SCHOOL OF
PHARMACY
B.SC. PHARMACY
1. INTRODUCTION

Curriculum goals:
(a) General
To provide sound education and training, both theoretical and practical, in the basic health sciences, the Pharmaceutical Sciences, Clinical Pharmacy and Pharmacy Practice so that the graduates not only have current knowledge of their subject, but also are disciplined to become lifelong learners to the benefit of patients and the future development of Pharmacy.

(b) Outcome expectations and professional competencies
Professional competencies that should be achieved through the curriculum in pharmacy include the ability to:

a) Evaluate drug orders or prescriptions, compound, package and dispense drugs in appropriate dosage forms;
b) Manage systems for storage, preparation, and dispensing of medicines, and supervise technical personnel who may be involved in such processes;
c) Manage and administer a pharmacy and pharmacy practice;
d) Apply computer skills and technological advancements to practice;
e) Communicate and collaborate with health care professionals and patients regarding rational drug therapy, wellness and health promotion;
f) Design, implement, monitor, evaluate, and modify or recommend modifications in drug therapy in consultation with the physician to ensure effective, safe and economical patient care;
g) Identify, assess and solve medication-related problems, and provide a clinical judgment as to the continuing effectiveness of individualised therapeutic plans and intended therapeutic outcomes;
h) Evaluate patients and order medications and/or laboratory tests in accordance with established standards or practice;
i) Evaluate patient problems and triage patients for other health professionals as appropriate;
j) Monitor and counsel patients regarding the purposes, uses and effects of their medications and related therapy;
k) Recommend appropriate non-drug therapies (including lifestyle modifications) in the provision of patient care;
l) Recommend, counsel and monitor patient use of non-prescription drugs;
m) Retrieve, evaluate and manage professional information and literature;
n) Use clinical data to optimise therapeutic drug regimens;
o) Evaluate and document interventions and pharmaceutical care outcomes.

Programme Description
Core Areas of the Curriculum
The curriculum in pharmacy provides the student with a core of knowledge, skills, abilities, attitudes and values that, in composite, relate to the professional competencies and outcome expectations, and it includes the following areas:

- Basic health sciences, including anatomy, physiology, general pathology, pathophysiology, microbiology, immunology, biochemistry and biostatistics.
- Pharmaceutical sciences, including pharmaceutical chemistry, medicinal chemistry, pharmacology, toxicology and pharmaceutics, which encompasses physical and chemical principles of dosage forms and drug delivery systems, biopharmaceutics and pharmacokinetics;
- Behavioural, social and administrative pharmacy sciences, including pharmacoeconomics, practice management, communications applicable to pharmacy, the history of pharmacy, ethical foundations to practice, social and behavioural applications and laws pertaining to practice;
- Pharmacy practice, including prescription processing, compounding and preparation of dosage forms, drug distribution and drug administration, epidemiology, paediatrics, geriatrics, gerontology, nutrition, health promotion and disease prevention, physical assessment, clinical pharmacokinetics, patient evaluation and ordering medications, pharmacotherapeutics, disease-state management, outcomes documentation, self-care/non-prescription drugs, and drug information and literature evaluation;
- Professional experience, including a variety of practice experiences acquired throughout the curriculum as a continuum, progressing from the Introductory Pharmacy Practice experiences to the Advanced Pharmacy Practice experiences, which include outreach clinical clerkship at Institutional and Community Sites.
2. REGULATIONS

2.1 Entry requirements

2.1.1 Full time students
The minimum requirements for admission to the BSc Pharmacy programme are the candidates’ performance and attainment in Chemistry plus one other from Biology, Zoology, Physics or Mathematics in the Caribbean Advanced Proficiency Examination (CAPE) / GCE A’ level equivalent.

2.1.2 If a candidate has not passed Physics at the CAPE /GCE A’ level examinations, he/she is required to have passed this subject at the CXC /GCE Ordinary level or equivalent examinations.

2.1.3 Passes in the above subjects taken in preliminary and/or introductory examinations in the Faculty of Agriculture and Natural Sciences, UWI or equivalent examinations in institutions recognised by the UWI, are acceptable.

2.1.4 Programme for part time (diploma holders) students
Registered Pharmacists holding a diploma/certificate/associate degree in Pharmacy may be eligible to join the degree programme and will follow a part-time programme of studies.

2.1.5 Course of Study
The duration for the full time programme is not less than eight (8) semesters and that for the part-time programme not less than six (6) semesters.

2.2 Exemption

2.2.1 A student who holds a diploma/certificate/associate degree in pharmacy and passed an examination from this or other recognised university in a course equivalent to the part or whole of a course in the pharmacy degree courses may apply through the Head of the School for exemptions. The Head of the School shall examine the syllabus, nature and duration of, and student’s grading in the examination in that course, the time that has elapsed since it had been completed, and in particular whether such a course is equivalent in whole or in part to that offered in the University of the West Indies. The Head of the School, through the Dean, shall make one of the following recommendations to the Faculty Board, indicating reasons for such recommendations:
(a) That the student be exempted from both the course and the examination
(b) That the student be exempted from a part or the whole of the course, but be required to take a part of or the full examination.
(c) That the application be rejected.

2.2.2 Exemptions shall not be granted automatically to students who have been asked to withdraw from and/or have been re-admitted to the Faculty.

2.3 Language and Communication Proficiency / UWI Foundation Courses

2.3.1 All students will be required to follow and complete satisfactorily a course on Communication Skills for Health Personnel.

2.3.2 All students will be required to complete a module on Computer Operations and Information Management in order to fully utilise the information services and learning resource materials at the Medical Sciences Library.

2.3.3 All students will be required to complete the required foundation courses as set out by the University of the West Indies.

2.4 Attendance

2.4.1 Attendance in excess of 75% is mandatory in all courses. Students are required to inform the office of the Director, School of Pharmacy within one week of any absence from any part of the course. Late excuses will not be accepted.

2.5 Examinations

2.5.1 A student shall not be approved by the Examiners in any one part or section of an examination unless she/ he has attended all of the required coursework tests and written, practical and oral examinations in that part.

2.5.2 All students must register for examinations on the completion of the courses. Failure to register will carry an absent/fail penalty.

2.5.3 Examinations may consist of written papers, which may include essays, multiple choice, practical and/or oral examinations.

2.5.4 Examinations will be held at the end of each course completed during a semester or academic year.

2.5.5 The Continuous Assessment for all courses from years 2 to 4 examined in semester II, except Pharmacy Practice IV (PHAR 4201), will carry a value of 30% and the Final Examination will carry a value of 70%: 60% written and 10% oral, for courses with an oral examination component.

2.5.6 The Continuous Assessment for all courses in year 1, and those courses from years 2 to 4 without an oral component, examined in semester I, except Pharmacy Seminars (PHAR 4103) and Research Project (PHAR 4104), shall carry a value of 40% and the Final Examination 60%.
2.5.7 The Continuous Assessment for Pharmacy Practice IV (PHAR 4201) will carry a value of 30% and the Final Exam 70%: the written paper 30%, an Objective Structured Practice Exam (OSPE) 30% and the oral 10%.

2.5.8 The Assessment for Pharmacy Seminars (PHAR 4103) will consist of 100% coursework.

2.5.9 The Continuous Assessment for Research Project (PHAR 4104) will carry a value of 20%, the written presentation 40% and the oral presentation 40%.

2.5.10 Coursework assessment marks will be used for examinations in one academic year only. For students repeating courses, new coursework marks must be generated.

2.5.11 The requirement for a pass in each course shall be 50%.

2.5.12 A student who fails the examination in the first attempt will be required to repeat the failed examination at the next available sitting. No student will be allowed to advance if she/he has failed in two or more courses.

2.5.13 A student who fails in the third attempt will be required to withdraw from the School. A supplemental examination will not be considered as an attempt.

2.5.14 No student will be eligible to proceed to the final year unless she/he has passed all the previous courses.

2.5.15 The cumulative GPA calculated for all courses, from Year 1 to Year 4, with the exception of foundation courses, shall be taken into consideration for the classification of the degree awarded as first class, upper second class and lower second class. A student whose cumulative GPA is less than 2.0 is awarded a pass.

2.5.16 Students scoring 86% and above in a course shall be declared to have passed the course with distinction. However, a student who achieves a failing grade at the first attempt is not eligible for distinction in that course.

2.6 Grading scheme

2.6.1 Each course will be awarded grades and grade points on the basis of the marks obtained as follows:

<table>
<thead>
<tr>
<th>GRADE</th>
<th>PERCENTAGE</th>
<th>GRADE POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>86-100</td>
<td>4.3</td>
</tr>
<tr>
<td>A</td>
<td>70-85</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>67-69</td>
<td>3.7</td>
</tr>
<tr>
<td>B+</td>
<td>63-66</td>
<td>3.3</td>
</tr>
<tr>
<td>B</td>
<td>60-62</td>
<td>3.0</td>
</tr>
<tr>
<td>B-</td>
<td>57-59</td>
<td>2.7</td>
</tr>
<tr>
<td>C+</td>
<td>53-56</td>
<td>2.3</td>
</tr>
<tr>
<td>C</td>
<td>50-52</td>
<td>2.0</td>
</tr>
<tr>
<td>F</td>
<td>&lt;50</td>
<td>0.0</td>
</tr>
</tbody>
</table>

2.7 Award of degree

2.7.1 A student is eligible for the award of a BSc Pharmacy Degree on the attainment of 123 credits. The classes of Degree will be awarded as indicated below:

- GPA ≥ 3.6 and above: First Class Honours
- 3.0 - 3.59: Upper Second Class Honours
- 2.0 - 2.99: Lower Second Class Honours
- Less than 2.00: Pass

2.7.2 Grade points are determined by multiplying the course credits by the quality points for a course.

2.7.3 Grade Point Average (GPA) is the average obtained by dividing the total grade points earned by the total credit hours (quality hours or course credits) for which the student has registered for any stated period of time.

3. THE NEW CURRICULUM (YEARS 1-4)

<table>
<thead>
<tr>
<th>YEAR 1</th>
<th>SEMESTER I Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR 1201</td>
<td></td>
<td>Pharmacy Practice I (Orientation to Profession of Pharmacy, Introduction to Dosage Forms)</td>
<td>(3)</td>
</tr>
<tr>
<td>PHAR 1202</td>
<td></td>
<td>Pharmaceutical Chemistry</td>
<td>(3)</td>
</tr>
<tr>
<td>PHAR 1203</td>
<td></td>
<td>Integrated Basic Health Sciences (Anatomy, Physiology, Biochemistry, Community Health)</td>
<td>(6)</td>
</tr>
<tr>
<td>COMS 1001</td>
<td></td>
<td>Communication Skills for Health Personnel I</td>
<td>(3)</td>
</tr>
</tbody>
</table>
## FOUNDATION COURSE

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOUN 1101</td>
<td>Caribbean Civilisation* OR</td>
<td></td>
</tr>
<tr>
<td>FOUN 1301</td>
<td>Law, Governance, Economy &amp; Society</td>
<td>3</td>
</tr>
</tbody>
</table>

### SEMESTER II

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR 1201</td>
<td>Pharmacy Practice I</td>
<td></td>
</tr>
<tr>
<td>PHAR 1202</td>
<td>Pharmaceutical Chemistry</td>
<td></td>
</tr>
<tr>
<td>PHAR 1203</td>
<td>Integrated Basic Health Sciences</td>
<td></td>
</tr>
<tr>
<td>COMS 1002</td>
<td>Communication Skills for Health Professionals II</td>
<td></td>
</tr>
</tbody>
</table>

## SEMESTER II

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR 1201</td>
<td>Pharmacy Practice I</td>
<td></td>
</tr>
<tr>
<td>PHAR 1202</td>
<td>Pharmaceutical Chemistry</td>
<td></td>
</tr>
<tr>
<td>PHAR 1203</td>
<td>Integrated Basic Health Sciences</td>
<td></td>
</tr>
<tr>
<td>COMS 1002</td>
<td>Communication Skills for Health Professionals II</td>
<td></td>
</tr>
</tbody>
</table>

## YEAR 2

### SEMESTER I

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR 2105</td>
<td>Microbiology, Immunology and General Pathology</td>
<td>3</td>
</tr>
<tr>
<td>PHAR 2201</td>
<td>Pharmacy Practice II (Compounding Lab)</td>
<td>2</td>
</tr>
<tr>
<td>PHAR 2202</td>
<td>Medicinal Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>PHAR 2203</td>
<td>Pharmaceutics (dosage form design)</td>
<td>4</td>
</tr>
<tr>
<td>PHAR 2209</td>
<td>Pharmacology</td>
<td>3</td>
</tr>
</tbody>
</table>

### SEMESTER II

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR 2106</td>
<td>Pharmaceutical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PHAR 2201</td>
<td>Pharmacy Practice II Laboratory</td>
<td></td>
</tr>
<tr>
<td>PHAR 2203</td>
<td>Pharmaceutics (Biopharmaceuticals, New Drug</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delivery Systems &amp; Devices)</td>
<td></td>
</tr>
<tr>
<td>PHAR 2202</td>
<td>Medicinal Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>PHAR 2209</td>
<td>Pharmacology</td>
<td>3</td>
</tr>
</tbody>
</table>

## SEMESTER II

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR 2105</td>
<td>Microbiology, Immunology and General Pathology</td>
<td>3</td>
</tr>
<tr>
<td>PHAR 2201</td>
<td>Pharmacy Practice II (Compounding Lab)</td>
<td>2</td>
</tr>
<tr>
<td>PHAR 2202</td>
<td>Medicinal Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>PHAR 2203</td>
<td>Pharmaceutics (dosage form design)</td>
<td>4</td>
</tr>
<tr>
<td>PHAR 2209</td>
<td>Pharmacology</td>
<td>3</td>
</tr>
</tbody>
</table>

## YEAR 3

### SEMESTER I

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR 3104</td>
<td>Pharmacy Law &amp; Ethics</td>
<td>2</td>
</tr>
<tr>
<td>PHAR 3105</td>
<td>Biostatistics &amp; Research Methodology</td>
<td>3</td>
</tr>
<tr>
<td>PHAR 3106</td>
<td>Complementary / Alternative Medicine, Non-Prescription Drugs</td>
<td>3</td>
</tr>
<tr>
<td>PHAR 3201</td>
<td>Pharmacy Practice III (prescription dispensing &amp; site visits)</td>
<td>3</td>
</tr>
<tr>
<td>PHAR 3205</td>
<td>Applied Therapeutics</td>
<td>6</td>
</tr>
<tr>
<td>PHAR 3203</td>
<td>Pharmacokinetics (Basic &amp; Clinical)</td>
<td>3</td>
</tr>
</tbody>
</table>

### SEMESTER II

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR 3201</td>
<td>Pharmacy Practice III (Drug Information / Literature Evaluation)</td>
<td>2</td>
</tr>
<tr>
<td>PHAR 3206</td>
<td>Applied Therapeutics II</td>
<td>6</td>
</tr>
<tr>
<td>PHAR 3203</td>
<td>Pharmacokinetics (Basic &amp; Clinical)</td>
<td>3</td>
</tr>
</tbody>
</table>

## YEAR 4

### SEMESTER I

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR 4102</td>
<td>Pharmacy Administration</td>
<td>4</td>
</tr>
<tr>
<td>PHAR 4103</td>
<td>Pharmacy Seminars</td>
<td>2</td>
</tr>
<tr>
<td>PHAR 4201</td>
<td>Pharmacy Practice IV (Clinical Skills,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient Counselling, Introduction to Clerkship)</td>
<td>8</td>
</tr>
</tbody>
</table>

**ELECTIVES (any two)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR 4104</td>
<td>Research Project</td>
<td>2</td>
</tr>
<tr>
<td>PHAR 4105</td>
<td>Community Pharmacy Practice Management</td>
<td>2</td>
</tr>
<tr>
<td>PHAR 4106</td>
<td>Institutional Pharmacy Practice Management</td>
<td>2</td>
</tr>
<tr>
<td>PHAR 4107</td>
<td>Clinical Toxicology</td>
<td>2</td>
</tr>
<tr>
<td>PHAR 4108</td>
<td>Pharmaco economics</td>
<td>2</td>
</tr>
</tbody>
</table>

## PART-TIME PROGRAMME

### MODULE 1

#### SEMESTER I

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR 1203</td>
<td>Integrated Basic Health Sciences</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>(Anatomy, Physiology, Biochemistry, Community Health)</td>
<td></td>
</tr>
<tr>
<td>PHAR 2105</td>
<td>Microbiology, Immunology and General Pathology</td>
<td>3</td>
</tr>
<tr>
<td>PHAR 2202</td>
<td>Medicinal Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>PHAR 2209</td>
<td>Pharmacology</td>
<td>3</td>
</tr>
<tr>
<td>COMS 1001</td>
<td>Communication Skills for Health Professionals I</td>
<td>3</td>
</tr>
</tbody>
</table>

## Foundation Course,

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOUN 1101</td>
<td>Caribbean Civilisation *OR</td>
<td></td>
</tr>
<tr>
<td>FOUN 1301</td>
<td>Law, Governance, Economy &amp; Society</td>
<td>3</td>
</tr>
</tbody>
</table>
### B.SC. PHARMACY
#### PART-TIME PROGRAMME

*Differences in course code compared to that for full-time students*

- **PHAR 2210 Pharmaceutics (P/T)**
  - PHAR 2203 is a two-semester course for full-time students (8 credits). Course content during the first semester includes Pharmaceutical Technology of dosage forms and topics during the second semester include Biopharmaceutics and new drug delivery systems. The part-time students are exempted from Pharmaceutics of first semester but they are required to register for Pharmaceutics of second semester PHAR 2210 (4 credits).

- **PHAR 3204 Pharmacy Practice III (P/T)**
  - PHAR 3201 is a two-semester course for the full-time students (5 credits), but the part-time students are exempted from the course given in semester I. They are, however, required to register for the course offered in semester II, PHAR 3204 (2 credits).

- **PHAR 4202 Pharmacy Practice IV (P/T)**
  - Pharmacy Practice Clerkship is of 600 hours duration for full-time students and 480 hours for part-time students. Part-time students have 12 credits whereas the full-time students have 16 credits for the clerkship.

5. **TEACHING, LEARNING AND ASSESSMENT STRATEGIES**

The hybrid system of teaching and learning instituted in the Faculty of Medical Sciences emphasises problem-based learning (PBL) and requires students to adopt a philosophy of self-directed study: students are self-motivated to acquire their own learning, and it facilitates the students’ achievement of the learning outcomes. In addition to PBL, learning settings will also include lectures, laboratories, clerkships for pharmacy practice, research projects, seminars, case-studies, poster presentations, numerical and non-numerical problem-solving and computer-aided learning packages.

**Knowledge and understanding:**

The strategy is to delineate a framework of knowledge and understanding of materials appropriate to the aim of the course. This is achieved through lectures, assigned reading of textbooks and reviews of journal articles, computer-aided learning materials, and practical laboratory exercises.

Assessment will be by written examinations incorporating objective questions and structured essay questions, reports of literature surveys and other coursework. Lectures are used throughout all levels. In later stages of the programme, there will be increased emphasis on personal information retrieval and use of available electronic information.
Skills:
Communication and presentation skills:
The strategy is to provide the student with opportunities to develop written and oral communication skills and general presentation skills. This is achieved via written laboratory reports, essays, seminars, case study presentations and video recorded role-playing. An oral defence will also be included. Communication skills are developed at the early stages of the curriculum and applied progressively to more complex situations in later stages, including basic counselling skills and lengthy and structured written work.

Numeric skills:
Numeric skills are developed and reinforced from the first year through tutorials, worked examples of calculations, statistical exercises, numerical treatment of data derived from laboratory exercises and simulated data. Assessment will incorporate numerical problem solving.

IT skills:
The strategy is to develop the student’s IT skills from year 1 by means of introductory lectures and incorporation of computer exercises. Assessment is by coursework activities including use of statistical packages, presentation of projects and other reports. Familiarity with computer-assisted learning materials is necessary at early stages of the course, and more sophisticated information retrieval and management are introduced at later stages.

Teamwork and interpersonal skills:
The PBL system followed from Year 1 onwards provides opportunity to develop interpersonal and group skills. In addition, case study presentations and practical laboratory work in groups will reinforce these skills.

Higher order cognitive skills:
Application of theory is an intrinsic aspect at all stages and is reflected in laboratory exercises and non-laboratory based coursework activities and research projects. These are assessed by objective, short answer and essay type questions. The skills are developed gradually through simple systems in early stages to more complex situations in optimisation methods, case studies and the planning of pharmaceutical care.

Synthesis and evaluation skills are developed at later stages subsequent to the acquisition of basic and specialised knowledge.

Problem-solving exercises are included in course activities and are assessed by mathematical, statistical and non-numerical questions and also by evaluation of research projects, case presentations and laboratory reports.

Subject-specific skills:
The curriculum develops a range of practical laboratory-based skills related to physical, chemical and biological measurements. It also develops a range of professional skills related to pharmacy practice areas.

Students must be able to evaluate patient data, scientific literature and pharmaceutical products in order to provide safe and effective products and to optimise drug utilisation for therapeutic and diagnostic purposes. Students should be responsible for basic prescription compounding functions, be able to safely prepare and handle parenteral products and demonstrate understanding of considerations necessary to assure pharmaceutical product quality; monitor the safety and efficacy of therapeutic plans; prevent or resolve medication-related problems; respond to information requests; collaborate with physicians, other health care professionals and patients to formulate a pharmaceutical care plan; determine an appropriate drug delivery system for the patient; determine medication doses and dosage schedules; implement a pharmaceutical care plan; and provide counselling related to proper use of medications and devices.

6. COURSE DESCRIPTIONS

YEAR I COURSES

COURSE TITLE: PHARMACY PRACTICE I
COURSE CODE: PHAR 1201
SEMESTER: ONE (1) & TWO (2)
COURSE CREDITS: FIVE (5)
ASSESSMENT: COURSEWORK 40%; FINAL EXAM 60%

Orientation to the Profession of Pharmacy, Introduction to Dosage Forms (Semester 1, 3 credits)
This course introduces the student to the profession of pharmacy. It covers the development of pharmacy since the emergence of scientific medicine through the current pharmaceutical care era. It includes the position of pharmacy in the delivery of health care by exploring major issues such as societal, political, philosophical, economic, legal and ethical issues affecting the practice of the profession. It emphasises the requirements, responsibilities and attitudes that are essential for success as a professional and examines the various career pathways and roles of the pharmacists.

Pharmacy Calculations (semester 2, 2 credits)
This course deals with various types of calculations required for compounding and dispensing of medications, including conversions of different units of measurement, interpretation of prescription orders and accurate dosage calculations.
COURSE TITLE: PHARMACEUTICAL CHEMISTRY  
COURSE CODE: PHAR 1202  
SEMESTER: ONE (1) & TWO (2)  
COURSE CREDITS: SIX (6)  
ASSESSMENT: COURSEWORK 40%; FINAL EXAM 60%

This course covers the study of organic, inorganic and physical chemistry of chemicals to provide an understanding of chemical structures, physicochemical properties and behaviour of drugs at the molecular level. The course also includes the study of various classes of compounds like alkanes, alkyl halides, alkenes, cyclic aliphatic, aromatic and heterocyclic compounds; stereochemistry and its applications to the activities of pharmaceuticals; chemical reactions of various functional groups; concepts of acidity and alkalinity, solubility, partition coefficient and chemical kinetics; and the use of different classes of inorganic compounds in pharmaceutical/medicinal applications, including radionuclides. Laboratory experiments are designed to illustrate the applications of these concepts in the analysis of drugs and pharmaceuticals.

COURSE TITLE: INTEGRATED BASIC HEALTH SCIENCES  
COURSE CODE: PHAR 1203  
SEMESTER: ONE (1) & TWO (2)  
COURSE CREDITS: SIX (6)  
ASSESSMENT: COURSEWORK 40%; FINAL EXAM 60%

The study of Basic Health Sciences, including anatomy, physiology and biochemistry, is important for building a strong foundation of knowledge of natural drugs and their actions within the body, and also for further understanding of pathophysiology of diseases involving various organ systems in the body.

These basic medical sciences are taught in an integrated approach, covering various topics such as cells and cell biology; tissues and organ systems like cardiovascular, central and peripheral nervous systems; digestion and metabolism; cardiovascular and renal; respiration; endocrines and reproduction; and muscles, bones and joints. The course also includes community health aspects involving public health, primary care and epidemiology of diseases related to various organ systems.

COURSE TITLE: CARIBBEAN CIVILISATION  
COURSE CODE: FOUN 1101  
SEMESTER: ONE (1) OR TWO (2)  
COURSE CREDITS: THREE (3)  
ASSESSMENT: COURSEWORK 40%; FINAL EXAM 60%

The student develops an awareness of the main process of cultural development in the Caribbean societies, highlighting the factors, the problematic and the creative output that have fed the emergence of Caribbean identities; a perception of the Caribbean as wider than island nations or linguistic blocs; interest in and commitment to Caribbean civilisation and to further their self definition.

COURSE TITLE: LAW, GOVERNANCE, ECONOMY AND SOCIETY  
COURSE CODE: FOUN 1301  
SEMESTER: ONE (1) OR TWO (2)  
COURSE CREDITS: THREE (3)  
ASSESSMENT: COURSEWORK 40%; FINAL EXAM 60%

The course introduces some of the major institutions in Caribbean society. It exposes the student to both the historical and contemporary aspects of Caribbean society, including Caribbean legal, political and economic systems. In addition, Caribbean culture and Caribbean social problems are discussed.

COURSE TITLE: COMMUNICATION SKILLS FOR HEALTH PERSONNEL I & II  
COURSE CODE: COMS 1001, 1002  
SEMESTER: ONE (1) & TWO (2)  
COURSE CREDITS: SIX (6)  
ASSESSMENT: COURSEWORK 40%; FINAL EXAM 60%

COMMUNICATION SKILLS I – COMS 1001 (Semester I, 3 credits)

This course uses a skills approach to the practice of effective communication in health settings. Students will be able to function effectively as individuals in public, small group and face-to-face interactions with persons seeking health care. They will also be able to communicate effectively in writing across a range of forms necessary to the health profession.

Communication Skills II – COMS 1002 (Semester II, 3 credits)

This course uses a skills approach to the application of effective communication principles in counselling and conveying messages in health settings. Students will be able to conduct counselling sessions and use clinical instruction methods. They will also be able to use appropriate strategies and technology to convey messages to patients, clients and other professionals.

YEAR II COURSES

COURSE TITLE: PHARMACY PRACTICE II (COMPOUNDING SKILLS, STERILE PRODUCT PREPARATION)  
COURSE CODE: PHAR 2201  
SEMESTER: ONE (1) & TWO (2)  
COURSE CREDITS: FOUR (4)  
ASSESSMENT: COURSEWORK 30%; ORAL EXAM 10%; FINAL EXAM 60%

Compounding Skills (Semester 1, 2 credits)

The student receives instructions on the art and science of compounding products that are used for (self) treatment to cure or alleviate specific (dermatological, ophthalmic etc.) conditions as well as for physician-prescribed medicaments. Techniques used in compounding are emphasised to ensure that good manufacturing practices are achieved. Storage and handling, aseptic techniques and preparation, equipment, labelling, expiration dating, documentation and patient counselling are discussed, among other topics.
Sterile Product Preparation (Semester 2, 2 credits)
The sterile products laboratory module introduces the students to sterile preparations and intravenous admixtures. Emphasis is placed on the sterile environment, aseptic techniques, effective use of a laminar flow hood, manipulations of the various injectable packages/needles/syringes, dose calculations, incompatibilities, safe compounding/dispensing/administration, quality assurance, the preparation of Parenteral Nutrition and the safe preparation and handling of cytotoxic agents. Students learn the role and responsibilities of the clinical pharmacist in parenteral nutrition prescription and cytotoxic agents prescriptions.

COURSE TITLE: MEDICINAL CHEMISTRY
COURSE CODE: PHAR 2202
SEMESTER: ONE (1) & TWO (2)
COURSE CREDITS: SIX (6)
ASSESSMENT: COURSEWORK 30%; ORAL EXAM 10%; FINAL EXAM 60%

This course has been designed to assist the students in understanding the structure, Structure-Activity-Relationships (SAR), physicochemical and structural basis of drug action; drug sources; mechanisms of drug action; drug design and drug selectivity; drug incompatibility; drug interactions of commonly used drugs affecting autonomic, cardiovascular, central and peripheral nervous, gastrointestinal, blood and renal systems; and also the drugs used to prevent or treat various bacterial, viral, protozoal and fungal infections and cancer.

The course also describes how the physical features of the drug such as pKₐ and partition coefficient, and the chemical features such as conformational and configurational features, contribute to drug activity and affect its administration, distribution, metabolism and excretion.

COURSE TITLE: PHARMACEUTICS INCLUDES (DOSES FORM DESIGN, BIOPHARMACEUTICS, NEW DRUG DELIVERY SYSTEMS AND DEVICES)
COURSE CODE: PHAR 2203
SEMESTER: ONE (1) & TWO (2)
COURSE CREDITS: EIGHT (8)
ASSESSMENT: COURSEWORK 30%; ORAL EXAM 10%; FINAL EXAM 60%

Dosage form design (semester 1, 4 credits)
An introduction to the technologic and scientific principles underlying the preparation of dosage forms and drug delivery systems. Students should develop an understanding of the inter-relationship between physical pharmacy principles, biopharmaceutics and dosage form design, including modifying the release pattern of a drug from its dosage form/device (sustained-release, controlled-release and site specific drug delivery systems) and the clinical applications in patient care. Product examples and the applications of each type of dosage form are emphasised to give the beginner an orientation to pharmacy practices.

Biopharmaceutics, New drug delivery systems and devices (Semester 2, 4 credits)
Biopharmaceutics provides an understanding of the relationship between physical, chemical and biological principles as they apply to drug absorption, distribution, metabolism, excretion and factors that influence the bioavailability of orally administered drugs.

COURSE TITLE: PHARMACOLOGY
COURSE CODE: PHAR 2209
SEMESTER: ONE (1) & TWO (2)
COURSE CREDITS: SIX (6)
ASSESSMENT: COURSEWORK 30%; ORAL EXAM 10%; FINAL EXAM 60%

This course has been designed to assist the students in learning about the most often used medications to treat patients. It will provide a framework for more in-depth study of pharmacology and support the student in learning the names, mechanisms/actions, uses, and side effects of commonly used drugs affecting autonomic, cardiovascular, central and peripheral nervous, gastrointestinal, blood and renal systems, and also of the drugs used to prevent or treat various bacterial, viral, protozoal and fungal infections and cancer.

COURSE TITLE: MICROBIOLOGY, IMMUNOLOGY AND GENERAL PATHOLOGY
COURSE CODE: PHAR 2105
SEMESTER: ONE (1)
COURSE CREDITS: THREE (3)
ASSESSMENT: COURSEWORK 40%; FINAL EXAM 60%

Microbiology: Students are expected to develop knowledge and understanding of the pharmaceutical aspects of microbiology, the nature and use of antibiotics and other antimicrobial agents, and the types and use of antiseptics, disinfectants and preservatives. The course includes a study of microorganisms and the clinical infections they cause; theoretical and practical aspects of active and passive immunisation against infectious diseases; classification or range of antimicrobial agents; sterilisation methods preventing contamination of pharmaceutical products; and understanding the need for a well-developed strategy for controlling infectious diseases.

Immunology: Incorporates an overview of the immune system (organisation of the immune system, innate and acquired immunity, antibodies, including generation of diversity, structure and function relationships, T-cells – structure, function and effects mechanisms); Major histocompatibility antigens, antigen processing and presentation; Overview of cytokines; Immunopathology, including immunodeficiency, hypersensitivity, autoimmune, transplantation and immunosuppressive modality; and immunisation.

General pathology: Basic pathophysiological and morphological changes that are associated with some common pathological states like cell injury, acute and chronic inflammation, cell growth, oedema, haemorrhage, thrombosis, wound healing, mechanisms of carcinogenesis and characteristics of neoplasms are covered.
COURSE TITLE: PHARMACEUTICAL ANALYSIS  
COURSE CODE: PHAR 2106  
SEMESTER: TWO (2)  
COURSE CREDITS: THREE (3)  
ASSESSMENT: COURSEWORK 30%; ORAL EXAM 10%; FINAL EXAM 60%

This course involves the practical application of modern analytical techniques such as spectroscopy and chromatography to the identification and quantisation of drugs and pharmaceutical products.

YEAR III COURSES

COURSE TITLE: PHARMACY PRACTICE III (PRESCRIPTION DISPENSING, DRUG INFORMATION/ LITERATURE EVALUATION AND SITE VISITS)  
COURSE CODE: PHAR 3201 & PHAR 3204  
SEMESTER: ONE (1) & TWO (2)  
COURSE CREDITS:FIVE (5)  
ASSESSMENT: COURSEWORK 30%; ORAL EXAM 10%; FINAL EXAM 60%

The course simulates actual pharmacy practice with a problem solving approach. It is intended as a transition between the didactic course work and later externship and clerkship experiences. It cultivates in the student an ability to utilise professional knowledge to analyse and solve problems that occur in the domains of community and institutional practice. In this process, the student learns to communicate effectively with patients, peers and other health professionals, and exhibits confidence during these interactions.

Drug Information and Literature Evaluation (Semester 2, 2 credits; PHAR 3204 P/T)

Pharmacy Practice seeks to acquaint the student with various information resources, and knowledge to appropriately utilise these references in responding to drug information requests. The course will review the primary, secondary and tertiary literature, indexing and abstracting systems, the systemic search strategy, and the principles of literature evaluation - ultimately, the approach for preparing, communicating and documenting the exact information needed for responding to a drug information request in an acceptable and timely manner. Additionally, it is intended that the student would become familiar with electronic databases and the Internet.

COURSE TITLE: APPLIED THERAPEUTICS  
COURSE CODE: PHAR 3205 & 3206  
SEMESTER: ONE (1) & TWO (2)  
COURSE CREDITS:TWELVE (12)  
ASSESSMENT: COURSEWORK 30%; ORAL EXAM 10%; FINAL EXAM 60%

Study of this course involves a description of the basic pathophysiology and clinical manifestations of disease states; how the pharmacological actions of drugs and their pharmacokinetic properties are utilised in the clinical setting to produce therapeutic effect; to explain the toxicities, interactions and contraindications to these drugs; to acquire the skill required to ensure the most effective and efficient use of drugs as therapeutic tools from a knowledge of the desired therapeutic objectives and feasible therapeutic alternatives, by selecting and individualising a drug treatment regimen and by designing a patient monitoring plan to achieve the stated therapeutic goals. It provides opportunities for a student to select, interpret and integrate patient, drug and disease information in order to prevent, detect and resolve drug-related problems.

COURSE TITLE: PHARMACOKINETICS (BASIC & CLINICAL)  
COURSE CODE: PHAR 3203  
SEMESTER: ONE (1) & TWO (2)  
COURSE CREDITS:SIX (6)  
ASSESSMENT: COURSEWORK 30%; ORAL EXAM 10%; FINAL EXAM 60%

This course aims to provide a basic understanding of the time-course of drugs and metabolites in the body, including the quantitative aspects of drug absorption, distribution, metabolism and excretion. Compartmental and non-compartmental treatment of kinetic data, parameter calculations and the applications of these concepts in estimation of loading and maintenance doses will be employed.

Clinical Pharmacokinetics. This course aims to provide an understanding of the potential clinical applications of the principles of pharmacokinetics through presentation and solution of common clinical problems. The student must integrate information from pharmacokinetics, biopharmaceutics and therapeutics to decide how to maximize a patient's drug therapy while minimising untoward effects. The student learns about therapeutic drug level monitoring, how to summarise the influence of other drugs, diseases and patient factors on pharmacokinetic-based dosage alterations.
Students will demonstrate communication skills in the use of legal writing and terminology. They would be able to relate a number of Acts and Regulations to the ethico-legal practice of Pharmacy from WHO and a number of Pharmacy Associations, Boards and Councils. Students in Trinidad and Tobago will pay special attention to the Food and Drugs Regulations, The Pharmacy Board Act, The Antibiotic Ordinance, The Dangerous Drugs Act, The Narcotic Ordinance, the conditions for registration and removal of a Pharmacist, and the Code of Ethics adopted by the Pharmacy Board.

Students are taught the skills relevant to Pharmaceutical Care and optimal patient management. Focus is placed on the methods of interviewing a patient, assessing organ systems, interpreting signs and symptoms, performing diagnostic/monitoring tests and conducting life support functions.

Students will be able to practice basic counselling techniques in skills laboratory sessions with their peers through role-play and with simulated and real patients seeking pharmaceutical care. They will be able to practice these skills having been provided with information on the counselling process, behaviour in groups and the ethics of counselling. Students will also appraise modalities of counselling that have been found to be effective in dealing with adherence (compliance), convalescence, rehabilitation, sexuality, family planning, AIDS, substance abuse, bereavement and pharmaceutical care.

The social and scientific foundations of complementary and alternative medicine (CAM) leading to an evidence-based approach are covered in this course. The course covers the safety of complementary and alternative medicine products and practices (herbal products, homeopathy, acupuncture, etc.); common aspects of traditional healing systems across cultures; and overviews of CAM systems, such as ayurvedic medicine, herbal medicine, homeopathy, naturopathic medicine, nutritional biotherapy and traditional Chinese medicine.

Non-Prescription Drugs: This course describes the intention to use non-prescription/Over-The-Counter (OTC) drugs by the prerogative of the lay public to alleviate symptoms of a disease with or without the advice of a physician. Scenarios are used to expound when patient selection of an OTC is appropriate or referral to a physician for consultation is deemed to be in the patient’s interest. The Physiology, Pharmacology, Adverse Drug reactions and Patient Counselling with respect to OTCs are covered.

Students would be introduced to Clinical Clerkship and the Health Care Team in the institution. They could commence the application of communication skills, professional laws, ethics, counselling, drug therapy monitoring, drug information, research, patient interviewing and judgment to provision of Pharmaceutical Care and the pharmacist’s clinical role in the health care delivery systems. They would develop a systematic approach to patient pharmacotherapy monitoring through ward rounds, working in clinics/wards and reviewing/presenting clinical case studies.

The Biostatistical module of this course is intended to introduce students to elementary statistical concepts and commonly used analytical tools while providing the rationale underlying their use. More specifically, the course will enable students to understand basic probability concepts and use them; familiarise themselves with statistical reasoning and skills; draw inferences using statistical logic; and use statistical packages for data management and processing. The research methodology module is intended to expose students to basic research designs and principles applicable to medical health fields.

The Pharmacy Practice Clinical Clerkships of the B. Sc. Pharmacy degree programme are scheduled in the fourth year of the pharmacy curriculum. The purpose of the clerkship is to ensure that the integration of classroom knowledge gained in the first three years is transferred effectively to ‘hands-on’ clinical skills in the various pharmacy practice sites. The rotations are designed to allow the students to develop skills in Pharmacy Practice by working alongside experienced practitioners at all levels of health care. It incorporates the team approach of Pharmacy Practice, faculty members and health care practitioners in the community, hospitals, health centres and other patient care sites, toward the training of pharmacy students in clinical pharmacy and pharmaceutical care.
This practice-based course which focuses on developing the practice of pharmaceutical care services through prescription processing, patient care plans, drug related problems (DRP’s), drug monitoring/advising, medication counselling, public health education, drug information, the team approach in the management/care of patients, home health care, the pharmacist's role in various patient care settings as they relate to drugs, and understanding the concepts of management in hospital and community pharmacy practices. On completion of these rotations the students would have developed skills in some of the following pharmacy practice areas: Inpatient Medicine, Ambulatory Care, Community Pharmacy, and Pharmacy Administration. This is required of all final year students and involves placement in a hospital and community pharmacy with a pharmacist-preceptor or related practice setting. Off-campus placement is necessary.

**COURSE TITLE:** PHARMACY ADMINISTRATION  
**COURSE CODE:** PHAR 4102  
**SEMESTER:** ONE (1)  
**COURSE CREDITS:** FOUR (4)  
**ASSESSMENT:** COURSEWORK 40%; FINAL EXAM 60%

An introduction to pharmacy practice environment and professional issues that includes the application of marketing principles of products, pricing and promotion; the use of inventory control concepts to manage inventory and work effectively; how to manage technical personnel with proper human resources management and efficient work delegation and work flow pattern; application of the principles of planning, organising, communicating, coordinating and controlling to evaluate and propose changes in the operations of pharmaceutical care practice in community, hospital, long-term managed care or other setting; the use of financial statements and financial analysis to diagnose financial and management problems and prepare a budget for a pharmacy; understanding the basic concepts of risk management and rational decisions regarding insurance; applying principles of strategic planning to develop a course of action for any pharmacy; and applying principles of business planning to implement pharmaceutical care services, and evaluate success of service.

**COURSE TITLE:** PHARMACY SEMINARS  
**COURSE CODE:** PHAR 4103  
**SEMESTER:** ONE (1)  
**COURSE CREDITS:** TWO (2)  
**ASSESSMENT:** COURSE WORK 100%

Students in groups of five will select a topic of general interest in pharmacy practice, in consultation with the pharmacy practice staff and preceptors, and present it to an audience consisting of students and faculty, including preceptors. Topics may be selected from contemporary issues such as health economics, pharmacoconomics, pharmacoepidemiology, generic drugs and drug regulatory aspects, contemporary pharmacy practice in the country vis a vis practice in other countries, and related areas which may have some impact on the pharmacy profession and clinical cases they have come across during their experiential rotation. Each group will present two seminars. The presentations will be assessed by faculty and peers.

**PHARMACY ELECTIVES**

**COURSE TITLE:** RESEARCH PROJECT  
**COURSE CODE:** PHAR 4104  
**SEMESTER:** ONE (1)  
**COURSE CREDITS:** TWO (2)  
**ASSESSMENT:** COURSEWORK 20%; ORAL PRESENTATION 40%; WRITTEN PRESENTATION 40%

The research project aims to provide a basic level of training in systematic investigation of a topic of interest to the student. It provides an opportunity to learn about research methods, gain skill in writing a research proposal in an appropriate format, skill in literature survey and to collect the relevant research papers, design the experiment or questionnaire giving due consideration to principles of selection of subjects, inclusion/exclusion criteria, sample size and statistical consideration, collection of data, organising it and representing it in the form of tables or graphs, apply statistical methods wherever required, transform the data into useful information, discuss the results and draw a conclusion from the whole exercise. Students get an opportunity to report their findings in an appropriate format and style, present orally to an audience and defend their findings.

**COURSE TITLE:** COMMUNITY PHARMACY PRACTICE MANAGEMENT  
**COURSE CODE:** PHAR 4105  
**SEMESTER:** ONE (1)  
**COURSE CREDITS:** TWO (2)  
**ASSESSMENT:** COURSEWORK 40%; FINAL EXAM 60%

This course explores selected topics in the organisation and operation of a retail pharmacy. Topics include organising and financing a pharmacy, examining the economic and political environment, marketing pharmaceutical services, assessing automation and computerising the pharmacy and other current issues. The goal is to provide the knowledge and managerial skills to succeed in a competitive marketplace. The community practice of pharmacy also entails the clinical responsibility for the safe and appropriate use of drugs, and the control of the patient’s overall medication profile within the framework of Pharmaceutical Care.

**COURSE TITLE:** INSTITUTIONAL PHARMACY PRACTICE MANAGEMENT  
**COURSE CODE:** PHAR 4106  
**SEMESTER:** ONE (1)  
**COURSE CREDITS:** TWO (2)  
**ASSESSMENT:** COURSEWORK 40%; FINAL EXAM 60%

The student is introduced to hospital pharmacy management and to the services frequently associated with hospital pharmacy. The director of the pharmacy coordinates the services and activities of the pharmacy department with other departments. The pharmacy is responsible for the procurement, storage, compounding, manufacturing, packaging, dispensing, distribution and monitoring of medications through drug therapy management for hospitalised and ambulatory patients by legally qualified and professionally competent pharmacists. The hospital practice of pharmacy also includes clinical responsibility for the safe and appropriate use of drugs and control of the patient’s overall drug regimen within the framework of Pharmaceutical Care.
SCHOOL OF ADVANCED NURSING EDUCATION

B.Sc. Nursing (BSc.N Post RN)

Admissions

(a) Candidates must submit their applications to the Campus Registrar, The University of the West Indies, St. Augustine, normally before January 31 of each year. For procedures concerning applications and further information, candidates should write to the Campus Registrar.

(b) Applicants for admission to this programme of study will be required to satisfy the minimum standards for entry to the BSc Nursing degree programme, as set forth by the University Regulations governing matriculation as follows:

1. General Entry Requirements

1.1 Five (5) G.C.E./C.X.C. O' Levels of which two (2) must be A' Level or equivalent

1.2 or Four (4) G.C.E. of which three (3) must be at least A’ Level or equivalent

2. Special Requirements:

2.1 Completion of the basic or general qualification in Nursing: Certificate, Diploma or Associate Degree with minimum passing grade of B or its approved equivalent. In addition to the above special requirement (1.) the applicant must be a registered nurse. Entry qualifications of applicants, when assessed by the admissions team, must be equivalent to a minimum of (30) credits

2.2 Candidates with Certificates, Diplomas, or Associate Degrees with a grade lower than the approved grade, upon recommendation from the selected committee or equivalent authority, if approved for entry, will be required to write a challenge examination

2.3 Candidates may be given provisional acceptance only when they do not possess the specific requirement. However, they will be advised to obtain it while awaiting entry. A Remedial programme of integrated science will be offered to all candidates during or before entry into the programme. Additionally, such applicants can access the necessary requirement at the Pre Health Professional Programme of the School of Continuing Studies.

2.4 Candidates with additional post-basic qualification in nursing from programmes offered by The UWI or other recognised tertiary institutions may be considered for admission on a preferential basis, but must have obtained a minimum grade of B in major course components of their post-basic training.