases of the urinary system and respiratory systems and it discusses the principles of treatment of the diseases.

PHMM 2232 Body System III: Musculoskeletal & Sensory Organ

An introductory course on the musculoskeletal system and two important sensory organs namely, the eyes and ears. The course covers and integrates the anatomy, physiology, pathology and pharmacological aspects of the organs to encourage and promote student's critical and integrative thinking with others subjects such as medicinal chemistry and pharmacotherapeutics.

PHMM 2242 General Pathology

The course consists of a series of lectures, tutorials and laboratory practical. Students will be studying general pathology which includes cell injury, cell death and cellular adaptation, inflammation and repair, haemodynamic disorders, neoplasia and genetic diseases.

PHMM 3223 Body System VI : Central Nervous System (CNS)

Review of the basic anatomy and physiological functions of the central nervous system, its relation to the pathophysiology of diseases affecting CNS and the mechanism/s of action of drugs acting on the CNS.

PHMP 1143**Introduction to Pharmacy Practice**

This course consists of a series of lectures, tutorial, laboratory practical, visit, group discussions and quizzes. Students will be introduced to various pharmacy services; dosage forms; types of pharmaceutical preparations; pharmaceutical care concepts; different drug classes and approach to quality use of medicines by providing explicit instruction on medication use. The requirements for the Good Manufacturing Practice (GMP) in small pharmaceutical industries and Good Lab Practices (GLP) in extemporaneous dispensing will also be included in this course. Students will also be taught on the importance of pharmaceutical calculation, the use of Latin abbreviations in prescriptions and formulations, list of schedule poisons and the regulatory requirements in drug usage.

PHMP 2152**Community Pharmacy Practice**

This course emphasises on policies and laws pertaining to the use of materials and medications (may also be referred as drugs) in the primary healthcare setting. Students will be introduced to non-prescription medications in the community pharmacy, as well as be provided with further exposure to the processes and requirements of dispensing practice, interpreting prescriptions and packaging of medications. In addition, students will be introduced to the basic knowledge of entrepreneurship focusing on the administrative and management aspects of a community pharmacy.

PHMP 3142 PT I: Pharmacotherapeutics of Cardiovascular, Haematology & Respiratory Disorders

This course has been designed to enable students to apply prior knowledge of body systems and pharmacology into disease management and pharmaceutical care planning by identifying, solving and preventing actual or potential drug related problems.

PHMP 3242 Pharmacy Management and Administration

This course has been designed to be taught as a series of management functions, entrepreneurship, conflict management and customer service. Students will be exposed to knowledge involving marketing, e-commerce, online business, strategic planning in pharmacy operations, managing technology and information systems, and franchising. Students will also be exposed to different sources of financing, both conventional and Islamic whereby basic knowledge of mudharabah and musharakah will be introduced.

PHMP 3252 Pharmacy Ethics and Law

The course consists of a series of lecturer, tutorials, group discussions and case scenarios. The students will be given the opportunity to learn the relevant Acts and Regulations that applies to pharmacy profession in Malaysia including the Registration of Pharmacy Act, Poison Act, Dangerous Drug Act, and Sales of Drug Act. The knowledge of the National Medicine Policy (DUNAS), Good Governance for Medicines and Code of Conducts for pharmacist will be emphasised. Regulations pertaining to medicinal, cosmetic products, professional ethics from the Islamic perspective and the importance of confidentiality of patients' information will also be discussed.

PHMP 4142 Pharmacoeconomics

This course has been designed to introduce students to the principles of pharmacoeconomics, methods of pharmacoeconomics and applications of pharmacoeconomics. It will include measuring cost, cost-of-illness, cost minimisation analysis, cost-effectiveness analysis, cost benefit analysis, cost utility analysis, sensitivity analysis, discounting, evaluating pharmacoeconomics literature, decision analytic model, budget impact analysis (BIA) and the structure and financing of health care system.

PHMP 4162 Pharmacotherapeutics III

This course has been designed for students to integrate knowledge and skills regarding common sign and symptoms, laboratory findings and choice of drugs in the management of common disorder involving the endocrine system, central nervous system, psychiatry, dermatology and infectious diseases in both adults and paediatrics.

PHMP 4214 Pharmacotherapeutics Attachment

This course has been designed for students to apply and enhance knowledge and skills in pharmacotherapeutics of various disorders related to internal medicine *via* experiential and interprofessional learning. The attachment will take place in various hospital pharmacy setting - inpatient pharmacy services, outpatient pharmacy services, aseptic dispensing services, ward pharmacy services, clinical pharmacokinetics services and drug information services.

PHMP 4224 Community Pharmacy Posting

Students will be attached to a community pharmacy in Malaysia for 8 hours per day for 5 days in a week for duration of 4 weeks. The students will have an opportunity to observe the work of a community pharmacist and perform certain activities under supervision of the pharmacist preceptor. The activities include products or drugs procurement procedure, prescription screening, dispensing, customer services, counselling, selling products, drugs/products consultation, searching drug information, wholesaling (if any) and business-related work. The students will be given the opportunity to learn on range of products which include over the counter (OTC), non-prescription medicines (NPM), prescription medicines, psychotropics (if any), dangerous drug (if any), health care products, skin care, cosmetics, rehabilitation products, wound care, etc.

This course is designed to provide comprehensive lectures on multidisciplinary nature of industrial pharmacy with subsequent hand-on training on various routine activities of a pharmaceutical industry. The latter is covered during industrial attachment at pharmaceutical manufacturing plant which include R&D, scale-up and routine production, quality control, quality assurance, logistics, regulatory affairs and relevant engineering activities.

Elective courses

PHM 3012 Research Project - Literature Search

This course focuses to train the students in the conduct of narrative and systematic review, emphasis on the skills development to conduct a review built on the framework of evidence-based practice, an increasingly important standard in the arena of literature reviews.

PHM 3022 Research Project - Practical I

Research Project - 1 is to introduce research activity and establish confidence among students towards research. This is continuation of the course PHM-3012 Literature Search. Following the literature search on a specific topic the student is expected to already identify a research problem, question or hypothesis

PHM 3282 Drug Abuse

This course consists of a series of lectures, tutorial, assignment (e.g., seminar presentation, poster presentation) and quizzes. This course introduces the concepts, theory, epidemiology and underlying neuropharmacology of addiction. It also provides information on the range of commonly abused drugs and the various treatment and punishment regimes.

PHM 3324 Hospital Attachment

This is an experiential learning course where the students enrolled need to attach to various units of pharmacy services of the selected hospitals namely Out-Patient Pharmacy Services, In-Patient Pharmacy Services, Cytotoxic Drug Reconstitution Services, Parenteral Nutrition Services, Clinical Pharmacokinetics Services, Drug Information Services and Pharmacy Logistic and Management Services. This will enable students to apply prior knowledge on Hospital Pharmacy Practice and the role of hospital pharmacist through observing the actual setting of various hospital pharmacy services.

PHM 4012 Research Project - Practical II

This is a continuation of the courses PHM-3022-Research Project Practical - 1. The overall objective of this Research Project - 2 is to establish confidence among students toward research and academic career.

PHM 4172 Renal Pharmacy

This course aims to prepare the pharmacy students with adequate theoretical ground covering numerous aspects of renal pharmacy. The course starts with an introduction to renal pharmacy services, it also covers various topics on kidney disease, including acute kidney injury (AKI), chronic kidney disease (CKD), its complications and their pharmacotherapeutic management, drug dosing in renal dysfunction, drug safety in CKD, CKD in special populations, drug induced nephrotoxicity, as well as drug therapy in glomerulonephritis. Besides, the course will encompass topics related to dialysis, i.e. basic principle of dialysis, pharmaceutical care issues in dialysis patients, proposed model of pharmaceutical care for End Stage Renal Disease (ESRD) patients on dialysis. In addition, the course provides several topics related to renal transplantation, its immunosuppression therapies and the possible post-transplantation complications that frequently ensue.

PHM 4202 Veterinary Pharmacy

This course introduces the main diseases affecting domestic animals and pets, the use of drugs and vaccines in animal therapeutics and regulations of veterinary medicines.

PHM 4272 Clinical Toxicology

This course introduces the students to the epidemiology, signs and symptoms, the general and specific management of poisoning, roles of poison centres, poisoning preventive measures in special population.

PHMC 2172

Nuclear Pharmacy

This course introduces the principles of radioactivity and various aspects of radiopharmaceuticals including processing, use, quality control and safe handling of radiopharmaceuticals. ^{99m}Tc -labelled radiopharmaceuticals are emphasised since they are the most commonly used at most nuclear medicine centres. Cyclotron radiopharmaceuticals are also discussed as more centres are beginning to use them.

PHMC 2202 Computer-aided Drug Design and Discovery

The course is designed to introduce computational approaches used in drug design and discovery. It covers molecular mechanics methods, quantum mechanics methods and chemoinformatics. It also provides understanding and hands-on experiences on the use of different modelling and visualisation software to study drug-target interaction.

PHMP 4183 E-commerce

This course is designed to expose students to e-commerce and digital marketing channels, practices and business activities with emphasis on establishment of a business platform. Students will learn key principles of online business operations such as business idea generation, online business operation and basic accounting management.

PHMT 2182 Cosmetics & Cosmeceuticals

This course provides an understanding of cosmeceutical with an emphasis on designing cosmeceutical formulations, its therapeutic significance, pharmacist's role, and regulatory issues pertaining to the marketing of these products.

PHMT 2292 Nutraceutical

This course provides an understanding of nutraceutical/functional food with an emphasis on therapeutic significance, pharmacist's role, quality assurance, regulatory issues pertaining to the marketing of these products and related Islamic perspectives.

PHMT 4122 Advanced Drug Delivery System

This is a multidisciplinary course involving biopharmaceutics, pharmacokinetics and pharmaceutical technology. The advances technology in drug delivery systems has provide therapeutics benefits and has increase the commercial value of medicinal and health care products. Advances drug delivery systems manipulate the use of various polymers and biopolymers systems either to achieve a controlled-release mechanism or targeting to the specific site or both. Overall aims are to increase the bioavailability, the therapeutic index and/or patients' compliance.

Fee and Funding

<http://www.iium.edu.my/division/finance-division/undergraduate>