# CURRICULUM FOR TRAINING OF PHARAMACISTS IN SIERRA LEONE

# BY

# THE EDUCATION COMMITTEE OF THE PHARMACY BOARD OF SIERRA LEONE

# CURRICULUM FOR TRAINING OF PHARAMACISTS IN SIERRA LEONE

PBSL/GL/059

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## *Section 1: Introduction and curriculum framework*

### *1.0 Introduction*

The curriculum is a five -year B. Pharm Degree programme structured to provide the students with the knowledge and competencies in;

i. General Education
ii. Basic and Biomedical Sciences
iii. Pharmaceutical Sciences and
iv. Professional Studies and Training.

The curriculum is an integration of basic medical and pharmaceutical sciences to strengthen the overall training of pharmacy students.

**Key Structures and Systems Adopted**

1. Admission criteria
2. Programmatic and module outcomes were revised using Bloom's taxonomy. Allocation of continuous assessment marks has been outlined for each module.
3. First aid (within clinical pharmacy)
4. Research Methods, in Years 4 and 5. As part of this component, students are required to develop and submit a research proposal in Year 4. The proposal is assessed and graded and contributes to the student's final dissertation grade. This approach provides students with an opportunity to receive feedback and improve their research skills before undertaking the full research project.
5. Alignment of module content with stakeholder feedback (e.g., Supply Chain Management in Year 5, inclusion of Haematology in Clinical Pharmacy)
6. Introduction of core pharmaceutical content in Year 5, to ensure that all graduating students acquire a comprehensive foundation across the various pharmaceutical disciplines.
7. Mandatory progression requirements: passing clinical examinations in Year 4 and OSCEs in Year 5

### *1.1 Overall aim and learning outcomes for B.Pharm (Hons) graduates*

**Aim**: The ultimate goal is to produce pharmacists with the knowledge, attitude and skills to deliver comprehensive pharmaceutical services.

**Learning Outcomes:** Graduates will be able to:

i. Demonstrate the knowledge and ability to relate and recall basic principles of anatomy, physiology, biochemistry, cell biology & genetics, pharmacology, chemical pathology, medical microbiology, community health, pharmaceutical chemistry, pharmaceutics, pharmacognosy, clinical pharmacy to pharmacy practice.
ii. Develop critical thinking and problem-solving skills that enable the application of knowledge to pharmacy practice and life-long learning
iii. Demonstrate skills in supply chain management, providing pharmaceutical care and promoting public health
iv. Demonstrate an understanding of health care systems and the role of the pharmacist within these systems
v. Demonstrate leadership skills, professionalism and apply the principles of ethics, pharmacy law and regulatory requirements in the practice of pharmacy.
vi. Develop effective communication and team working skills that promote pharmaceutical care
vii. Demonstrate information and communication technology skills in the application of pharmacy practice
viii. Develop an ability to design and conduct independent research

### *1.2 Teaching and learning methods*

A combination of the following teaching and learning methods, with an emphasis on student centred learning and critical thinking, will be used:

- Lectures
- Tutorials
- Bed side teaching
- Field visits
- Laboratory Practicals
- E Learning – e.g. Audio visuals, simulations
- Clinical skills
- Seminar presentations
- Assignments
- Mentorships
- Research projects and report writing

## Expectations

### Students

In order to facilitate effective learning, students are expected to do the following.

- Attend lectures / practical classes on time. They should be seated before the scheduled start time. Ten (10) minutes after the commencement of the session is considered late and the student will not be allowed in class.
- Switch off or put the phone on silence during lectures. Failure to do so, will result in the student being penalised.
- Provide written permission before taking leave except for emergency purposes.
- Submit assignments / deliver presentations according to deadlines provided by faculty staff.
- Participate with all continuous assessments and examinations.
- Class representatives are expected to liaise with lecturers and class members about delivery of the timetabled sessions.
- Must follow all university and college policies and regulations

### Faculty staff

In order to facilitate effective teaching and learning, faculty staff are expected to do the following.

- Attend lectures and examinations as per schedule, with timely submission of examination questions and grades.
- Submit lecture guidelines (syllabi / teaching plans) and notes with references to the HOD for review. Final versions should be shared with students to support their learning.
- Submit practical session guidelines.
- Attend scheduled department meetings.
- Facilitate regular feedback from students about their teaching sessions
- Comply with all university and college policies and regulations

## *1.3 Assessment Strategy*

Continuous Formative assessment, Final Summative assessment and assessment for promotion to evaluate competence in achieving the learning outcome include:

- Level 1: Formative

- SAQs
- MCQs
- Practical (e.g. laboratory reports, case presentations)

➢ Level 2– Summative

- MCQs
- SAQs
- Clinical exams / OSCEs / Practical exams
- Structured oral exams

### *1.4 Admission criteria*

#### Pre-pharmacy

Minimum of C5 in all the following subjects English Language, Chemistry, Biology, Mathematics/Further Mathematics, Physics/Core Science (at WASSCE) with a maximum **aggregate of 18** in not more than two sittings **OR** an equivalent qualification.

#### Direct entry into the 1st Year B. Pharm (Hons) Programme

Candidates can be admitted to the First (1st) year B. Pharm (Hons) programme if they fulfil the following requirements:

I. Successful completion of the Pre-pharmacy programme.
II. Diploma in Pharmacy with 5 credits at WASSCE in English Language, Mathematics/Further Mathematics, Biology, Chemistry and physics/Core Science.
III. GCE 'A' levels (A-D) in any of the following subjects: Physics, Chemistry, Biology, Mathematics; or an equivalent qualification.
IV. Graduates with a science degree preferably in Chemistry at Division 2:2 or better from a recognized university.

### *1.5 Monitoring and Evaluation of Curriculum*

The implementation of the curriculum will be monitored by PBSL Education committee. Other members of the committee will include:

1. Deans of faculties of Pharmacy from the various universities and
2. One Lecturer from each Department

Defined timeline evaluation of the new curriculum will be overseen by this committee. Key activities will include:

- Collaboration between the Education Committee of the Board and College/University.
- Development of review schedule /plan.
- Development and revision of survey tool to be implemented for both students and faculty.

**Section 2: Programme structure**

The B.Pharm (Hons) course is a five-year programme divided into three phases.

**Table 1 – Outline of B. Pharm (Hons) Programme**

| Year | Semester | Content |
|---|---|---|
| Year 1<br>Year 2 | Semester 1-4 | Basic Medical Sciences<br>Pharmaceutical Sciences<br>Community Health |
| Year 3 | Semester 5-6 | Para-Clinical Sciences<br>(Laboratory Medicine)<br>Pharmaceutical Sciences |
| Year 4<br>Year 5 | Semester 7-10 | Pharmaceutical Sciences<br>Research Project |

## 2.1 Programme for Year 1

| **Semester 1** | | **Module hours** | | | | **Credit hours per module** |
|---|---|---|---|---|---|---|
| **Module code and title** | | **Theory teaching hours** | **Theory credit hours** | **Practical teaching hours** | **Practical credit hours** | |
| ANAP101 | Anatomy and Physiology 1 | 60 | 4 | 45 | 1 | 5 |
| CPHA101 | Introduction to Pharmacy | 30 | 2 | 0 | 0 | 2 |
| PHAC101 | Pharmaceutical chemistry 1 | 30 | 2 | 45 | 1 | 3 |
| BGCB101 | Biochem. & Genetics-Cell Biology 1 | 60 | 4 | 0 | 0 | 4 |
| FREN101 | French 1 | 30 | 2 | 0 | 0 | 2 |
| **Total hours** | | **210** | **14** | **90** | **2** | **16** |

| **Semester 2** | | **Module hours** | | | | **Credit hours per module** |
|---|---|---|---|---|---|---|
| **Module code and title** | | **Theory teaching hours** | **Theory credit hours** | **Practical teaching hours** | **Practical credit hours** | |
| ANAP102 | Anatomy and Physiology 2 | 60 | 4 | 45 | 1 | 5 |
| PHAG102 | Introduction to Pharmacognosy | 30 | 2 | 45 | 1 | 3 |
| PHAC102 | Pharmaceutical chemistry 2 | 30 | 2 | 45 | 1 | 3 |
| BGCB102 | Biochem. & Genetics-Cell Biology 2 | 60 | 4 | 0 | 0 | 4 |
| FREN102 | French 2 | 30 | 2 | 0 | 0 | 2 |
| **Total hours** | | **210** | **14** | **135** | **3** | **17** |

## 2.2 Programme for Year 2

| **Semester 1** | | **Module hours** | | | | **Credit hours per module** |
|---|---|---|---|---|---|---|
| **Module code and title** | | **Theory teaching hours** | **Theory credit hours** | **Practical teaching hours** | **Practical credit hours** | |
| PCHE201 | Pharmaceutical Chemistry 3 | 45 | 3 | 45 | 1 | 4 |
| PHAT201 | Pharmaceutical Technology 1 | 60 | 4 | 90 | 2 | 6 |
| PHAM201 | Pharmaceutical Microbiology 1 | 60 | 4 | 90 | 2 | 6 |
| CPHA201 | Pharmacy Jurisprudence | 30 | 2 | 0 | 0 | 4 |
| | First Aid | 15 | 1 | 45 | 1 | |
| COMM201 | Community Health 1 | 45 | 3 | 0 | 0 | 3 |
| FREN201 | French 3 | 30 | 2 | 0 | 0 | 2 |
| **Total hours** | | **225** | **15** | **180** | **4** | **19** |

| **Semester 2** | | **Module hours** | | | | **Credit hours per module** |
|---|---|---|---|---|---|---|
| **Module code and title** | | **Theory teaching hours** | **Theory credit hours** | **Practical teaching hours** | **Practical credit hours** | |
| PCHE202 | Pharmaceutical Chemistry 4 | 45 | 3 | 45 | 1 | 4 |
| PHAT202 | Pharmaceutical Technology 2 | 60 | 4 | 90 | 2 | 6 |
| PHAM202 | Pharmaceutical Microbiology 2 | 60 | 4 | 90 | 2 | 6 |
| CPHA202 | Clinical Pharmacy 1 | 30 | 2 | 45 | 1 | 3 |
| COMM202 | Community health 2 | 45 | 3 | 0 | 0 | 3 |
| FREN202 | French 4 | 30 | 2 | 0 | 0 | 2 |
| **Total hours** | | **210** | **14** | **180** | **4** | **18** |

### *2.3 Programme for Year 3*

| **Semester 1** | | **Module hours** | | | | **Credit hours per module** |
|---|---|---|---|---|---|---|
| **Module code and title** | | **Theory teaching hours** | **Theory credit hours** | **Practical teaching hours** | **Practical credit hours** | |
| CPAT301 | Chemical pathology 1 | 30 | 2 | 45 | 1 | 3 |
| MBIO301 | Medical microbiology 1 | 30 | 2 | 45 | 1 | 3 |
| PHAR301 | Pharmacology 1 | 90 | 6 | 0 | 0 | 6 |
| PCHE301 | Pharmaceutical chemistry 5 | 45 | 3 | 45 | 1 | 4 |
| **Total hours** | | **195** | **13** | **135** | **3** | **16** |

| **Semester 2** | | **Module hours** | | | | **Credit hours per module** |
|---|---|---|---|---|---|---|
| **Module code and title** | | **Theory teaching hours** | **Theory credit hours** | **Practical teaching hours** | **Practical credit hours** | |
| CPAT302 | Chemical pathology 2 | 30 | 2 | 45 | 1 | 3 |
| MBIO302 | Medical microbiology 2 | 30 | 2 | 45 | 1 | 3 |
| PHAR302 | Pharmacology 2 | 90 | 6 | 0 | 0 | 6 |
| PCHE302 | Pharmaceutical chemistry 6 | 45 | 3 | 45 | 1 | 4 |
| **Total hours** | | **195** | **13** | **135** | **3** | **16** |

## 2.4 Programme for Year 4 (Part I)

| **Semester 1** | | **Module hours** | | | | **Credit hours per module** |
|---|---|---|---|---|---|---|
| **Module code and title** | | **Theory teaching hours** | **Theory credit hours** | **Practical teaching hours** | **Practical credit hours** | |
| PHAT401 | Pharmaceutics Technology 3 | 60 | 4 | 90 | 2 | 6 |
| PHAM401 | Pharmaceutical Microbiology 3 | 60 | 4 | 90 | 2 | 6 |
| PCHE401 | Pharmaceutical chemistry 7 | 45 | 3 | 45 | 1 | 4 |
| PHAG401 | Pharmacognosy /phytochemistry 1 | 60 | 4 | 45 | 1 | 5 |
| CPHA401 | Clinical pharmacy 2 | 105 | 7 | 45 | 1 | 8 |
| RESE401 | Research methods 1 | 45 | 3 | 0 | 0 | 3 |
| **Total hours** | | **315** | **21** | **225** | **5** | **26** |

| **Semester 2** | | **Module hours** | | | | **Credit hours per module** |
|---|---|---|---|---|---|---|
| **Module code and title** | | **Theory teaching hours** | **Theory credit hours** | **Practical teaching hours** | **Practical credit hours** | |
| PHAT402 | Pharmaceutics Technology 4 | 60 | 4 | 90 | 2 | 6 |
| PHAM402 | Pharmaceutical Microbiology4 | 60 | 4 | 90 | 2 | 6 |
| PCHE402 | Pharmaceutical chemistry 8 | 45 | 3 | 45 | 1 | 5 |
| PHAG402 | Pharmacognosy /phytochemistry 2 | 60 | 4 | 45 | 1 | 5 |
| CPHA402 | Clinical pharmacy 3 | 105 | 7 | 45 | 1 | 8 |
| RESE402 | Research methods 2 | 45 | 3 | 0 | 0 | 3 |
| **Total Teaching hours** | | **315** | **21** | **225** | **5** | **26** |

### *2.5 Programme for Year 5 (Part II)*

| **Semester 1** | | **Module hours** | | | | **Credit hours per module** |
|---|---|---|---|---|---|---|
| **Module code and title** | | **Theory teaching hours** | **Theory credit hours** | **Practical teaching hours** | **Practical credit hours** | |
| PCHE501 | Pharmaceutical chemistry 9 | 45 | 3 | 0 | 0 | 3 |
| PHAT501 | Pharmaceutics Technology 5 | 60 | 4 | 90 | 2 | 6 |
| PHAM501 | Pharmaceutical Microbiology 5 | 60 | 4 | 90 | 2 | 6 |
| PHAG501 | Pharmacognosy & Phytochemistry 3 | 30 | 2 | 0 | 0 | 2 |
| CPHA501 | Clinical pharmacy 4 | 45 | 3 | 45 | 1 | 4 |
| PHPA501 | Pharmacy practice and Administration 1 | 45 | 3 | 45 | 1 | 4 |
| RESE501 | Research project 1 | 30 | 2 | 45 | 1 | 3 |
| **Total hours** | | **255** | **17** | **225** | **5** | **22** |

| **Semester 2** | | **Module hours** | | | | **Credit hours per module** |
|---|---|---|---|---|---|---|
| **Module code and title** | | **Theory teaching hours** | **Theory credit hours** | **Practical teaching hours** | **Practical credit hours** | |
| PCHE502 | Pharmaceutical chemistry 10 | 30 | 2 | 0 | 0 | 2 |
| PHAT502 | Pharmaceutics Technology 6 | 60 | 4 | 90 | 2 | 6 |
| PHAM502 | Pharmaceutical Microbiology 6 | 60 | 4 | 90 | 2 | 6 |
| PHAG502 | Pharmacognosy & Phytochemistry 4 | 15 | 1 | 0 | 0 | 1 |
| CPHA502 | Clinical pharmacy 5 | 0 | 0 | 45 | 1 | 1 |
| PHPA502 | Pharmacy practice and Administration 2 | 45 | 3 | 45 | 1 | 4 |
| RESE502 | Research project 2 | 0 | 0 | 180 | 4 | 4 |
| **Total hours** | | **120** | **8** | **270** | **6** | **14** |

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