Year One Courses

PR1150 Professional Identity and Skills Development I (4 Units, Year Long Course, Semester 1&2, 2 units for each semester)

Pre-requisite: Must be undertaking Bachelor of Pharmacy (Hons) programme

This course begins the journey of developing personal and professional identity, and skills for patient care. Pharmacist's roles, ethical principles and regulatory frameworks of the pharmacy profession will be introduced, along with early experiential encounters to reinforce core skills and concepts. Students will also acquire patient care skills through hands-on practice and use of simulated patients, before applying them on real patients during experiential encounters. In year 1, students will be taught to interpret prescription, obtain targeted history, adopt clinical reasoning and conduct physical assessment on the integumentary and ocular systems.

PR1152 Pharmacy Foundations: Science & Therapeutics I (6 Units, Semester 1)

Pre-requisite: Must be undertaking Bachelor of Pharmacy (Hons) programme

This course aims to deliver foundational concepts and principles in basic and clinical sciences. Students will acquire fundamental knowledge in human anatomy, physiology, cell biology and medical biochemistry with a focus on the healthy body. Armed with this foundation in biomedical and pharmaceutical sciences, students will scaffold their learning in understanding clinical sciences and application of basic sciences to therapeutics. As an inquiry approach to learning, students will also learn to retrieve evidence-based information using various search engines and databases. Finally, students will integrate the basic scientific knowledge to propose solutions for pharmacy related case studies.

PR1153 Pharmacy Foundations: Science & Therapeutics II (4 Units, Semester 2)

Pre-requisite: PR1152

This course continues with more foundational concepts and principles in basic and clinical sciences. The focus is on the disease states and treatments building on the foundational knowledge of the healthy body. This course will facilitate a strong understanding of the fundamental knowledge and skills that will be applied repeatedly throughout the curriculum subsequently. In addition these fundamental knowledge and skills are building blocks for purpose of understanding the integrated themes in courses that follow. The key areas of study include pharmaceutical sciences (biopharmaceutics, pharmaceutics, pharmacology and statistics.

PR1154 Pharmacy Foundations: Science and Therapeutics III (6 Units, Semester 1)

Pre-requisite: Must be undertaking Bachelor of Pharmacy (Hons) programme

This course introduces Pharmacy students to subjects such as pharmaceutical chemistry, pharmaceutical analysis and physical pharmacy which are foundations for understanding the properties of the drug molecule and the health product in relation to their absorption, distribution, metabolism and excretion (ADME) in the human body. The course will cover organic chemistry that underpins the physicochemical properties of the active pharmaceutical ingredient (API) and the chemical bases of drug-target interaction, drug metabolism and drug stability; analytical chemistry for the identification and purity determination of the API and dosage forms, and also physical pharmacy that explains the science of pharmaceutical formulation.

PR2156 Integumentary & Ocular Systems: Science and Therapeutics (4 Units, Semester 2)

Pre-requisite: PR1152

This course aims to provide an overview of the anatomy and physiology of the skin and eye followed by the pathophysiology of common conditions related to these structures. Students will learn the scientific theories and principles of medicinal chemistry, formulation sciences and pharmacokinetics that impact therapeutic outcomes, and integrate these with pharmacy practice, in the management of patients with common skin and eye conditions.

Year Two Courses

PR2150 Professional Identity and Skills Development II (4 Units, Year Long Course, Semester 1&2, 2 units for each semester)

Pre-requisite: PR1150

This is the second course in the compulsory series of four professional identity and skills development courses that aims to prepare students for pharmacy practice upon graduation. This course seeks to further develop students' skills in patient-centered communication, critical evaluation and clinical reasoning essential in the professional activities, as well as continue to explore and experience what professionalism and ethics mean to pharmacists in practice. In year 2, students will be taught using case examples related to the parallel physiological system courses. Lastly, students will get to experience pharmacy practice at the polyclinics via Pre-Employment Clinical Training I.

PR2152 Gastrointestinal System: Science & Therapeutics (6 Units, Semester 1)

Pre-requisite: PR1152, PR1153 and PR2156

The 6-week course, delivered by blended learning, aims to have students learn how to recognize, assess, prevent and therapeutically manage medical conditions affecting the human gastrointestinal system (GIS). The scientific component covers the medicinal chemistry and pharmacology of GI drugs; the formulation and manufacture of oral and rectal dosage forms; and factors governing absorption of drugs delivered to the GIS. The practice component includes pharmacist scope of practice, history taking approach, care plan design, health-believe model and disease risk communication. Randomized controlled trial and cost effectiveness of healthcare through colorectal screening will provide the systems perspective of GIS healthcare.

PR2153 Cardiovascular System: Science & Therapeutics (6 Units, Semester 1)

Pre-requisite: PR1152, PR1153 and PR2156

The cardiovascular system (CVS) is the focus of this 13-week course delivered by blended learning that includes interactive classes, practicals, collaborative learning workshops and projects. The objective is to empower students to recognize, assess, prevent and therapeutically manage conditions affecting the CVS. The scientific principles include pathophysiology of cardiovascular diseases; and pharmaceutical/ medicinal chemistry and pharmacology of CVS drugs. Applied therapeutics constitute the clinical reasoning for care planning. The impact of determinants of health and health equity on the person's ability to adhere to treatment plans will also be discussed.

PR2154 Respiratory System: Science & Therapeutics (6 Units, Semester 2)

Pre-requisite: PR1152, PR1153 and PR2156

This 6-week course integrates pharmaceutical, clinical and systems sciences to help students recognize, assess, prevent and therapeutically manage conditions affecting the human respiratory system. The drug's physicochemical properties underpin the formulation of inhalation delivery system. Pharmacology and applied therapeutics inform students on clinical decision making and care plan development. The strong association of smoking to lung cancer, supported by case-control study, is used to illustrate how Trans Theoretical Model for behaviour change adopted in smoking cessation programme can instil health advocacy attitude in students. The classification of medical devices and therapeutic products is used to introduce principles of regulatory science.

PR2155 Hepatic and Renal Systems: Science & Therapeutics (6 Units, Semester 2)

Pre-requisite: PR1152, PR1153 and PR2156

This 6-week course is delivered by blended learning and integrates basic, clinical and systems sciences to enable students to recognize, assess, prevent and treat diseases affecting the human hepatic and renal systems. The basic sciences include physicochemical and pharmacological properties of the drugs, metabolism and excretion of drugs, principles of toxicodynamics and toxicokinetics, and pathological changes that affect ADME processes. Applied therapeutics and therapeutic drug monitoring will form the clinical bases for effective and safe care plans. Systematic review and meta-analysis provide essential evidence for positive predictive value and negative predictive value of screening tests for liver and kidney diseases.

Year Three Courses

PR3150 Professional Identity and Skills Development (4 Units, Year Long Course, Semester 1&2, 2 units for each semester)

Pre-requisite: PR2150 and PR2151

Pharmacists must possess appropriate knowledge, skills, attitudes, professional and ethical values to deliver optimal patient-centered care. This course integrates and expands upon patient care skills, professional and ethical values introduced in PR1150, PR1151, PR2150 and PR2151. Students will be presented with more complex patient-care scenarios where they will be challenged to apply patient-care skills while demonstrating professionalism and ethical reasoning abilities. Students will participate in pre-employment clinical training to apply what has been learned in the classroom. Students will continue to adopt a reflective approach in their professional development journey as a pharmacy student and future pharmacist.

PR3151 Infection: Optimising Prevention & Treatment (6 Units, Semester 1)

Pre-requisite: PR1153 and PR2156

This 13-week course expounds on the optimisation of prevention and control of infectious diseases. The course reviews clinical microbiology and host-related factors associated with pathogenesis, transmission, prevention and treatment of infectious diseases. Students will learn the principles of vaccine manufacturing, sterile preparations, pharmacology, medicinal chemistry and spectrum of activity of antimicrobials, and actions of disinfectants. The optimal use of vaccination and antimicrobials in the prevention and treatment of infectious diseases will be emphasised. Students will also be introduced to principles of antimicrobial stewardship and interpret point prevalence studies to identify areas for improving antimicrobial use to hone systems thinking.

PR3152 Immune & Endocrine Systems: Science & Therapeutics (6 Units, Semester 1)

Pre-requisite: PR1153 and PR2156

Blended learning is the way of instruction for this 6-week course. Students learn to recognize, assess, prevent and therapeutically manage conditions affecting the human immune and endocrine systems. Applied therapeutics and pharmacology provide the knowledge for clinical reasoning. The scientific topics include cellular and humoral components of the immune system; impact of physicochemical and pharmacokinetic properties on the biologics' ADME profile; biotechnological techniques employed for biologics manufacture; immune mediated toxicity and risk; differentiation of proprietary products and their biosimilars. Pharmacist's value in a collaborative care team is discussed. The socio-economic impact on the use of therapeutic biologics is studied.

PR3153 Central Nervous System: Science & Therapeutics (6 Units, Semester 2)

Pre-requisite: PR1153 and PR2156

This 6-week course is taught by blended learning. The integration of basic and clinical sciences enables students to recognize, assess, prevent and therapeutically manage conditions affecting the human central nervous system (CNS). Basic sciences include the morphology and pathophysiology of the CNS; medicinal chemistry of the CNS drugs; and transdermal drug delivery will be introduced. Pharmacology and applied therapeutics form the basis of clinical reasoning for achieving therapeutic goals of patients. Students are certified as mental health first aiders. Inquiry-based study is supported using qualitative and quantitative research methodologies.

PR3154 Haematological & Musculoskeletal Systems: Science & Therapeutics (6 Units, Semester 2)

Pre-requisite: PR1153 and PR2156

Basic science and applied therapeutics of the human haematological and musculoskeletal systems are integrated in this 6-week course. Through blended learning, students learn about the structure and pathophysiology of the haematological and musculoskeletal systems; the various pharmacological bases of inflammatory and pain intervention; the management of rheumatoid arthritis, gout, muscular spasm and therapeutics for coagulation disorders and anaemia. Drug-related toxicity of the haematological and musculoskeletal systems is discussed. Systems thinking is instilled with cases on transition of care for the elderly; evaluation and improvement of medication use on a system level through medication use evaluation and concepts of pharmacovigilance.

PR4191 SCI-PhI Project (8 Units, 3 Semesters Long Course, Year 3 Semester 1&2 and Year 4 Sem 1, 4 units for each semester but total units will be 8 units)

Pre-requisite: PR2150 and PR2151

Student-led Collaborative Innovative Pharmacy Inquiry (SCI-PhI) Project is a year-long course that aims to provide opportunities for creative inquiry connected to the real world, using rigorous academic approaches in the derivation of innovative solutions. Students will work in teams to perform hands-on research and project work, with advisors from diverse disciplines and expertise. Teams will present their proposals and completed work or findings in written and oral academic communications at various timepoints of the academic year, appropriate to the audience.

Year Four Courses

PR4150 Professional Identity and Skills Development IV (4 Units, Year Long Course, Semester 1&2, 2 units for each semester)

Pre-requisite: PR3150

This is the capstone course for the development of professional identity and patient care skills among the senior pharmacy students before graduation. This course aims to integrate legal principles and norms of practice by empowering students to use ethical reasoning skills to navigate grey situations in practice. Professional and health products legislations will be included. Applied patient care skills in special patient populations will also be reviewed. The course will be delivered through blended learning using videos, workshops and skills labs. Students will be assessed by OSCE and a Forensic Examination recognized by the Singapore Pharmacy Council as registration requirement.

PR4151 Leading the Future of Pharmacy (4 Units, Semester 2)

Pre-requisite: PR3150

Pharmacy services form an important integral part of the Singapore health system. Within a dynamic and complex healthcare landscape, healthcare resources allocation is important to ensure services are sustainable, and readily accessible. Pharmacists must play a role in influencing and leading the profession to a high level of excellence where optimal patient outcomes are key performance indicators. Therefore, pharmacists entering practice must be equipped with foundational competence in leadership, resource management, pharmacoeconomic evaluation, as well as cost-effectiveness analysis for meeting challenges in the future of pharmacy. This course provides those foundational competence in preparing graduates for the workforce.

PR4152 Integrated Management of Multi-Morbid Patients (4 Units, Semester 2)

Pre-requisite: PR3154

In this 13-week course, students will describe the pharmacist's role and apply the principles of managing geriatric and palliative care patients with multimorbidity to optimize their care and health outcomes. The elderly, terminally-ill and multi-morbid patients will form the main patient population groups to be covered. Key areas of focus will include ensuring patient safety, applying clinical reasoning to identify and resolve drug-related problems and optimise drug regimens, principles of prescribing continuum (rationale prescribing/deprescribing) through interprofessional collaboration, as well as advising and advocating on issues pertaining to accessibility, affordability and quality of care.

PR4192 Direct Patient Care Internship (8 Units)

Pre-requisite: PR3150

This course provides an opportunity for pharmacy undergraduates to undergo pre-employment clinical training (PECT). It will require the students to undertake full-time experiential learning in a direct patient care setting situated in the community. This will include attachment to primarily the retail pharmacies or polyclinic pharmacies. Students will hone competencies essential for managing primary care for patients or clients through actively participating in professional activities. These activities may include, and not limiting to the following: manage minor ailments, fulfil medication order, counsel patients on medicine use, promote health and respond to drug information.

PR4193 Indirect and Specialty Patient Care Internship (8 Units)

Pre-requisite: PR3150

This course provides an opportunity for pharmacy undergraduates to undergo pre-employment clinical training (PECT) in either the indirect or specialty care sector. It will require the students to undertake full-time experiential learning in a selected setting which can be indirect or specialty patient care. The setting may be a (i) pharmaceutical company, (ii) regulatory agency, (iii) manufacturing facility (iv) specialty centre such as cancer centre, skin centre, or eye centre or (v) administrative pharmacy. It may include emerging areas of practice where a pharmacist has a new role to play. Students will undertake professional activities that will hone competencies in pharmaceutical care provision, communication, professionalism, leadership, collaboration, management and research.