





**FACULTY OF ALLIED HEALTH SCIENCES  
UNIVERSITY OF PERADENIYA**

**HANDBOOK - 2017/2018**



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## **Vision and Mission**

The vision of the Faculty of Allied Health Sciences is to be an internationally recognized leader in allied health education.

The mission is to provide nationally and internationally accredited undergraduate and postgraduate education and training through conduct of research and dissemination of knowledge to produce competent professionals having social sensitivity and humane qualities.

## Message from the Vice-Chancellor

It is with great pleasure that I send this message on the occasion of admitting the new batch (2017/2018) of students to the Faculty of Allied Health Sciences (FAHS).

The University of Peradeniya is the largest and the most comprehensive Sri Lankan university in both undergraduate and post graduate studies, with nine faculties and four post graduate institutes covering almost all fields of study.

The faculty celebrated its Tenth Anniversary last year and thus far has produced nearly thousand highly qualified graduates in nursing and paramedical fields through its six departments. These 120 credit honours degree programmes are well accepted locally as well as internationally. Being a student of the FAHS should remind you the extent of your responsibility not only towards the faculty but also to the university and eventually to the society.

I strongly believe that you are a privileged group of students who have been selected to a reputed and fast growing faculty where a competent and dedicated staff is looking forward to train you. Hence, I request you to make maximum use of this opportunity. Finally, I wish you a very pleasant and memorable stay at the university and every success in your future endeavours.

**Professor Upul B. Dissanayaka**  
**Vice-Chancellor**  
**University of Peradeniya**



## Message from the Dean

Congratulations! The staff and students of the Faculty of Allied Health Sciences warmly welcome you to the University of Peradeniya.

You are considered a very privileged group of students admitted to the largest university in Sri Lanka to follow degree courses in Nursing, Pharmacy, Medical Laboratory Science, Physiotherapy, Radiography and Radiotherapy. The Faculty of Allied Health Sciences offers four-year honours degrees, which are designed according to internationally accepted standards.



We anticipate a wide job market for you, both at home and abroad when you qualify. Your career shall be a noble profession engraved with a desire to care and to alleviate human suffering. Thus, your future shall also depend on your commitment to follow the courses without any interruptions.

I wish you well in your chosen field of study and hope that your studies at the Faculty of Allied Health Sciences will fulfill your aspirations and pave the way for a rewarding career.

**Professor D.B. Mahinda Wickramaratne**  
**Faculty of Allied Health Sciences**  
**University of Peradeniya**

# Background

## University of Peradeniya

The University of Peradeniya traces its origins to the University of Ceylon, established by the Ceylon University Ordinance in Colombo, in July 1942. It was later transferred to Peradeniya, which could house several faculties, halls of residence and staff quarters. Sir William Ivor Jennings, the key personality responsible for the process became the first Vice Chancellor of the "University of Ceylon, Peradeniya Campus" which was opened on 20<sup>th</sup> April, 1954 by the Duke of Edinburgh. However, according to the University Act No: 16 of 1978 section 139-1, the Peradeniya campus was re-established as an independent university, as the "University of Peradeniya – Sri Lanka." Currently, the University of Peradeniya consists of nine academic faculties, namely, Faculty of Agriculture, Faculty of Allied Health Sciences, Faculty of Arts, Faculty of Dental Sciences, Faculty of Engineering, Faculty of Management, Faculty of Medicine, Faculty of Science and the Faculty of Veterinary Medicine and Animal Sciences. The University of Peradeniya also houses three postgraduate institutes: Post Graduate Institute of Agriculture, Post Graduate Institute of Humanities and Social Sciences and the Post Graduate Institute of Science.

## Faculty of Allied Health Sciences (FAHS)

The Faculty of Allied Health Sciences (FAHS) was inaugurated on 16<sup>th</sup> January 2007. The faculty comprises five academic departments conducting B.Sc. degree programmes in Medical Laboratory Science, Nursing, Physiotherapy, Radiography, Radiotherapy and Bachelor of Pharmacy. As the faculty offers professional degree programmes, students are introduced to basic concepts in medical sciences followed by mandatory hospital-based training. All degree programmes consist of 120 credits curricula, which have been designed on par with international standards. Several departments have established active foreign collaborations in teaching and research.

# Faculty Administration

## Office of the Dean

The Dean is the academic and administrative Head of the Faculty and is assisted by the Assistant Registrar, Assistant Bursar and a team of clerical, technical, and other service staff members. The Office of the Dean is the administrative centre of the faculty, which handles matters related to course registration, student requests and examinations.

### **Prof. D.B. Mahinda Wickramaratne**

Dean

Faculty of Allied Health Sciences

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### **Ms. W. R. S. M. Y. D Higgoda**

Assistant Registrar

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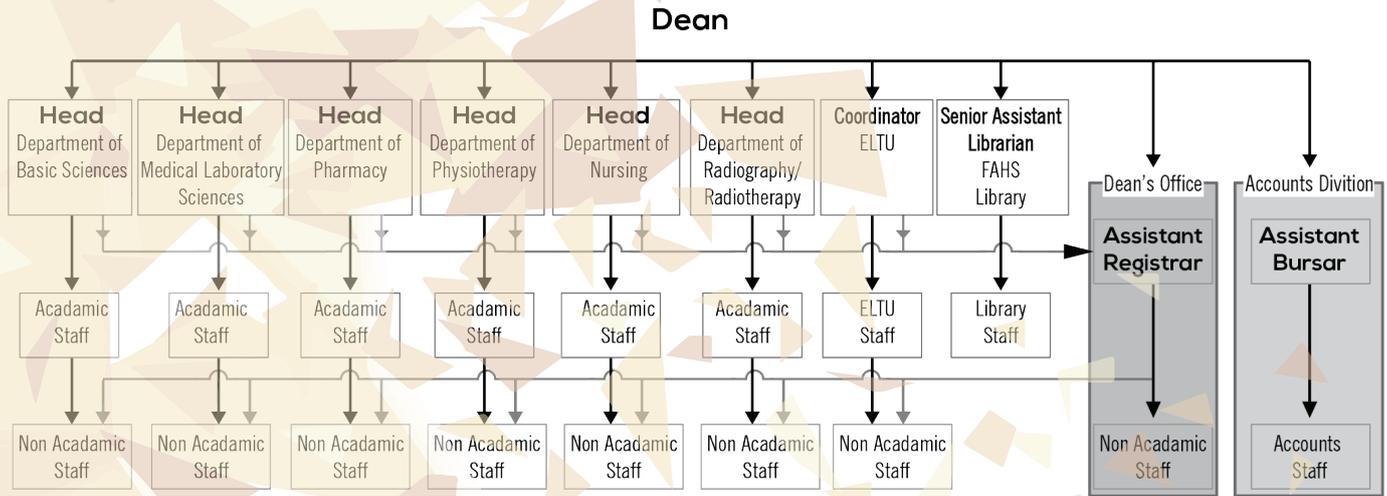
### **Ms. M. G. D. C. Muhandiram**

Assistant Bursar

Ph: 081 380 6641

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# Organizational Structure



## Academic Programmes

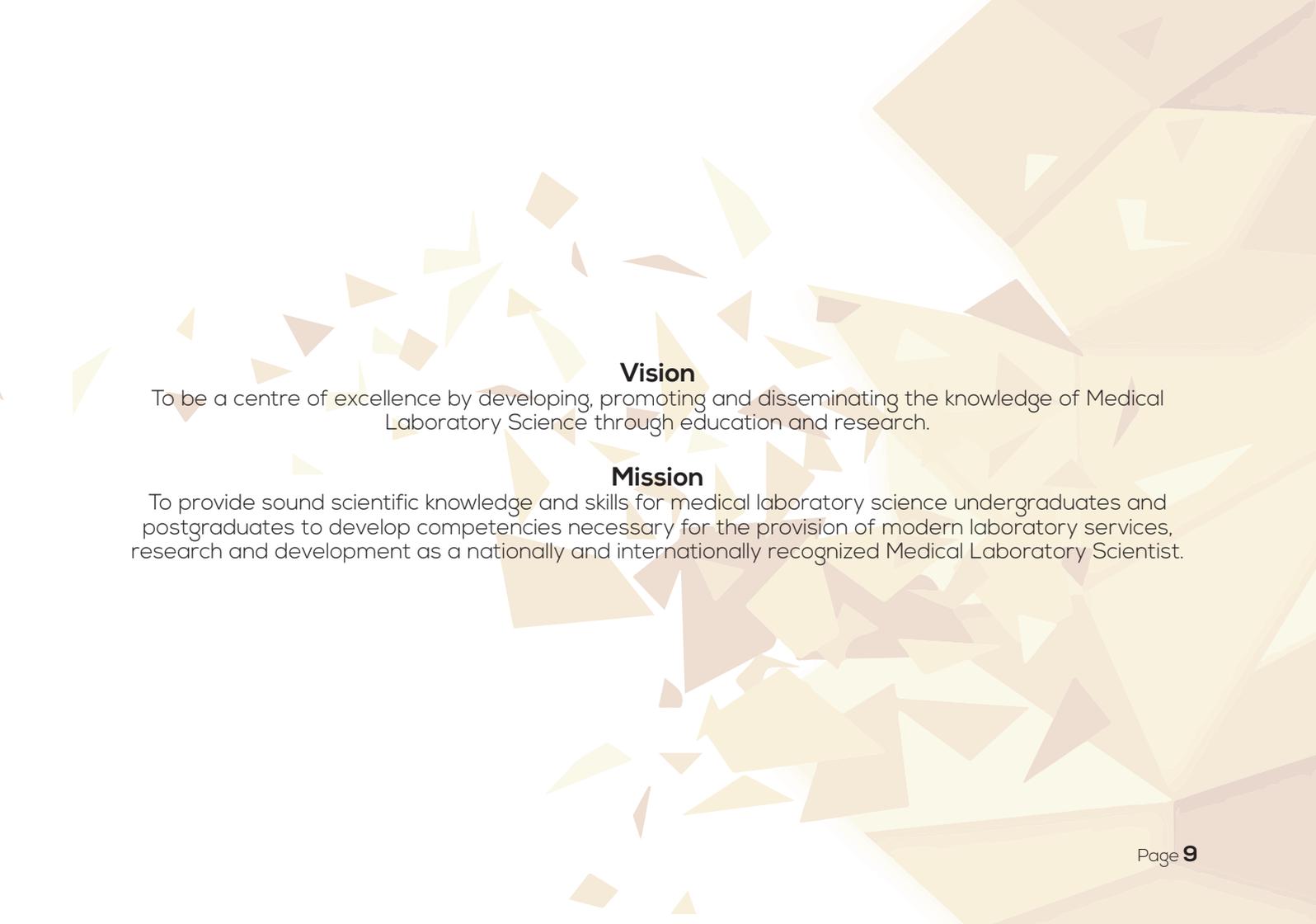
- **Bachelor of Science in Medical Laboratory Science**
- **Bachelor of Science in Nursing**
- **Bachelor of Pharmacy**
- **Bachelor of Science in Physiotherapy**
- **Bachelor of Science in Radiography and Radiotherapy**

Faculty Web : <http://ahs.pdn.ac.lk>

E-Learning System : <http://ahsmoodle.pdn.ac.lk>

# DEPARTMENT OF MEDICAL LABORATORY SCIENCE





## **Vision**

To be a centre of excellence by developing, promoting and disseminating the knowledge of Medical Laboratory Science through education and research.

## **Mission**

To provide sound scientific knowledge and skills for medical laboratory science undergraduates and postgraduates to develop competencies necessary for the provision of modern laboratory services, research and development as a nationally and internationally recognized Medical Laboratory Scientist.

## Graduate profile

Students who have successfully completed a BSc in Medical Laboratory Science will be able to apply their knowledge, skills, and attitudes as follows:

1. Demonstrate sound knowledge in medical laboratory diagnostic procedures and the relationship between the laboratory findings and disease conditions.
2. Perform routine and advanced biochemical, biological, hematological, immunologic, microbiological, and molecular laboratory tests.
3. Respect and be compassionate to patients, their relatives and other health professionals while maintaining the medical laboratory ethical code of conduct.
4. Participate in research and development of new laboratory diagnostic technologies.
5. Establish and monitor programs to ensure the quality of pre- analytical, analytical and post- analytical phases.
6. Demonstrate leadership and managerial skills in medical laboratory management.
7. Communicate effectively with the public and the professional community in writing, speaking and presentation.
8. Use appropriate and modern ICT tools in academic and professional work.
9. Be committed to provide quality services to the society and to contribute in general to the socio- economic development of the country
10. Take part in continuing education, training and professional development
11. Develop interpersonal skills to interact with health professionals as a team and be aware of the professional limitations.

## Department of Medical Laboratory Science

### Academic Staff

**Phone: 081-3999615**

Dr. M.D.M.L.D.K. Yatawara; B.VSc. (Peradeniya), Ph.D. (Japan) – Head of Department  
Prof. H.M.T.U. Herath; B.Sc. Zoology Sp. (Peradeniya), Ph.D. (London, UK)  
Dr. M.P.S. Mudalige; B.Sc. Zoology Sp. (Sri Jayawardenapura), Ph.D. (Ruhuna)  
Dr. R.P. Illeperuma; BDS (Peradeniya), MSD (S. Korea), Ph.D. (S. Korea)  
Dr. H.D.W.S. Kudagammana; MBBS (Peradeniya), MD (Colombo)  
Dr. G. S. Weerasinghe; MBBS (Peradeniya), MD (Colombo)  
Dr. K.L.T.D. Jayawardene; BVSc. (Peradeniya), M.Sc. (Peradeniya)  
Ms. B.C.G. Mendis; B.Sc. Medical Laboratory Science (Peradeniya), M.Sc. (Peradeniya)  
Ms. S. Thilakarathne; B.Sc. Medical Laboratory Science (Peradeniya)  
Ms. R.M.H.W. Rathnayake; B.Sc. Medical Laboratory Science (Peradeniya)

## Course Units Offered by the Department

### 1000 LEVEL – SEMESTER I

Course Number	Course Title	No. of Credits	Prerequisites
AH 1101	English and Communication Skills I	None Credit	None
AH 1102	Information Technology	None Credit	None
AH 1103	Basic Human Anatomy	2	None
AH 1104	Human Physiology I	3	None
ML 1101	Laboratory Practice, Safety and First Aid	2	None
ML 1102	General Microbiology	2	None
ML 1103	Genetics and Molecular Biology	2	None
ML 1104	Basic Biochemistry	3	None

### 1000 LEVEL – SEMESTER II

Course Number	Course Title	No. of Credits	Prerequisites
AH 1201	English and Communication Skills II	None Credit	AH 1101
AH 1202	Basic Statistics	2	None
AH 1203	General Pathology	2	AH 1103, AH 1104, ML 1104
AH 1204	Human Physiology II	3	AH 1104
ML 1201	Specimen Collection and Transport	2	None
ML 1202	Analytical Chemistry	3	None
ML 1203	Tissues of the Body	1	AH 1103
ML 1204	Systematic Bacteriology	2	None

### 2000 LEVEL – SEMESTER I

Course Number	Course Title	No. of Credits	Prerequisites
AH 2101	English and Communication Skills III	None Credit	AH 1201
ML 2101	Haematology I	3	None
ML 2102	Clinical Biochemistry I	3	ML 1104, MI 1202
ML 2103	Histotechnology	3	None
ML 2104	Systematic Virology and Mycology	2	None

ML 2105	Systematic Parasitology and Medical Entomology	2	None
ML 2106	Diagnostic Bacteriology	3	ML 1102, ML 1204, ML 2104

## 2000 LEVEL – SEMESTER II

Course Number	Course Title	No. of Credits	Prerequisites
AH 2201	English and Communication Skills IV	None	Credit AH 2101
ML 2201	Haematology II	3	ML 2101
ML 2202	Clinical Biochemistry II	3	ML 2102
ML 2203	Diagnostic Virology and Mycology	2	ML 2104
ML 2204	Cytotechnology	2	AH 1203, ML 1203
ML 2205	Diagnostic Parasitology	2	ML 2105
ML 2206	Immunotechnology	2	None

## 3000 LEVEL – SEMESTER I

Course Number	Course Title	No. of Credits	Prerequisites
AH 3101	English and Communication Skills V	None	Credit AH 2201
ML 3101	Haematology III	2	ML 2201
ML 3102	Clinical Biochemistry III	3	ML 2202
ML 3103	Public Health Microbiology	2	None
ML 3104	Laboratory Quality Assurance and Accreditation	3	None
ML 3105	Laboratory Management	2	None
ML 3106	Biomedical Instrumentation	1	None

## 3000 LEVEL – SEMESTER II

Course Number	Course Title	No. of Credits	Prerequisites
ML 3201	WBL - Haematology I	4	ML 2101, ML 2201, ML 3101
ML 3202	WBL - Clinical Biochemistry I	4	ML 2102, ML 2202, ML 3102
ML 3203	WBL - Blood Bank Serology	2	ML 2101, ML 2201, ML 3101
ML 3204	WBL - Histotechnology I	3	ML 2103
ML 3205	WBL - Microbiology I	3	ML 2203, ML 3103

ML 3206                      WBL - Immunotechnology and Hormone Assays    1                      ML 2206, ML 3102

**4000 LEVEL – SEMESTER I**

<b>Course Number</b>	<b>Course Title</b>	<b>No. of Credits</b>	<b>Prerequisites</b>
ML 4101	WBL - Haematology II	3	ML 3201
ML 4102	WBL - Clinical Biochemistry II	3	ML 3202
ML 4103	WBL - Microbiology II	2	ML 3205
ML 4104	WBL - Histotechnology II and Cytotechnology	3	ML 3204, ML 2204
ML 4105	WBL - Emergency Laboratory Tests	1	None
ML 4106	WBL - Medical Parasitology and Entomology	2	ML 2105, ML 2205
ML 4107	WBL - Sexually Transmitted Diseases	1	ML 1102, ML 1204, ML 2104,
ML 2203, ML 3103			
ML 4108	WBL - Laboratory Management	1	ML 3105
ML 4109	Research Methodology and Scientific Writing	2	AH 1202

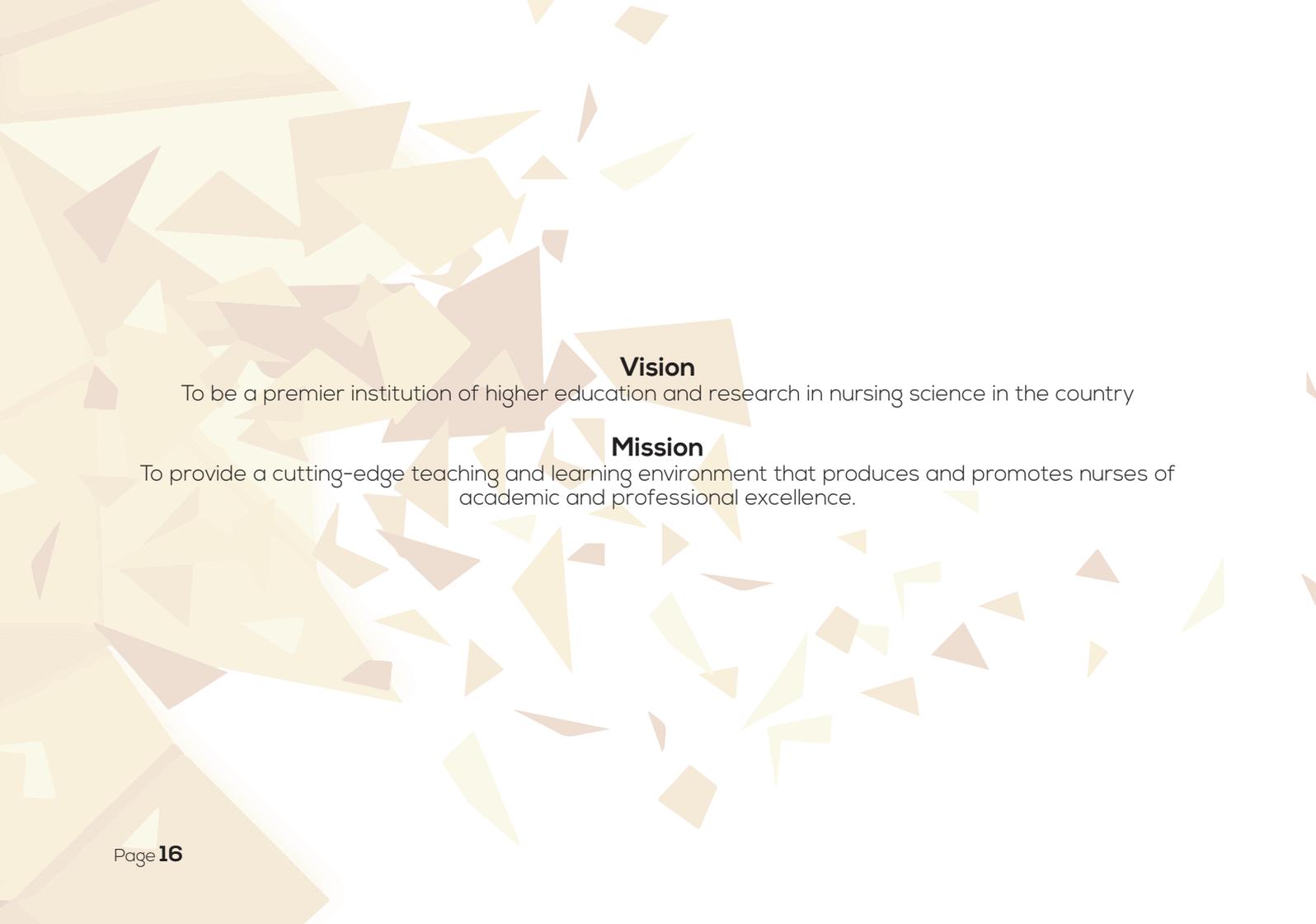
**4000 LEVEL – SEMESTER II**

<b>Course Number</b>	<b>Course Title</b>	<b>No. of Credits</b>	<b>Prerequisites</b>
ML 4201	Biotechnology	1	ML 1103
ML 4202	Experimental Laboratory Medicine	2	None
ML 4203	Bioethics	1	None
ML 4204	Healthcare Marketing	1	None
ML 4205	Applied Statistics	2	None
ML 4206	Research Project	6	AH 1202
ML 4207	Human Resource Management	1(Optional)	None

WBL – Work Based Learning

# DEPARTMENT OF NURSING





### **Vision**

To be a premier institution of higher education and research in nursing science in the country

### **Mission**

To provide a cutting-edge teaching and learning environment that produces and promotes nurses of academic and professional excellence.

## Graduate Profile

At the successful completion of the B.Sc in nursing degree, the students will be able to;

1. Demonstrate inquiry mind, and be able to perform self-directed learning and self-development continuously throughout their career.
2. Provide safe and effective nursing care of a high standard in a variety of clinical settings such as general nursing, midwifery nursing, paediatric nursing, psychiatric nursing and community health nursing.
3. Contribute their critical and reflective thinking, problem solving, analytical and social skills to carry out nursing research and thereby enhance patient care.
4. Apply interpersonal skills to interact with diverse people in multi-cultural environments locally and internationally.
5. Utilize information and communication technologies to be used in academic and professional work.
6. Work in collaboration with nurses and other health care professionals towards a better outcome in patient care locally and internationally.
7. Work in a range of paradigms besides the clinical setup such as academia, research projects and public and private sector organizations.
8. Have respect towards the self, the nursing profession and be aware of professional values and rights underpinned by the nursing code of ethics.

## Department of Nursing

### Academic Staff

**Phone: 081-2388820**

Dr. R.P. Illeperuma; BDS (Sri Lanka), MSD (S. Korea), Ph.D. (S. Korea) – Head of Department

Dr. M.L. Pathirathna; B.Sc. Nursing (Peradeniya), M.Sc. (Peradeniya), Ph.D (Niigata, Japan), RN.

Dr. H.D.W.T. Damayanthi; B.Sc. Nursing (OUSL), M.Sc. (Peradeniya), M.ScN (Chiang Mai, Thailand), PhD (Kuala Lumpur, Malaysia), RN.

Ms. A.Y.R. Athukorala; B.Sc. Nursing (OUSL), RN.

Ms. A.M.S.D. Pathirannage; B.Sc. Nursing (OUSL), RN.

Mr. U.W.S. Rathnayake; B.Sc. Nursing (OUSL), M.ScN (Sarawak, Malaysia), RN.

Ms. T.G.N.S. Gunarathne; B.Sc.Nursing (Peradeniya), M.Sc (Peradeniya), RN.

Mr. B.M.C. Rathnayake; B.Sc. Nursing (Peradeniya), M.Sc (Peradeniya), RN.

Ms. E.M.J.S.K. Ekanayake; B.Sc. Nursing (Sri Jayawardanapura), RN.

Ms. A.R.M.A.U. Rathnayake; B.Sc. Nursing (Peradeniya), RN.

Ms. P.A.D. Perera; B.Sc. Nursing (Sri Jayawardanapura) ,RN

Ms. A.M.M.P. Atapattu; B.Sc. Nursing. (Peradeniya), RN.

Ms. H.M.R.K.G. Nandasena; B.Sc. Nursing (Peradeniya), RN.

## Course Units Offered by the Department

### 1000 LEVEL – SEMESTER I

Course code	Course Title	No. of Credits	Prerequisites
AH 1101	English and Communication Skills I	None	Credit None
AH 1102	Information Technology	None	Credit None
AH 1103	Basic Human Anatomy	2	None
AH 1104	Human Physiology I	3	None
AH 1106	Introduction to psychology	2	None
NS 1101	Basic Biochemistry for Nurses	3	None
NS 1102	Nursing Theory and Practice I	2	None
NS 1104	Community Health Nursing I	1	None
NS 1105	Sociology and Anthropology	1	None

### 1000 LEVEL – SEMESTER II

Course code	Course Title	No. of Credits	Prerequisites
AH 1201	English and Communication Skills II	None	Credit AH 1101
AH 1202	Basic Statistics	2	None
AH 1203	General Pathology	2	AH 1103, AH 1104
AH 1204	Human Physiology II	3	AH 1104
NS 1201	Human Anatomy for Nurses	2	None
NS 1202	Nursing Theory and Practice II	4	None
NS 1203	Pharmacology I	1	None
NS 1205	Microbiology for Nurses	1	None

## 2000 LEVEL – SEMESTER I

Course code	Course Title	No. of Credits	Prerequisites
AH 2101	English and Communication Skills III	None	Credit AH 1201
NS 2101	Adult Nursing I	4	None
NS 2102	Nursing Theory and Practice III	4	None
NS 2103	Pharmacology II	2	None
NS 2104	Community Health Nursing II	2	None
NS 2105	Communication Skills in Nursing	1	None
NS 2106	Pathology for Nurses	2	None

## 2000 LEVEL – SEMESTER II

Course code	Course Title	No. of Credits	Prerequisites
AH 2201	English and Communication Skills IV	None	Credit AH 2101
NS 2201	Adult Nursing II	5	None
NS 2202	Nursing Theory and Practice IV	4	None
NS 2203	Community Health I	2	None
NS 2205	Health Promotion	1	None
NS 2207	Ethical and Professional Issues	1	None
NS 2208	Trends in Nursing	1	None

## 3000 LEVEL – SEMESTER I

Course code	Course Title	No. of Credits	Prerequisites
NS 3101	Adult Nursing III	4	None
NS 3102	Nursing Theory and Practice V	4	None
NS 3103	Community Health II	1	None
NS 3104	Child Health Nursing I	2	None
NS 3105	Epidemiology	1	None
NS 3106 A	Maternity Nursing I (Theory)	1	None
NS 3106 B	Maternity Nursing I (Practical)	1	None
NS 3109	Nutrition and Dietetics	2	None
NS 3116 B	Urology I	1	None

### 3000 LEVEL – SEMESTER II

Course code	Course Title	No. of Credits	Prerequisites
NS 3201	Adult Nursing IV	3	None
NS 3202	Nursing Theory and Practice VI	4	None
NS 3204	Child Health Nursing II	2	None
NS 3206 A	Maternity Nursing II (Theory)	1	None
NS 3206 B	Maternity Nursing II (Practical)	1	None
NS 3207	Emergency and Disaster Nursing	2	None
NS 3208	Critical Care Nursing	2	None
NS 3216 B	Urology II	1	None

### 4000 LEVEL – SEMESTER I

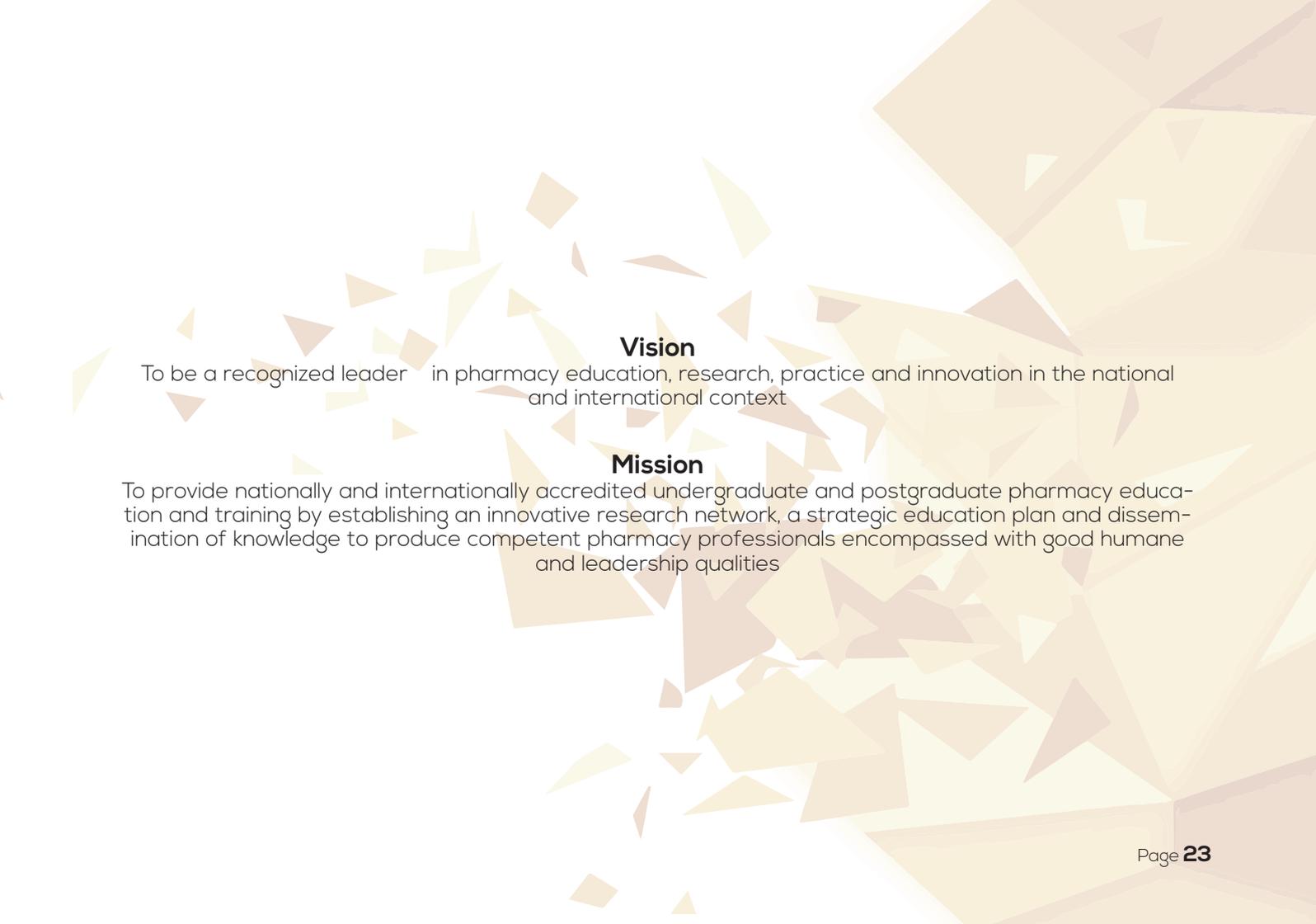
Course code	Course Title	No. of Credits	Prerequisites
NS 4102	Nursing Theory and Practice VII	4	None
NS 4103	Leadership and Management	1	None
NS 4104	Child Health Nursing III	2	None
NS 4106 A	Maternity Nursing III (Theory)	1	None
NS 4106 B	Maternity Nursing III (Practical)	1	None
NS 4109	Scientific Writing and Communication in Nursing	1	None
NS 4111	Psychiatric Nursing and Mental Health	5	None
NS 4116 B	Nursing in Trauma Management I	1	None

### 4000 LEVEL – SEMESTER II

Course code	Course Title	No. of Credits	Prerequisites
NS 4202	Nursing Theory and Practice VIII	4	None
NS 4204	Child Health Nursing IV	2	None
NS 4206 A	Maternity Nursing IV (Theory)	1	None
NS 4206 B	Maternity Nursing IV (Practical)	1	None
NS 4209	Research Project	6	None
NS 4210	Teaching and Learning	2	None
NS 4216 B	Nursing in Trauma Management II	1	None

# DEPARTMENT OF PHARMACY





## **Vision**

To be a recognized leader in pharmacy education, research, practice and innovation in the national and international context

## **Mission**

To provide nationally and internationally accredited undergraduate and postgraduate pharmacy education and training by establishing an innovative research network, a strategic education plan and dissemination of knowledge to produce competent pharmacy professionals encompassed with good humane and leadership qualities

## Graduate Profile

### B. Pharm graduates should be able to

1. Demonstrate comprehensive knowledge on chemical, physical and biological sciences appropriate to professional practice in community, hospital, clinical pharmacy settings, pharmaceutical industries and research institutes. Also, they should be able to provide knowledge on legal and administrative aspects codes of practice, ethics and development of the profession of pharmacy.
2. Practice as a professional pharmacist in hospital, community pharmacy settings or function effectively as a pharmacy professional in a variety of pharmacy related professional settings including drug manufacturing, regulation, distribution, marketing, research and pharmacy education.
3. Apply knowledge of basic scientific principles to resolve practical problems, create new inventions, collect, analyze and interpret data
4. Communicate effectively in writing and speaking with the community, patients, co-workers, pharmacy institutes and stakeholders. And disseminate knowledge and information through advanced research, scientific writing and presentations.
5. Exploit different state of the art information technology tools for the benefit of the pharmacy profession and stake holders
6. Be assertive, proactive, compassionate and possess interpersonal skills to interact with co-workers & other diverse societies and show effective leadership qualities to lead the pharmacy profession to meet the national and global requirements. latest advancement in technology
7. Be committed to the pharmacy profession, uphold professional norms and ethics and uplift the pharmaceutical care process.
8. Be a lifelong learner and be involved in continuing professional development and professional conduct.

## Department of Pharmacy

### Academic Staff

**Phone: 081-2065792**

Dr. A.C.M. Fahim; B.Pharm (Karachi, Pakistan), MAppMgt (Newcastle, Australia),  
Ph.D. (New South Wales, Australia) - Head of Department

Prof. D.B.M.Wickramaratne; B.Sc. Chemistry Sp. (Peradeniya), Ph.D. (Peradeniya)

Mrs. M.H.F. Sakeena; B.Pharm (Gomal, Pakistan), M.Sc. (Sains Malaysia, Malaysia)

Dr. H.M.D.R. Herath; B.Sc. Pharmacy Sp. (Colombo), Ph.D. (Queensland, Australia)

Dr. M.L.C. Menikarachchi; B.Sc. Chemistry Sp. (Peradeniya), Ph.D. (Connecticut, USA)

Dr. N.R. Amarasinghe; B.Sc. Chemistry Sp. (Peradeniya), M.Phil (Peradeniya), Ph.D. (Sydney, Australia)

Dr. I.U.K. Tennakoon; B.Sc. Molecular Biology and Biotechnology Sp. (Peradeniya),  
Ph.D. (Queensland University of Technology, Australia)

Dr. L.C.P.T. Liyanaracchie; B.Sc. Pharmacy Sp. (Colombo), Ph.D. (Peradeniya)

Ms. S.T. Sudeshika; B.Pharm. (Peradeniya)

Ms. H.R.W.M.D.P.K. Niyangoda; B. Pharm. (Peradeniya)

Ms. R.K. Suraweera; B.Pharm. (Peradeniya)

Mr. N.M.Y. Bagyanantha; B.Pharm. (Peradeniya)

## Course Units Offered by the Department

### 1000 LEVEL – SEMESTER I

Course code	Course Title	No. of Credits	Prerequisites
AH 1101	English and Communication Skills I	None Credit	None
AH 1102	Information Technology	None Credit	None
AH 1103	Basic Human Anatomy	2	None
AH 1104	Human Physiology I	3	None
PM 1101	Social Pharmacy	1	None
PM 1102	General Microbiology	2	None
PM 1103	Biochemistry I	2	None
PM 1104	Pharmaceutical Mathematics	2	None
PM 1105	Pharmaceutical Chemistry I (Organic)	3	None

### 1000 LEVEL – SEMESTER II

Course Code	Course Title	No. of Credits	Prerequisites
AH 1201	English and Communication Skills II	None Credit	AH 1101
AH 1202	Basic Statistics	2	None
AH 1203	General Pathology	2	AH 1103, AH 1104
AH 1204	Human Physiology II	3	AH 1104
PM 1201	Physical Pharmacy I	3	None
PM 1202	Pharmaceutical Microbiology	3	None
PM 1203	Biochemistry II	2	PM 1103

### 2000 LEVEL – SEMESTER I

Course Code	Course Title	No. of Credits	Prerequisites
AH 2101	English and Communication Skills III	None Credit	None
PM 2101	Physical Pharmacy II	3	None
PM 2102	Pharmaceutical Dosage Forms I	3	None
PM 2103	Pharmacognosy I	2	None
PM 2104	Pharmacology I	3	None

PM 2105	Community Pharmacy Practice	2	None
PM 2106	Therapeutic Principles	2	None
PM 2107	IT for Pharmacy (Foundation Course)	None Credit	AH 1202

## 2000 LEVEL – SEMESTER II

Course Code	Course Title	No. of Credits	Prerequisites
AH 2201	English and Communication Skills IV	None Credit	None
PM 2201	Pharmaceutical Chemistry II (Analytical)	2	PM 2107
PM 2202	Pharmaceutical Dosage Forms II	3	None
PM 2203	Pharmacognosy II	3	None
PM 2204	Pharmacology II	3	None
PM 2205	Pharmaceutical Technology	4	PM 1201

## 3000 LEVEL – SEMESTER I

Course Code	Course Title	No. of Credits	Prerequisites
PM 3101	Instrumental Methods in Pharmaceutical Chemistry	3	PM 2107
PM 3102	Pharmaceutical Dosage Forms III	3	None
PM 3103	Pharmacognosy III	3	None
PM 3104	Pharmacology III	3	None
PM 3105	Hospital and Institutional Pharmacy	2	None
PM 3106	Novel Therapeutic Dosage Forms	2	None

## 3000 LEVEL – SEMESTER II

Course Code	Course Title	No. of Credits	Prerequisites
PM 3201	Bio-pharmaceutics	3	None
PM 3202	Pharmaceutical Biotechnology	3	None
PM 3203	Hospital Pharmacy Practice	3	None
PM 3204	Pharmacology IV	2	None
PM 3205	Research Methodology, Scientific Writing and Presentation	2	None

## 4000 LEVEL – SEMESTER I

Course Code	Course Title	No. of Credits	Prerequisites
PM 4101	Medicinal Chemistry I	2	None
PM 4102	Clinical Pharmacy I	3	None
PM 4103	Pharmacognosy IV	2	None
PM 4104	Pharmacy Law and Ethics I	2	None
PM 4105	Pharmacoeconomics	3	None
PM 4106	Research Project	6	None

## 4000 LEVEL – SEMESTER II

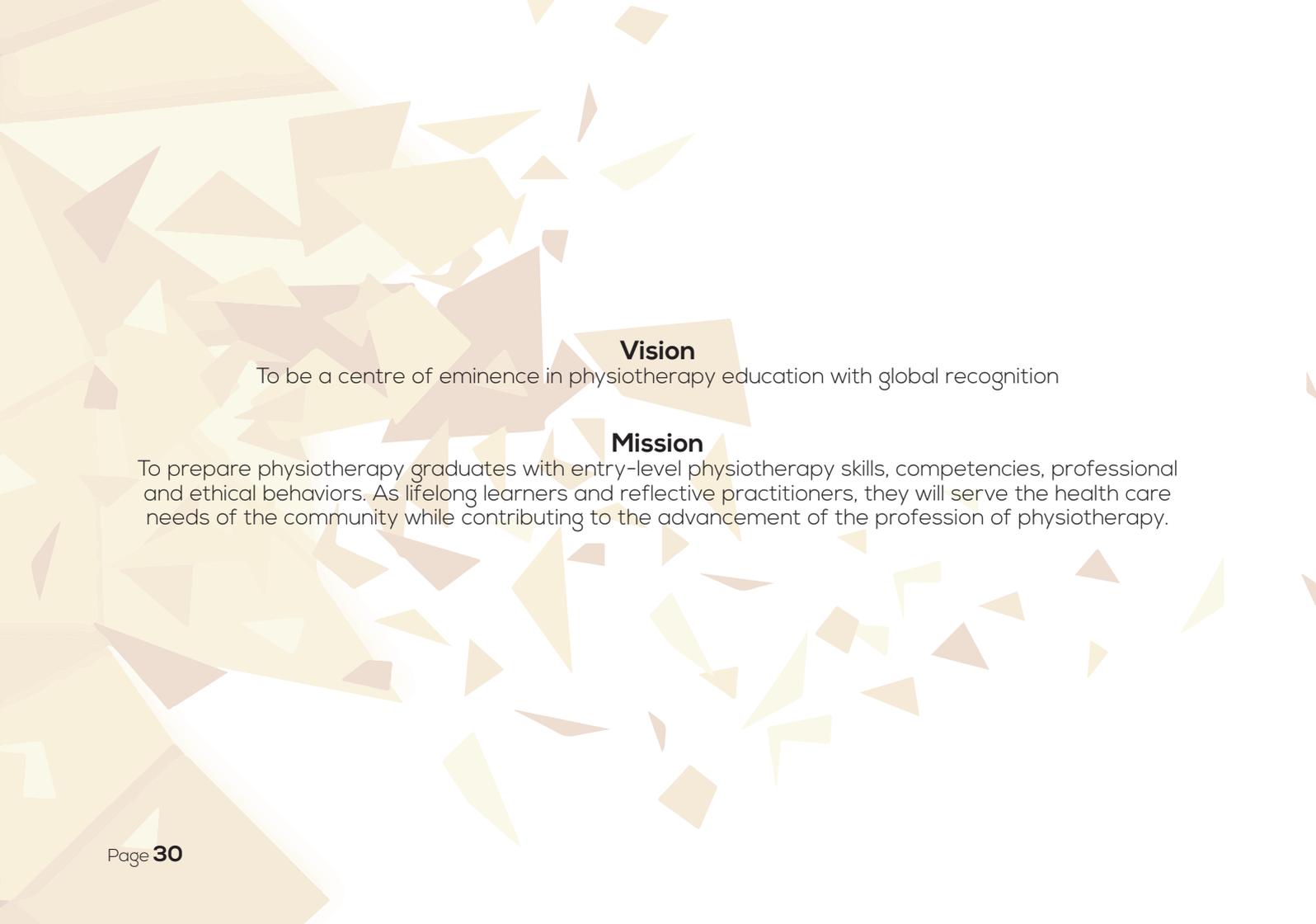
Course Code	Course Title	No. of Credits	Prerequisites
PM 4201	Medicinal Chemistry II	3	None
PM 4202	Clinical Pharmacy II	3	None
PM 4203	Pharmaceutical Management	3	None
PM 4204	Pharmacy Law and Ethics II	2	None
PM xxxx	Optional Module	2	None

## OPTIONAL MODULES

PM 4205	Pharmaceutical Marketing Management	2	None
PM 4206	Drug Discovery and Development	2	None
PM 4207	Advanced Pharmacy Practice	2	None

# DEPARTMENT OF PHYSIOTHERAPY





## **Vision**

To be a centre of eminence in physiotherapy education with global recognition

## **Mission**

To prepare physiotherapy graduates with entry-level physiotherapy skills, competencies, professional and ethical behaviors. As lifelong learners and reflective practitioners, they will serve the health care needs of the community while contributing to the advancement of the profession of physiotherapy.

## Graduate profile

Graduates of the B.Sc. in Physiotherapy program will be able to

1. Apply the knowledge of biological, physical, clinical sciences, and psychosocial behaviors for clinical decision making.
2. Perform physiotherapy assessments using evidence-informed tests and measures to identify impairments, activity limitations and participatory restrictions of clients with various disorders.
3. Communicate effectively in oral and written formats, to facilitate the physiotherapists' roles in education, consultation, patient management, and developing professional relationships.
4. Critically evaluate and utilize professional literature to become evidence-based practitioners.
5. Design and carryout a research project to contribute to the knowledge base of the profession.
6. Demonstrate professional behavior consistent with ethical and legal standards of the physiotherapy profession.
7. Incorporate leadership skills and behaviors in multidisciplinary health care teams.
8. Display the skills of a reflective practitioner and employ continuous professional and personal growth to advance professional competence and the profession.

## Department of Physiotherapy

### Academic Staff

**Phone: 081-23999623**

Mr. A.L.I. Prasanna; BPT (India) M.Phil. (Peradeniya) - Head of Department

Ms. R.R.W.M.S.I. Wadugodapitiya; BPT (India), M. Phil. (Peradeniya)

Ms. E. Liyanage; BPT (India), MPT in Musculoskeletal and Sports Physiotherapy (India)

Ms. T.D. Dissanayaka; B.Sc. Physiotherapy (Peradeniya), M.Phil. (Peradeniya)

Ms. R.M.I.M. Weerasekara; B.Sc. Physiotherapy (Peradeniya), M.Phil. (Peradeniya)

Ms. M.K.I.D. Senarath; B.Sc. Physiotherapy (Peradeniya), M.Sc in Applied Epidemiology (Peradeniya)

Mr. S.Mayooran; B.Sc. Physiotherapy (Peradeniya)

Ms. V.V. Senadheera; B.Sc. Physiotherapy (Peradeniya)

Ms. V.M.B.K.T. Malwanage B.Sc. Physiotherapy (Peradeniya)

## Course Units Offered by the Department

### 1000 LEVEL – SEMESTER I

Course Code	Course Title	No. of Credits	Prerequisites
AH 1101	English and Communication Skills I	None Credit	None
AH 1102	Information Technology	None Credit	None
AH 1103	Basic Human Anatomy	2	None
AH 1104	Human Physiology I	3	None
AH1106	Introduction to Psychology	2	None
PT 1101	Biochemistry for Physiotherapists	2	None
PT 1102	Microbiology for Physiotherapists	1	None
PT 1103	Physiotherapy as a Profession	2	None
PT 1104	Pathology for Physiotherapists	3	None

### 1000 LEVEL – SEMESTER II

Course Code	Course Title	No. of Credits	Prerequisites
AH 1201	English and Communication Skills II	None Credit	AH 1101
AH 1202	Basic Statistics	2	None
AH 1204	Human Physiology II	3	None
PT 1201	Human Anatomy for Physiotherapists	3	None
PT 1202	Biomechanics I	2	None
PT 1203	Emergency Care in Physiotherapy	2	None
PT 1204	Electro Physical Agents in Physiotherapy I	2	None
PT 1205	Pharmacology for Physiotherapists	2	None

## 2000 LEVEL – SEMESTER I

Course Code	Course Title	No. of Credits	Prerequisites
AH 210	English and Communication Skills III	None	Credit AH 1201
PT 2101	Biomechanics II	2	None
PT 2102	Physiotherapy Skills I	2	None
PT 2103	Electro Physical Agents in Physiotherapy II	3	None
PT 2104	Introduction to Applied Exercise Science	2	None
PT 2105	Teaching in Physiotherapy	2	None
PT 2106	Physiotherapy in Community Health Rehabilitation	2	None

## 2000 LEVEL – SEMESTER II

Course Code	Course Title	No. of Credits	Prerequisites
AH 2201	English and Communication Skills IV	None	Credit AH 2101
PT 2201	Physiotherapy Skills II	4	None
PT 2202	Musculoskeletal Physiotherapy I	3	None
PT 2203	Neurological Physiotherapy I	3	None
PT 2204	Common Medical Obstetrics and Gynecological Conditions for Physiotherapists I	2	None
PT 2205	Cardio Respiratory and General Surgical Conditions for Physiotherapists I	3	None

## 3000 LEVEL – SEMESTER I

Course Code	Course Title	No. of Credits	Prerequisites
PT 3101	Pediatric Physiotherapy I	2	None
PT 3102	Musculoskeletal Physiotherapy for Upper Limbs	3	None
PT 3103	Neurological Physiotherapy II	3	None
PT 3104	Common Medical Obstetrics and Gynecological Conditions for Physiotherapists II	2	None
PT 3105	Cardio Respiratory and General Surgical Conditions for Physiotherapists II	3	None
PT 3106	Physiotherapy in Burns	2	None

### 3000 LEVEL – SEMESTER II

Course Code	Course Title	No. of Credits	Prerequisites
PT 3201	Musculoskeletal Physiotherapy for Spine and Lower Limb	3	None
PT 3202	Pediatric Physiotherapy II	3	None
PT 3203	Physiotherapy in Sports	4	None
PT 3204	Evidence Based Practice in Physiotherapy	2	None
PT 3205	Research Methodology	3	None

### 4000 LEVEL – SEMESTER I

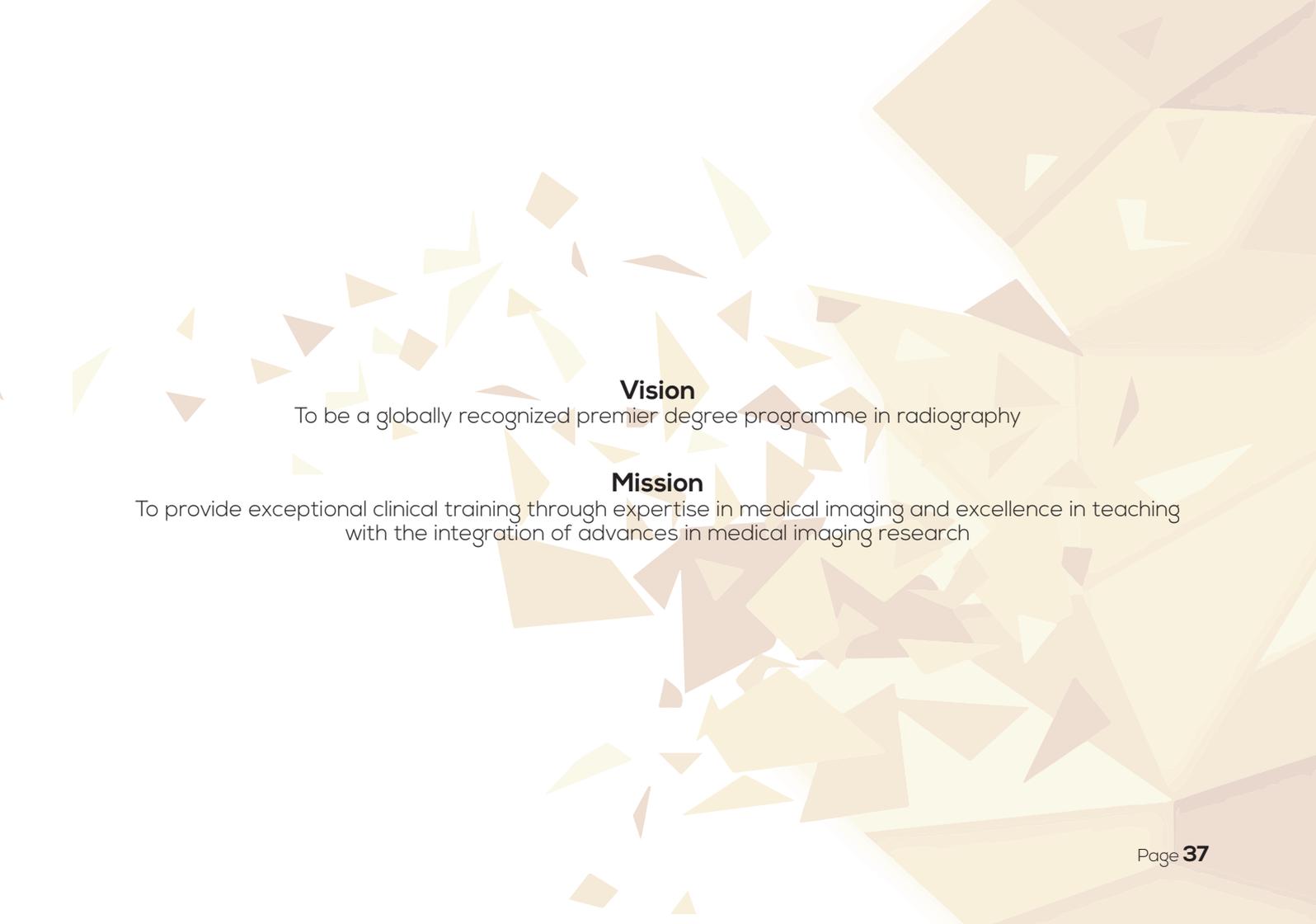
Course Code	Course Title	No. of Credits	Prerequisites
AH 4101	Proposal Formulation and Presentation	2	None
PT 4101	Geriatric Physiotherapy	3	None
PT 4102	Clinical Practice in Musculoskeletal Physiotherapy	5	None
PT 4103	Clinical Practice in Common Medical, Obstetrics and Gynaecological Conditions for Physiotherapists	3	None
PT 4104	Clinical Practice in Rehabilitation and Community Role	3	None

### 4000 LEVEL – SEMESTER II

Course Code	Course Title	No. of Credits	Prerequisites
PT 4201	Clinical Practice in Neurology and Neurosurgery	5	None
PT 4202	Clinical Practice in Intensive Care Unit	3	None
PT 4203	Clinical Practice in Cardio Respiratory and Surgical Conditions	3	None
PT 4204	Research Project in Physiotherapy	4	None
PT 4205	Introduction to Related Health Care Professions	None	None

# DEPARTMENT OF RADIOGRAPHY / RADIOTHERAPY





**Vision**

To be a globally recognized premier degree programme in radiography

**Mission**

To provide exceptional clinical training through expertise in medical imaging and excellence in teaching with the integration of advances in medical imaging research

## Graduate profile

The Department of Radiography / Radiotherapy prepares the BSc Radiography graduates

1. With knowledge and skills to carry out medical imaging procedures efficiently
2. To combine science and technology with patient care
3. To work collaboratively and constructively with multidisciplinary teams
4. To demonstrate ethical and professional behaviour
5. With innovative and analytical thinking leading to lifelong learning
6. For careers in medical imaging, academia and research
7. To be competent in seeking opportunities locally and internationally
8. With a basic foundation to pursue postgraduate studies

## Department of Radiography/Radiotherapy

### Academic Staff

**Phone: 081-3999621**

Dr. M.A.J.C. Marasinghe; B.Sc. Physics Sp. (Peradeniya), Ph.D. (Japan) - Head of Department

Ms. U.M.U.W. Jayasekara; B.Sc. (KLN), M.Phil (Peradeniya)

Dr. M.L. Jayatilake; B.Sc. Physics Sp. (Peradeniya), Ph.D. (USA)

Dr. U.J.M.A.L. Jayasinghe; B.Sc. Physics Sp. (Peradeniya), Ph.D. (USA)

Dr. S. Kulatunga; B.Sc. Physics Sp. (Peradeniya), Ph.D. (USA)

Dr. B.S. Weerakoon; B.Sc. Radiography (Peradeniya), Ph.D. (Japan)

Ms. M.G.R.S. Perera; B.Sc. Radiography (Peradeniya)

Ms. L.P.G. Sherminie; B.Sc. Radiotherapy (Peradeniya)

Mr. L. Thasanthan; B.Sc. Radiotherapy (Peradeniya)

Ms. I.L.U. Chandrasiri; B.Sc. Radiography (Peradeniya)

## Course Units Offered by the Department

### 1000 LEVEL – SEMESTER I

Course code	Course Title	No. of Credits	Prerequisites
AH 1101	English and Communication Skills – I	Non credit	None
AH 1102	Information Technology	Non credit	None
AH 1103	Basic Human Anatomy	2	None
AH 1106	Introduction to Psychology	2	None
RA 1101	Human Physiology	2	None
RA 1102	Basic Biochemistry	1	None
RA 1103	General Physics	2	None
RA 1104	Mathematics - I	2	None
RA 1105	Introduction to Electronics and Instrumentation	2	None

### 1000 LEVEL – SEMESTER II

Course code	Course Title	No. of Credits	Prerequisites
AH 1201	English and Communication Skills – II	Non credit	AH 1101
AH 1203	General Pathology	2	AH 1103, RA 1101, RA 1102
RA 1201	Atomic and Radiation Physics	2	None
RA 1202	Radiobiology and Radiation Protection	2	None
RA 1203	Applied Anatomy – I	2	AH 1103
RA 1204	Medical Imaging Equipment	3	None
RA 1205	Plain Radiography – I	2	None
RA 1206	Medical Image Processing – I	3	None

### 2000 LEVEL – SEMESTER I

Course code	Course Title	No. of Credits	Prerequisites
AH 2101	English and Communication Skills – III	Non credit	AH 1201
RA 2101	Programming Techniques	3	None
RA 2102	Fluoroscopy – I	2	None

RA 2103	Computed Tomography – I	3	None
RA 2104	Mathematics – II	2	RA 1104
RA 2105	Modern Physics	2	RA 1103
RA 2106	Care of Patient – I	2	None
RD 2101	Mammography – I	1	RA 1201, RA 1205,
RD 2102	Plain Radiography – II	2	AH 1103, RA 1205
RT 2101	Radiotherapy Equipment and Physics – I	2	None
RT 2102	Molecular Oncology	2	None

### 2000 LEVEL – SEMESTER II

Course code	Course Title	No. of Credits	Prerequisites
AH 2201	English and Communication Skills – IV	Non credit	AH 2101
RA 2201	Ethics in Medical Radiation Sciences	1	None
RA 2202	Medical Image Processing – II	3	RA 1206, RA 2101
RA 2203	Common Systemic Diseases	2	None
RA 2204	Magnetic Resonance Imaging – I	3	None
RD 2201	Fluoroscopy – II	3	RA 2102
RD 2202	Plain Radiography – III	3	RA 1205
RT 2201	Principles of Radiotherapy and Oncology	2	RT 2102
RT 2202	Radiotherapy Methods – I	2	None

### 3000 LEVEL – SEMESTER I

Course code	Course Title	No. of Credits	Prerequisites
RA 3101	Nuclear Imaging – I	3	None
RD 3101	Computed Tomography – II	2	RA 2103
RD 3102	Dental Radiography	2	None
RD 3103	Plain Radiography – IV	2	RD 2102, RD 2202
RD 3104	Applied Anatomy – II	1	AH 1103, RA 1203
RD 3105	Radiation Protection in Radiography	2	RA 1202
RD 3106	Care of patient – II	2	None
RD 3107	Pharmacology for Medical Imaging	1	None

RT 3101	Radiotherapy Physics and Equipment - II	2	RT 2101
RT 3102	Applied Anatomy in Radiotherapy	2	RA 3102
RT 3103	Treatment Planning - I	2	None
RT 3104	Clinical Oncology and Radiotherapy - I	2	RT 2202
RT 3105	Radiotherapy Methods - II	2	RT 2202
RT 3106	Clinical Practice of Radiotherapy - I	2	RT 2202

### 3000 LEVEL – SEMESTER II

Course code	Course Title	No. of Credits	Prerequisites
RA 3201	Statistics	2	None
RD 3201	Magnetic Resonance Imaging - II	2	RA 2204
RD 3202	Imaging in Common Systemic Diseases- I	1	RD 3104
RD 3203	Fluoroscopy - III	2	RD 2201
RD 3204	Paediatric Imaging	2	None
RD 3205	Mammography - II	2	RD 2101
RD 3206	Computed Tomography - III	3	RA 2103, RD 3101
RT 3201	Radiation Protection and Safety in Radiotherapy	2	RA 1202
RT 3202	Care of Patient - II	2	RA 2106, RT 3104
RT 3203	Treatment Planning - II	2	RT 3103
RT 3204	Clinical Oncology and Radiotherapy - II	2	RT 3105
RT 3205	Quality Assurance in Radiotherapy - I	2	RT 2101
RT 3206	Clinical Practice of Radiotherapy - II	3	RT 3105

### 4000 LEVEL – SEMESTER I

Course code	Course Title	No. of Credits	Prerequisites
RA 4101	Research Methodology	2	None
RD 4101	Maintenance of Medical Imaging Equipment	2	None
RD 4102	Nuclear Imaging - II	2	RA 3101
RD 4103	Applied Anatomy - III	2	RD 3104

RD 4104	Radiation Dosimetry and Applications	2	None
RD 4105	Magnetic Resonance Imaging - III	3	RA 2204, RD 3201
RD 4106	Quality Assurance in Radiography	2	None
RT 4101	Paediatric Radiotherapy	2	None
RT 4102	Quality Assurance in Radiotherapy - II	2	RT 3101
RT 4103	Evidence Based Clinical Practice	2	None
RT 4104	Maintenance of Radiotherapy Equipment	2	RT 2201, RT 3101
RT 4105	Radiation Dosimetry and Applications	2	RA 1201
RT 4106	Clinical Practice of Radiotherapy - III	3	RT 3105

## 4000 LEVEL – SEMESTER II

Course code	Course Title	No. of Credits	Prerequisites
RA 4201	Research Project	6	RA 4101
RA 4202	Medical Data Communication	1	RA 2101
RD 4201	Imaging in Common Systemic Diseases- II	2	RD 4104
RD 4202	Ancillary Imaging Techniques	2	None
RD 4203	In-Service Training	4	RD 2202, RD 3103, RD 3203, RD 3206, RD 4103, RD 4106
RT 4201	Treatment Planning - III	2	None
RT 4202	Advanced Radiotherapy Methods	2	RT 2202, RT 3105
RT 4203	In-service Training in Radiotherapy	4	RT 3106, RT 3206, RT 4106, RT 4202

# DEPARTMENT OF BASIC SCIENCES



## Department of Basic Sciences

### Academic Staff

#### Phone: 081-3761444

Prof. H.M.T.U. Herath; B.Sc. Zoology Sp. (Peradeniya), Ph.D. (London, UK) - Head of Department

Dr T.P.Gamagedara; B.Sc. Chemistry Sp. (Peradeniya), Ph.D (Peradeniya)

Dr. T. N. Haththotuwa; BVSc. (Peradeniya), MSc. (Peradeniya)

Dr. R.D.V.S.Ranasinghe; MBBS (Peradeniya)

## 1000 LEVEL – SEMESTER I

Course code	Course Title	No. of Credits	Prerequisites
AH 1102	Information Technology	Non credit	None
AH 1103	Basic Human Anatomy	2	None
AH 1104	Human Physiology I	3	None
AH 1106	Introduction to Psychology*	2	None
RA 1101	Human Physiology	2	None
ML 1104	Basic Biochemistry	3	None
NS 1101	Basic Biochemistry for Nurses	3	None
PT 1101	Biochemistry for Physiotherapists	2	None
RA 1102	Basic Biochemistry	1	None

## 1000 LEVEL – SEMESTER II

AH 1202	Basic Statistics	2	None
AH 1203	General Pathology	2	AH 1103, AH 1104, ML 1104
AH 1204	Human Physiology II	3	AH 1104
ML 1202	Analytical Chemistry	3	None
RA 1203	Applied Anatomy I	2	AH 1103

\* Courses marked with a star (\*) are coordinated by other departments

# ENGLISH LANGUAGE TEACHING UNIT



## English Language Teaching Unit (ELTU)

### Academic Staff

Ms. R.T.M. Senanayake; B.A. (Peradeniya) – Coordinator

Ms. G.K.Bowange; B.A. (Peradeniya), M.A (Kelaniya)

Ms. V.U.K.Wasala; B.A. (Peradeniya)

Ms. R.T. Kumarasinghe; B.A. (Peradeniya), M.A (Colombo)

Ms. S. Uvasideen; B.A. (Peradeniya)

Ms. C.S. Mallikaarachchi; B.A. (Peradeniya)

Ms. K.M.N.N Konara; B.A. (Peradeniya)

## Course Units Offered by the English Language Teaching Unit

### The Foundation Course in English

#### 1000 LEVEL – SEMESTER I

Course code	Course Title	No. of Credits	Prerequisites
EL 1101	Basic English for Allied Health Sciences 1 (Reading and Writing)	6 (Non-GPA)	None

#### 1000 LEVEL – SEMESTER II

Course code	Course Title	No. of Credits	Prerequisites
EL 1202	Basic English for Allied Health Sciences 2 (Listening and Speaking)	6 (Non-GPA)	None

#### 2000 LEVEL – SEMESTER I

Course code	Course Title	No. of Credits	Prerequisites
EL 2103	Intermediate English for Allied Health Sciences 1 (Reading and Writing)	3 (Non-GPA)	EL 1101

#### 2000 LEVEL – SEMESTER II

Course code	Course Title	No. of Credits	Prerequisites
EL 2204	Intermediate English for Allied Health Sciences 2 (Listening and Speaking)	3 (Non-GPA)	EL 1202

#### 3000 LEVEL – SEMESTER I

Course code	Course Title	No. of Credits	Prerequisites
EL 3105	Advanced English for Allied Health Sciences 1 (Reading and Writing)	6 (Non-GPA)	EL 1101 & 2103

(Subject to Senate Approval)

## Course Units Offered by the English Language Teaching Unit

### The Foundation Course in English

#### 3000 LEVEL – SEMESTER II

Course code	Course Title	No. of Credits	Prerequisites
EL 3206	Advanced English for Allied Health Sciences 1 ( Listening and Speaking)	6 (Non-GPA)	EL 1202 & 2204

#### Reading and Writing:

EL 1101 >> EL 2103 >> EL 3105

#### Speaking and Listening:

EL 1202 >> EL 2204 >> EL 3206

### 3000 Level (only for the Department of Medical Laboratory Science)

Course code	Course Title	No. of Credits	Prerequisites
AH 3101	English and Communication Skills	Non-Credit	AH 2201

(Subject to Senate Approval)

# Faculty of Allied Health Sciences (FAHS) - Rules and Regulations

These rules and regulations are based on By-Laws made by the Council of the University of Peradeniya under Section 29 (n) and section 135 (1) (d) of the University Act No. 16 of 1978 as amended by Acts No. 7 of 1985 and No. 26 of 1988.

## The Degrees Offered by the Faculty of Allied Health Sciences (120 Credits)

The Degree of Bachelor of Science in Medical Laboratory Science

The Degree of Bachelor of Science in Nursing

The Degree of Bachelor of Pharmacy

The Degree of Bachelor of Science in Physiotherapy

The Degree of Bachelor of Science in Radiography and Radiotherapy

## Terminology

**Semester:** An academic year is divided into two semesters, identified as the first semester and the second semester. Each semester is of 15 weeks duration.

**Course Unit:** This is a complete course taught within a semester with one or more contact hours per week. A contact hour is defined as an hour of lectures, practicals, tutorials etc.

**Levels:** Undergraduate courses will be conducted at 4 levels, namely 1000 level, 2000 level, 3000 level and 4000 level. The subject matter advances as the levels go up.

**Credit:** The abstract value assigned to a course unit on the basis of contact hours per week is called a credit. Usually, one credit is equivalent to 15 hours of lectures/tutorials or 30 hours of laboratory work or 45 hours of field/clinical classes. Course units of one credit, two credits and three credits are available. The contents of a three-credit course unit, for example, are approximately three times that of a course unit of one credit.

**Grade Point Average:** The marks are designated by the symbols A+, A, A-, B+, B, B-, C+, C, C- , D+, D and E. These are called grades and grade points are assigned as follows:

<b>A+ = 4.00</b>	<b>B+ = 3.30</b>	<b>C+ = 2.30</b>	<b>D+ = 1.30</b>
<b>A = 4.00</b>	<b>B = 3.00</b>	<b>C = 2.00</b>	<b>D = 1.00</b>
<b>A- = 3.70</b>	<b>B- = 2.70</b>	<b>C- = 1.70</b>	<b>E = 0.00</b>

(Note: **A+** and **A** have the same grade points.)

**Grade Point Average (GPA):** The grade point average for each level is the credit weighted mean of grade points obtained by a student for the course units offered at that level. It is calculated to the second decimal place and is an indicator of the academic performance of the student. The final GPA is computed using these level GPAs by giving percentage weights for different levels.

**Prerequisites:** In order to follow the higher-level courses, the student shall complete the lower level courses.

## Part I Introduction

1. The Council of the University of Peradeniya shall have authority to confer the Degrees of Bachelor of Science in Medical Laboratory Science/Nursing/Physiotherapy/Radiography/Radiotherapy and the Degree of Bachelor of Pharmacy on a person who has been recommended for the conferment of the said degree by the Senate of the University.
2. The Senate shall not make such a recommendation unless the person has successfully fulfilled all requirements and conditions, including those relating to the programme of study and assessment, laid down in these Rules and Regulations and has complied with By-Laws of the University.
3. Any person admitted to a degree programme shall complete the same within a period of eight academic years from the date of first registration.

## **Part II**

### **Admission and Registration**

4. The admission of a person to the respective degree programme conducted by the University of Peradeniya shall be done by the authorized statutory body under the Universities Act No. 16 of 1978 or any other relevant law that replaces it.
5. A person who has been admitted to the said degree programme under the law or relevant regulation in force shall register himself/herself with the University of Peradeniya by returning the duly perfected registration form.
6. It shall be the duty and responsibility of the student who is admitted to the Faculty of Allied Health Sciences to keep his registration valid by paying the prescribed fees on time until he/she completes the Programme.
7. The registration shall be valid for one academic year at a time and shall be renewed annually, subject to the provisions of these Rules and Regulations, unless otherwise decided by the Senate on the recommendation of the Faculty of Allied Health Sciences.

## **Part III**

### **The Programme**

8. Respective degrees shall be awarded at the completion of a minimum of 120 credits. The academic years shall be known as 1000 level, 2000 level, 3000 level and 4000 level. Each level of the programme of study shall be divided into two semesters unless otherwise decided by the Senate on the recommendation of the Faculty Board.
9. The Programme of study shall consist of compulsory, optional and non-credited supplementary course units as may have been prescribed by these Rules and Regulations. A course unit shall carry a time-based credit value as specified in the schedule.

10. (a) A student shall register for all course units including supplementary course units for each semester as prescribed in the schedule of the respective degree programme.  
  
(b) Course registration forms shall be submitted to the office of the Assistant Registrar of the faculty with the recommendation of the relevant head of the department within the last week of the previous semester.
11. The first and second digits of the course code shall denote the respective level and the semester of the study programme respectively.
12. The titles and descriptions of course units offered in each subject area, the nature of individual systems of evaluation and other relevant requirements leading to the Bachelor's Degree in the relevant subject area shall be prescribed by regulations made by the Senate and shall be contained in the prospectus of the Faculty of Allied Health Sciences.
13. The Senate shall have the power, on the recommendation of the Faculty Board, to change, to amend or to add to the course units, contents and to any rules and regulations relating to any requirements leading to all degree programmes. Due notice shall be given to the students of such amendments, changes or additions.
14. Instructions at each level of all degree programmes shall be in the form of lectures, practicals/demonstrations, tutorials, assignments, hospital-based training, reports, presentations, seminars, research and/or any other forms approved by the Faculty Board. The Faculty Board shall have the authority to decide the method/s of imparting instruction at each level. The medium of instruction and evaluation shall be English.
15. To be eligible to sit for the examinations at 3000 level, the student can carry only two C-s from the course units offered at the 1000 level of the respective degree programme. Students who have more than two C- or lower grades are considered as deferred.
16. To be eligible for the registration at 4000 level, the student can carry a maximum of one C- from

the course units offered at both 1000 and 2000 levels of the respective degree programmes.

17. To qualify for the comprehensive examination of Bachelor of Science in Nursing, the student shall have a cumulative GPA of at least 2.0 at all four levels.
18. The students who do not have 80% attendance for lectures will not be eligible to sit for the end-semester examination and shall register for the said course module with the next immediate offer. In order to sit for the examination, he/she shall complete the course in a manner deemed satisfactory by the Head of the department / module co-ordinator.
19. Pregnancy Policy

Based on the internal circular (Circular No. TA/SA/10/2010) issued by the Ministry of Health, which prohibits pregnant females to be employed in the Radiography units in government hospitals, the Department of Radiography/ Radiotherapy wishes to advise and make the following recommendations to a pregnant student:

Students reading for a degree in Radiography who obtain practical training at the hospital will have to comply with the circulars adopted. The first responsibility for the protection of the conceptus lies with the student herself and as such recommends the pregnancy to be declared in writing to the Head of the Department as soon as the condition is confirmed. This would be communicated to the hospital and the final decision of permitting such a student to continue to obtain practical training will depend on the decision of the hospital. The Department strongly advises declaration, as an undeclared pregnancy once detected by the hospital could create a breach of trust and may even lead to refusal of future training.

The student who elects to declare pregnancy must submit a completed Declaration of Pregnancy Form available in the Department to the Head of the Department. The declaration form shall include information on the estimated date of conception and anticipated delivery date. The form shall include a statement that the declared student is aware of the risks of radiation to the developing foetus and that the foetal dose should be kept below 1 mGy during the entire pregnancy as given by ICRP 84 or 2 mSv to the abdomen of the pregnant woman for the remainder of the pregnancy once the pregnancy has been

declared (ICRP 60).

Once a student declares pregnancy, the Department will inform the hospital and if the hospital authorities permit the student to continue the practical training, a separate TLD (to monitor dose to abdomen) will be provided to the student who shall bear the cost. Foetal exposure will be monitored throughout the pregnancy or until such time as the student revokes the declaration.

Pregnant students:

- may complete the theory part of the programme without any modifications.
- may take leave of absence (LOA) of one-year duration. Such a student will be granted leave of absence with a chance to follow the programme with the next available batch and such examinations will be considered as her first attempt. The student must complete the necessary requirements of the courses before proceeding to the next level.
- should be aware of all risks associated with continuing the program. Any modifications/changes to the study programme will not be made to accommodate such students.
- should complete the degree programme within the time period as stipulated by the University/ Faculty By-Laws

## **Part IV**

### **Eligibility Criteria for Examinations**

20. Evaluation of all courses shall be conducted under the semester system and all examinations shall be held within a given semester and/or at the end of each semester unless otherwise decided by the Faculty Board of the Faculty of Allied Health Sciences.

- I. A student shall not be permitted to sit for an end-semester examination unless the Head of the relevant Department/course coordinator has certified that she/he has satisfied all the requirements of the relevant course unit, including at least 80% attendance for lectures and laboratory classes.

- II. Submission of all the assignments and tutorials at the appropriate time and attending workshops where applicable are mandatory requirements to be eligible to sit for an examination.
- III. It is mandatory to have 100% attendance in hospital based/clinical training components of all relevant courses. Those who are unable to attend during the regular clinical sessions due to a valid excuse as defined in 21(iv), should complete the respective component before sitting the end-semester examination.
- IV. A valid excuse shall be:
- A. Illness or injury, In case of an illness or injury, the student or his/her parent/guardian should contact the Dean within 7 days by telegram/fax/e-mail, followed by a letter within a period of 4 weeks indicating the nature of illness and the name of the attending doctor. A medical certificate supporting the illness of the student should also be sent to the Dean. Medical certificates should be obtained from the following persons: UMO, DMO, Consultant in the particular field, Head of a Base Hospital, registered medical practitioner, MS of a provincial ayurvedic hospital or ayurvedic physician registered with the Ayurvedic Medical Council. The UMO shall certify the acceptance of the medical certificate.
- B. Personal problems involving an immediate family member, In case of a personal problem involving an immediate family member, the student should contact the Dean within 7 days by telegram/fax/e-mail, followed by a letter within a period of 4 weeks indicating the circumstances leading to his/her absence from the examination. His/her excuse shall be considered by the Faculty Board. Grounds for favourable consideration may be:
- Death of an immediate family member.
  - Serious illness of an immediate family member requiring personal attention by the student, and certified by a medical practitioner specified in the University Rules governing medical certificates.

- C. A student participating in a university or national level event or for any other legitimate cause for which prior permission has been obtained from the Faculty Board.
  - D. Natural disasters affecting the student. Student should be able to provide proof upon request of the Faculty Board.
21. Those who are unable to fulfill the attendance requirements to sit an examination should complete the necessary requirements prior to the next available examination.
  22. A student should sit the first available examination held following the completion of the course or at the end of each semester unless a valid excuse has been submitted to the Faculty Board.
  23. In the absence of an accepted excuse, failure to sit the first available examination shall be considered as an unsuccessful attempt at the examination.
  24. The examinations prescribed by these Rules and Regulations shall be conducted by Boards of Examiners appointed by the Senate on the recommendation of the Faculty Board.
    - Every student following the Programme of Study in a given level shall take the relevant examinations of Course Modules at the very first occasion they are held.
    - A student who is unable to sit for any examination due to a valid excuse shall inform the Assistant Registrar of the faculty, of his/her inability to do so by letter, telegram, fax or e-mail within 7 days and supporting documents should be sent within 2 weeks.
    - A student shall be deemed to have sat the first scheduled examination irrespective of the fact whether she/he has actually sat or not, unless the Senate is satisfied that the candidate has been prevented from sitting the examination due to illness or any other reasonable cause as described in 20.iv.

- A student who fails to complete any course in the first attempt shall be eligible to repeat the course in the **next 3 consecutive attempts only**.
  - However, under exceptional circumstances, an appeal should be submitted to the Assistant Registrar through the respective Head of the Department for a **5<sup>th</sup> attempt**, and it may be entertained by the Faculty Board. In counting the number of attempts a student has exhausted, the attempts deemed under 23 of this section shall also be taken into account.
25. i. A candidate is deemed to have failed a course if she/he has obtained a grade below C. A candidate who obtains C- or a lower grade in a course may re-sit the examination for the purpose of improving the grade within the stipulated period and she/he has to obtain a Grade Point Average of 2.0 in order to complete the requirements of the degree programme.
- ii. A candidate should pass (C or above) all courses in order to be eligible to obtain the degree.

## Part V Award of the Degree

26. The marks obtained for all academic courses shall be graded as below. The marks shall carry grades and grade points according to the ranges within which they fall.

<b>A+ = 4.00</b>	<b>B+ = 3.30</b>	<b>C+ = 2.30</b>	<b>D+ = 1.30</b>
<b>A = 4.00</b>	<b>B = 3.00</b>	<b>C = 2.00</b>	<b>D = 1.00</b>
<b>A- = 3.70</b>	<b>B- = 2.70</b>	<b>C- = 1.70</b>	<b>E = 0.00</b>

27. i. Grades of all registered course modules in a programme of study shall be taken into account and all course modules shall be weighted according to their corresponding Credit Values when Grade Point Average (GPA) is calculated.

ii. The formula for the calculation of the GPA shall be as follows:

28.  $\frac{\sum c_i g_i}{\sum c_i}$  where  $c_i$  and  $g_i$  are the number of credits and the grade point for the  $i^{\text{th}}$  course unit

29. A candidate should complete all prescribed courses in the relevant degree programme at all four levels and should

I. pass all supplementary courses (non-credit) at each level and

II. pass all credited courses (C or above)

in order to be eligible to obtain the degree

**Note :** Candidates who followed the Nursing Degree Programme should also pass the final comprehensive examination to be eligible to obtain the degree. Students should obtain a minimum GPA of 2.00 to be eligible to sit for the comprehensive examination prescribed under these Rules and Regulations and/or any other By-Laws made by the University.

30. A candidate who fulfills the requirements of the relevant degree shall be awarded First Class, Second Class (Upper Division), Second Class (Lower Division), or a Pass based on the GPA given below.

<b>Award</b>	<b>GPA</b>
• First Class	GPA of 3.70 or above
• Second Class (Upper Division)	GPA of 3.30 – 3.69
• Second Class (Lower Division)	GPA of 3.00 – 3.29
• Pass	GPA of 2.00 – 2.99

## **Part VI – Interpretation**

31. In these Rules and Regulations, unless it is specifically stated otherwise,  
The “University” means the University of Peradeniya, established in terms of the Universities Act No 16 of 1978 as amended subsequently.  
The “Senate” means the Senate of the University of Peradeniya, constituted under Universities Act No 16 of 1978 as amended subsequently.  
The “Faculty Board” means the Faculty Board of the Faculty of Allied Health Sciences of the University of Peradeniya, constituted under the Universities Act.  
The “GPA” means Grade Point Average.
32. Any questions regarding the interpretation of these Rules and Regulations shall be referred to the Council of the University of Peradeniya, which after obtaining the views of the Senate, makes a decision on such questions. The decision of the Council thereon shall be final.

## Regulations Relating to Examinations

Regulations made by the Senate of the University of Peradeniya and approved by the Council under Section 136 read with Sections 29, 45 and 46 of the Universities Act No. 16 of 1978 as amended by the Universities (Amendment) Act No.7 of 1985.

Examination of a course/course unit may consist of several assessment components (quizzes, within semester and end-semester examinations, term papers, assignments, etc.)

### 31.1 Regulations

These Regulations may be cited as the Examination Procedure, Offences & Punishment Regulation No.1 of 2008.

#### 31.1.1 Part I - Examination Procedure

1. A candidate is expected to be outside the examination hall at least 15 minutes before the commencement of each paper, but shall not enter the hall until he/she is requested to do so by the supervisor.
2. On admission to the hall a candidate shall occupy the seat allotted to him/her and shall not change it except on the specific instruction of the Supervisor.
3. For examinations which have duration of one or more hours, a candidate shall not be admitted to the examination hall after the expiry of half an hour from the commencement of the examination. A candidate shall not be allowed to leave the hall until half an hour has elapsed from the commencement of the examination or during the last 15 minutes of the paper.
4. However, under exceptional circumstances or in cases where the duration of the examination is less than one hour, the supervisor in consultation with the Dean of the Faculty concerned may use

his discretion in the enforcement of Rule 3.

5. A candidate shall have his/her student record book/student identity card/admission card with him/her in the examination hall on every occasion he/she presents himself/herself for a paper. His/her candidature is liable to be cancelled if he/she does not produce the student record book/student identity card/admission card when requested to do so. If he/she fails to bring his/her student record book/student identity card /admission card, he/she shall sign a declaration in respect of the paper for which he/ she had not produced the student record book/student identity card/admission card in the form provided for it, and produce the student record book/student identity card/admission card to the Registrar or the relevant Senior Assistant Registrar/ Assistant Registrar within the next three working days. If a candidate loses his/her student record book/student identity card/admission card during the examination period, he/she shall obtain a duplicate of student record book/student identity card/admission card as the case may be from the Registrar or relevant Senior Assistant Registrar/Assistant Registrar for production at the examination hall.
6. A candidate shall not have on his/her person or in his/her clothes or on the admission card, timetable, student record book/student identity card, any notes, signs or formulae, etc., except those items that are permitted. All unauthorized items which a candidate has brought with him/her should be kept at a place indicated by the Supervisor/Invigilator.
7. A candidate may be required by the supervisor to declare any item in his/her possession or person.
8. No candidate shall copy or attempt to copy from any book or paper or notes or similar material or from the scripts of another candidate. A candidate shall neither help another candidate nor obtain help from another candidate or any other person. A candidate shall not conduct himself/herself so negligently that an opportunity is given to any other candidate to read anything written by him/her or to watch any practical examination performed by him/her. No candidate shall use any other unfair means or obtain or render improper assistance at the examination.

9. If any candidate was found to have copied from another candidate by an examiner at the time of marking, he/she would be treated as having committed a punishable offence.
10. No candidate shall submit a practical book or field book or dissertation/thesis or project study or answer script or assignment which has been prepared wholly or partly by anyone other than the candidate himself/herself. This section, however, does not apply to group projects of students.
11. A candidate shall bring his/her own pens, ink, mathematical instruments, erasers, pencils or any other approved equipment or stationery which he/she has been instructed to bring. The use of a calculator will be permitted only for papers that contain a rubric to that effect.
12. Examination stationery (i.e., writing paper, graph paper, drawing paper, ledger paper, precis paper, etc.) will be supplied at the examination hall as and when necessary. No sheet of paper or answer book supplied to a candidate may be torn, crumbled, folded or otherwise mutilated. No papers other than those supplied to him/her by the Supervisor/Invigilator shall be used by candidates. All material supplied, whether used or unused, shall be left behind on the desk and not removed from the examination hall.
13. Every candidate shall enter his/her Index Number/Registration Number on each answer book and on every continuation paper. He/She shall also enter all necessary particulars as required. A candidate who inserts on script an Index Number/Registration Number other than his/her own is liable to be considered as having attempted to cheat. A script that bears no Index Number/Registration Number, or has an Index Number/Registration Number which cannot be identified, is liable to be rejected. No candidate shall write his/her name or any other identifying mark on the answer script unless otherwise authorized.
14. All calculations and rough work shall be done only on paper supplied for the examination, and shall be cancelled and attached to the answer script. Such work should not be done on any other material. Any candidate who disregards these instructions runs the risk of being considered as having written notes or outline of answers with the intention of copying.

15. Any answer or part of an answer, which is not to be considered for the purpose of assessment, shall be neatly crossed out. If the same question has been attempted in more than one place the answer or answers that are not to be considered shall be neatly crossed out.
16. Candidates are under the authority of the supervisor and shall assist him/her by carrying out his/her instructions and those of the Invigilator during the examination and immediately before and after it.
17. Every candidate shall conduct himself/herself in the examination hall and its precincts as not to cause disturbance or inconvenience to the supervisor or his staff or to other candidates. In entering and leaving the hall, he/she shall conduct himself/herself as quietly as possible. A candidate is liable to be excluded from the examination hall for disorderly conduct.
18. Candidates shall stop work promptly when ordered by the Supervisor/Invigilator to do so.
19. Absolute silence shall be maintained in the examination hall and its precincts. A candidate is not permitted for any reason whatsoever to communicate or to have any dealings with any person other than the Supervisor/Invigilator. The attention of the Supervisor/Invigilator shall be drawn by the candidate by raising his/her hand from where he/she is seated.
20. During the course of answering a question paper no candidate shall be permitted to leave the examination hall temporarily. In case of an emergency, the Supervisor/Invigilator may grant him/her permission to do so but the candidate will be under his/her surveillance.
21. No person shall impersonate a candidate at the examination, nor shall any candidate allow himself/herself to be impersonated by another person.
22. Any candidate receiving unauthorized assistance from any person shall be deemed to have committed an examination offence.
23. If circumstances arise which in the opinion of the supervisor render the cancellation or postponement

of the examination necessary, he/she shall stop the examination, collect the scripts already written and then report the matter as soon as possible to the Dean of the relevant Faculty.

24. The Supervisor/Invigilator is empowered to require any candidate to make a statement in writing on any matter which may have arisen during the course of the examination and such statement shall be signed by the candidate. No candidate shall refuse to make such a statement or to sign it. If such a candidate refuses to make such a statement or refuses to sign it, the Supervisor/Invigilator shall make his own statement and report the matter to the Dean of the relevant Faculty.
25. No candidate shall contact any person other than the Vice-Chancellor, Dean, Head of the Department, the Registrar or the relevant Senior Assistant Registrar regarding any matter concerning the examination.
26. Every candidate shall hand over the answer script personally to the Supervisor/Invigilator or remain in his/her seat until it is collected. On no account shall a candidate hand over his/her answer script to an attendant, a minor employee, or another candidate.
27. Every candidate who registers for a course/course unit shall be deemed to have sat the examination of that course/course unit unless he/she withdraws from the course/course unit within the prescribed period for dropping courses/course units. He/She should submit a medical certificate in support of his/her absence, prior to the commencement of the examination. If such a document cannot be submitted before the commencement of the examination, a candidate shall inform of his/her inability to attend the examination to the Dean of the Faculty within a week after the commencement of the examination. The medical certificate shall conform to the Senate Regulations. (See Appendix I.)
28. When a candidate is unable to be present for any part/section of an examination of a course/course unit, he/she shall notify or cause to be notified this fact to the Dean of the Faculty and relevant Senior Assistant Registrar or Assistant Registrar immediately. This should be confirmed in writing with supporting documents by registered post within two weeks.

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29. A student will be eligible for honours if all requirements for the award of honours are met within the prescribed period for the degree. However, candidates found guilty of an examination offence shall not be eligible for honours.
  30. No student shall sit an examination of a course/course unit, if he/she has exhausted the number of attempts that he/she is allowed to sit that particular examination, unless he/she has been granted special permission to do so by the Dean of the relevant Faculty.

## Deputy Proctor and Senior Student Counsellors - 2019

<b>Title</b>	<b>Name</b>	<b>Telephone</b>	<b>E-mail</b>
Deputy Proctor	Mr. A.L.I. Prasanna	071 6818633	prasannak3@yahoo.com
Senior Student Counsellor	Dr. I.U.K. Tennakoon	077 1052133	imalka123@yahoo.com
Senior Student Counsellor	Dr. S. Kulatunga	071 4406236	kulatunga.sunil@gmail.com
Senior Student Counsellor	Dr. Wasana Kudagammana	077 3981378	wasanakudagammana@yahoo.co.uk
Senior Student Counsellor	Dr. M. L. Pathirana	077 1659231	malshanilakshika@gmail.com
Senior Student Counsellor	Mr. S. Mayooran	0775761567	ursmayoo22@gmail.com

# Facilities

## University Health Centre

The University Health Center is a curative and preventive health care delivery unit, headed by the Chief Medical Officer. This service consists of an outpatient department (OPD), in-patient treatment facilities, including an infectious disease ward and a public health section all of which are geared to serve resident and non-resident students, employees, and their families. The preventive health section, under the supervision of public health inspectors, manages disinfection, cleaning, epidemiological work, vector control, food hygiene, waste disposal, environmental sanitation, water supply sanitation and health education.

### Contact Information

Chief Medical Officer: Dr. P.M.A. Samarakkody

Phone: 081-2388152 (Direct)  
2024 (Intercom)  
2028 (Intercom: Office/Lab)  
2022, 2026 (wards/pharmacy)

Opening: 8.30 a.m. to 4.30 p.m. including Saturdays (OPD)

## Student Services and Registration Division

Student Services Branch coordinates activities with all faculties and other service units of the University in order to provide various types of services to students. This Division assigns hostel facilities to students and coordinates the payment of Mahapola and Bursaries on time.

Contact Information: Mr. Ariyaratne Punchihewa, Deputy Registrar  
Phone: 081-2392421 (2421 and 2422 Intercom)

## **Marshals' Division**

Marshals' Division consists of a Chief Marshal, five Marshals and a Lady Marshal. The main function of the Marshals is to maintain discipline of students by keeping vigilance on their activities and behaviour at the Faculties, Centres, Gymnasium, Playground and Halls under the direction of the Deputy Vice-Chancellor.

Contact Information: 081-2392423 (Direct) 2423 (Intercom)  
Chief Marshal : 0775-996290 (Mr. W.A.A. Werahera)

0714-395666 (Mr. Rohana Gajaweera)  
0714-472843 (Mr. D.M.R.S. Dassanayake)  
0718-293887 (Mr. H.M.C.S.B. Wanniarachchi)  
0774-332333 (Mr. Subramaniam Satheeswaran)

0716-029393 (Mr. D.K.G.K.P. Pathirana)  
0718-314604 (Mr. M. Abeywickrama)  
0787-363780 (Ms. S.M.D.N.K. Seneviratne)

## **Security Office – Near the New Arts Building**

Contact Information:  
081-2389182 (Direct) 2133 (Intercom)  
2134 (Intercom) Chief Security Officer  
2240 (Intercom) Deputy Chief Security Officer

## Main Library

The Library of the University of Peradeniya originated in 1921 as the Library of the Ceylon University College. The Library was shifted to Peradeniya in 1952 and was moved to the present premises in 1960. After moving to Peradeniya, the Library developed into a library network comprising of the Main Library and seven other branch libraries at the faculties of Agriculture, Allied Health Sciences, Dental Sciences, Engineering, Medicine, Science and Veterinary Medicine and Animal Sciences. The ninth library is attached to the Faculty of Agriculture in Mahailuppallama sub-campus. The Main Library can be accessed by proceeding along new Galaha Road, passing the entrance to the Arts Theatre and turning right into the Senate Building. The Peradeniya University Library Network is the oldest and the largest university library in Sri Lanka. For more information, please visit <http://www.lib.pdn.ac.lk>.

Contact Information:                    0812392475 (Director, Counter 1 and Ground floor)  
    2480 (Intercom) (Counter II, First floor)  
    2481 (Intercom) (Short-Term Reference Counter)

Opening hours: 7.15 am to 6.30 pm (weekdays); 8.00 am to 4.15 pm (Saturdays). These times may change during exam periods.

## Information Technology Centre

The Information Technology Centre (ITC) was established in 2004 as a part of ICT Skills Development Programme of the University. One of the main objectives of this Centre is to provide opportunities for undergraduates and other members of the University community to improve their ICT skills. The centre offers numerous part-time and regular training programmes.

Contact Information:                    Reception Counter Intercom: 2909, Office 2070, 2900, 2906  
Opening hours:                            8.00 a.m. to 10.00 pm  
Service & facilities:                    Computer facilities with Internet access. Students need to register and obtain their account passwords prior to using the facilities in the Center

Location: Behind the WUS Building Complex near the Gymnasium  
**Department of Physical Education and Gymnasium**

The Department of Physical Education, the sports governing body of the University of Peradeniya, aims to instill the life-long practice of sport and other recreational activities among undergraduates so that they may engage in self-improvement and enjoy the health benefits. In order to achieve these objectives the Department organizes various sports programs, competitions, lectures, workshops and some foreign tours.

Contact Information	Intercom 2164 (Mr. Palitha Kumara (Director/Physical Education)) Intercom 2162 (Office) Intercom 2163 (Swimming Pool)
Opening hours:	7.00 a.m. to 8.00 pm
Service and facilities:	Indoor sport facilities, swimming pool, fitness center Organizes faculty, university and inter-university level sports tournaments

# Synopses of Course Contents

## Department of Medical Laboratory Sciences

### 1000 Level

#### **ML 1101 Laboratory Practice, Safety and First Aid (2 Credits)**

Introduction to the laboratory safety, Organization and design of a medical laboratory, Laboratory hazards and means of prevention, Safety equipments used in the laboratory, Sterilization and disinfection, Laboratory waste disposal, Storage of chemicals and safety aspects, Occupational health in the laboratory.

#### **ML 1102 General Microbiology (2 Credits)**

Introduction to microbiology, History of microbiology, Taxonomy and classification of microbes, Microbial variety, Microbial metabolism and growth, Microbial habitat and transmission, Microbiology of air, soil and water, Microbial pathogenicity, Koch's postulates and proof of causation, Principles of detection and identification of microorganisms, Storage of microorganisms, Bacterial genetics, Basic microbiological techniques.

#### **ML 1103 Genetics and Molecular Biology (2 Credits)**

Mendelian inheritance, Laws of inheritance, Major genes, Polygenes, Dominance, Recessiveness, Sex linked inheritance, Pedigree analysis, Cytogenetics and chromosomal aberrations, Molecular genetics, Modern biotechnology, Recombinant DNA technology, Molecular techniques.

#### **ML 1104 Basic Biochemistry (3 Credits)**

Basic structure of an eukaryotic and prokaryotic cells, Structure and function of cell organelles, Structure and function of carbohydrates, Lipids, Amino acids, Proteins & nucleic acids, Biochemical tests for identification of carbohydrates, proteins & lipids, Introduction to Enzymology, Chemistry & function of haemoglobin & vitamins, Minerals and their functions, Metabolism of carbohydrates, lipids, proteins, amino acids & nucleic acids, Integration and regulation of metabolism.

### **ML 1201 Specimen Collection & Transport (2 Credits)**

Blood collection techniques (Finger prick, Heel prick & Venepuncture), Anticoagulants, Separation of serum & plasma, Preparation of patients, Collection, transport and rejection of different specimens in haematology, biochemistry, microbiology & histopathology, Universal precautions, Pre-analytical errors, Etiquettes for health care workers.

### **ML 1202 Analytical Chemistry (3 Credits)**

Introduction to basic equipment used in analytical chemistry, Measurements & errors in chemical analysis, Preparation of laboratory reagents & standardization, Titrations, pH & Buffers, Centrifugation, Spectrophotometry and analytical aspects, Electrophoresis, Chromatography, Electro-analytical chemistry in laboratory analysis, Enzyme kinetics.

### **ML 1203 Tissues of the Body (1 Credit)**

Introduction, Epithelial tissue, Connective tissue, Bone, Cartilage, Muscle and cardiovascular system, Urinary system, Male and female reproductive system, Liver, Gastrointestinal tract & associated organs, Respiratory system, Reticulo-endothelial system, Lymphoreticular system, Nervous system, Introduction to tissue processing.

### **ML 1204 Systematic Bacteriology (2 Credits)**

Characteristic features, Pathogenicity, Clinical conditions and identification tests of medically important bacteria, mycobacteria, spirochaetes, cell wall free bacteria (mycoplasma, chlamydia, rickettsiae and others).

## **2000 Level**

### **ML 2101 Haematology I (3 Credits)**

Introduction to haematology, Haemopoiesis, Determination of haemoglobin, Packed cell volume, Erythrocyte sedimentation rate, Red cells & red cell inclusions, Red cell count & red cell indices, White blood cell count & differential count, Preparation of blood films, Reticulocytes & reticulocyte count, Morphology & function of platelets, Platelet count, Automated haematological analyzers, Laboratory errors.

### **ML 2102 Clinical Biochemistry I (3 Credits)**

Structure and function of kidney, Formation & composition of urine, Renal diseases, Specimen collection for urine analysis, Physical and chemical examination of urine, Examination of urine deposits, Special urine examination, Renal calculi & chemical analysis of calculi, Spermatogenesis & male infertility, Seminal fluid analysis, Diseases of CNS, Analysis of CSF, Exudates & transudates, Examination of other body fluids.

### **ML 2103 Histotechnology (3 Credits)**

Introduction to histology and relevant equipments, Sample collection and fixation, basic steps in histotechnology, Tissue processing, Paraffin embedding & section cutting (microtomy), Haematoxylin and eosin staining and staining artifacts, Special staining techniques, Processing of fresh specimens and cryostat sectioning, Micrometry, Immunohistochemistry and enzyme histochemistry, Quality assurance methods in histotechnology

### **ML 2104 Systematic Virology and Mycology (2 Credits)**

Introduction to fungi, Classification and general properties of fungi, Yeasts (Candida, Cryptococcus), Dimorphic fungi, Dermatophytes, filamentous fungi pathogenic to humans, Introduction to viruses including classification and general properties of viruses, General aspects of DNA viruses & RNA viruses, Pathogenesis and control of viral diseases.

### **ML 2105 Systematic Parasitology and Medical Entomology (2 Credits)**

Introduction to parasitology, Intestinal protozoa, Tissue protozoa, Intestinal nematodes, Tissue nematodes, Trematodes, Cestodes, Medically important mosquitoes & other arthropods, Zoonotic parasitic diseases.

### **ML 2106 Diagnostic Bacteriology (3 Credits)**

Normal flora and collection and transport of specimens, Use of microbiology laboratory in the diagnosis of respiratory tract infections, Gastrointestinal infections, Sexually transmitted infections, Central nervous system infections, Bacteraemia/infective endocarditis, Skin and wound infections, Urinary tract infections, ENT & eye infections, Infection in the compromised host. Choice of appropriate test in an infective disease, Antibiotics & their mode of actions, Principles & procedures of different types of antibiotic sensitivity testing, (ABST) methods used in diagnostic & research laboratories, Antibiotic resistance mechanisms & methods of their detection and quality assurance in a microbiology laboratory.

### **ML 2201 Haematology II (3 Credits)**

Classification of anaemia; Haemolytic anaemia, G6PD deficiency, Iron deficiency anaemia, Megaloblastic anaemia, Thalassaemia and haemoglobinopathies, Investigations and interpretation of thalassaemia and other haemoglobinopathies, Interpretation of haemoglobin electrophoresis, Leukaemia, Pancytopenia, Myeloproliferative disorders, Paraproteinaemia, LE cells, Blood coagulation disorders and coagulation tests.

### **ML 2202 Clinical Biochemistry II (3 Credits)**

Regulation and abnormalities of carbohydrate, Lipoproteins, Serum protein and bilirubin metabolism, Diabetes mellitus, Acute and chronic liver diseases, Specimen collection and methods of serum glucose determination under different clinical entities, Lipoproteins, Bilirubin & serum protein testing, Liver function tests, Rectify the possible errors and quality control in above testing.

### **ML 2203 Diagnostic Virology and Mycology (2 Credits)**

Pathogenesis, laboratory diagnosis and prevention of fungal infections of medical importance including infections caused by yeasts (*Candida*, *Cryptococcus*), dimorphic fungi, dermatophytes and other filamentous fungal infections in humans. Pathogenesis, laboratory diagnosis and prevention of viral infections caused by DNA viruses, maternal viral infection that affect the foetus and neonates, pathogenesis, diagnosis and control of emerging and re-emerging viral infections in the world and in Sri Lanka.

### **ML 2204 Cytotechnology (2 Credits)**

Introduction to cytotechnology, Overview of cytopreparatory techniques, Cytological sampling of female genital tract, Respiratory tract, GIT & body cavities, CSF and urine cytology, Skin scrapings, Needle aspiration biopsies, Basic cervical cytology, Ancillary techniques in cytology, Error identification, Quality assurance in cytology.

### **ML 2205 Diagnostic Parasitology (2 Credits)**

Micrometry relevant to parasitology, Collection, transport & preservation of specimens, Faecal examination- wet smears, Concentration techniques, Culture techniques, Permanent staining, trichrome, Iron- haematoxylin, Acid fast stains, Blood examination- malaria, Filariasis, Concentration techniques, Immunodiagnosis & molecular diagnosis, Arthropods of medical importance- identification, Preservation

& transport to reference labs, Collection & dissection of medically important insects, Quality control and quality assurance in parasitology.

### **ML 2206 Immunotechnology (2 Credits)**

Introduction to Immunology, Innate & acquired immunity, Antigens & Antibodies, Humoral & cellular immunity, Antigen-antibody reactions, Complement system, Laboratory diagnosis of autoimmunity, Laboratory diagnosis of immunodeficiency, Immunotechnology; Immunoagglutination, Immunohistochemistry, Antibody titres, Immunofluorescence, Radio-immunoassay, ELISA, Immuno-electrophoresis, Flowcytometry.

### **3000 Level**

### **ML 3101 Haematology III (2 Credits)**

Introduction to blood bank, Blood grouping, Screening for infectious diseases, Preparation of blood components, Blood transfusion, Cross matching, Compatibility testing, Rh blood group system, Direct and Indirect Coomb's tests, Leucodepletion, Haemolytic disease of new born.

### **ML3102 Clinical Biochemistry III (3 Credits)**

Clinical Enzymology, Cardiac markers, Tumor markers, Renal diseases and renal function tests, Mineral metabolism, Serum electrolytes, Flame photometry, Thyroid disorders and Thyroid function Tests, Point of care testing, Errors in diagnostic testing.

### **ML 3103 Public Health Microbiology (2 Credits)**

Introduction to public health microbiology, Outbreak investigations, emerging and re-emerging infections & zoonotic diseases, Investigations of food, milk and water quality, Bio-terrorism and bio-invasion. Prevention and control of infection in the light of one health approach.

### **ML 3104 Laboratory Quality Assurance & Accreditation (3 Credits)**

Quality Management System (QMS), Laboratory accreditation & ISO 15189, Internal & external quality assurance, Standards, quality control materials & calibrators, Method development, validation & verification, Uncertainty of measurements, Quality indicators, Systematic troubleshooting & corrective action, Internal audits, Document control in the laboratory.

### **ML 3105 Laboratory Management (2 Credits)**

Basic management concepts, Scope of medical laboratory management & laboratory manager's role, Laboratory planning & organization, Specimen management & processes, Personal management & training, Equipment management, Financial management, Chemical management & ordering process, Data management & statistics, Health & safety in laboratory, Medical laboratory waste management, Occurrence management, Root cause analysis as a problem solving tool, Customer satisfaction surveys, Principles of Good Laboratory Practice & its application, Risk assessment, Supply chain management.

### **ML 3106 Biomedical Instrumentation (1 Credit)**

Basic concepts, calibration & maintenance of analytical balance, microscope, refrigerator, freezer, centrifuge, cytocentrifuge, incubator, oven, water bath, automated pipette, refractometer, spectrophotometer, bio safety cabinet, automated blood culture analyzer, automated haematology analyser, semi / fully automated biochemistry analyser, tissue processor, microtome, ELISA machine, PCR machine.

### **ML 3201 Work Based Learning - Haematology I (4 Credits)**

Preparation of glassware for haematology, Determination of haemoglobin, PCV, Red cell count, White cell count & differential counts, Blood film preparation & staining, ESR, Platelet count, Bleeding time, Clotting time, APTT and prothrombin time, Reticulocyte count, Blood pictures (anaemia, thalasaemia, leukaemia).

### **ML 3202 Work Based Learning - Clinical Biochemistry I (4 Credits)**

Specimen collection and transport, Specimen processing & manual analytical techniques, Urine full report, Urine ketone bodies, Bile, Urine specific gravity, Seminal fluid analysis, Body fluid analysis, blood glucose (FBS, PPBS, OGTT), Blood urea, BUN, Serum creatinine, Serum uric acid, Creatinine clearance, Preparation of 24 hour urine bottles, Urine micro albumin, Serum electrolytes.

### **ML 3203 Work Based Learning - Blood Bank Serology (2 Credits)**

Blood grouping, Cross matching, Direct & indirect Coomb's tests, Preparation of blood components / products, Antibody screening & identification, Genotyping, Rh antibody titres, Cold antibody titres, Discrepancies in blood grouping & problems in cross matching and HLA typing.

### **ML 3204 Work Based Learning- Histotechnology I (3 Credits)**

Collecting procedure, Collecting containers, Tissue accession, Labeling / request forms, Tissue logging, Preparation of fixatives for histological work, Preparation of tissue specimens for processing, Decalcification & assessment, Dehydration procedures, Clearing, Wax impregnation & embedding, trimming, Cutting & mounting, Theory of different types of staining mechanism, H&E staining of tissue slides and examination of H&E stained slides.

### **ML 3205 Work Based Learning - Microbiology I (3 Credits)**

Specimen collection and transport, Processing & culture of specimens, Virus culture, Fungal culture, Gram stains, Methylene blue stain, ZN stain, Negative stain & identification of capsules, Preparation of stains, reagents & culture media, Sterilisation and disposal of cultures, Hanging drop & motility testing, Identification of bacteria including biochemical tests.

### **ML 3206 Work Based Learning - Immunotechnology and Hormone assays (1 Credit)**

Agglutination test, Immuno-histochemical tests, Antibody titres, Immunofluorescence, RIA, ELISA, Immunoelectrophoresis, Flowcytometry, Fluoccculation test, Precipitation tests, Nephelometry, Strip tests.

## **4000 Level**

### **ML 4101 Work Based Learning - Haematology II (3 Credits)**

Investigation of haemolytic anaemia, Investigation of coagulation disorders, Bone marrow-slide preparation, staining & examination, Haemoglobin electrophoresis, Investigation of thalassaemias & haemoglobinopathies, Investigation of leukemia, myeloproliferative disorders, pancytopenia & aplastic anaemia, Quality control in a haematology laboratory.

### **ML 4102 Work Based Learning - Clinical Biochemistry II (3 Credits)**

Serum amylase, Liver function tests (AST, ALT, Alkaline phosphatase), Serum proteins, Serum bilirubin, Serum protein electrophoresis, Lipid profile, Quality control of a clinical biochemistry laboratory.

### **ML 4103 Work Based Learning - Microbiology II (2 Credits)**

Processing of clinical samples, Isolation and identification of micro-organisms, Quality control in a diagnostic microbiology laboratory, Antibiotic sensitivity testing, Serology in a diagnostic microbiology laboratory.

### **ML 4104 Work Based Learning - Histotechnology II & Cytotechnology (3 Credits)**

Preparation of special stains, Special staining techniques, Frozen sections, Cryostat sections, Immunohistochemistry, Enzyme histochemistry, Transport of fresh and other special type of specimens, Special care in handling chemicals used in histotechnology, Identification of histotechnological errors in prepared slides, Automation in the histology laboratory, Quality assurance in histotechnology. Preparation of fixative for cytological work, FNA cytology staining & examination, PAP smear staining & screening, Preparation of stains.

### **ML 4105 Work Based Learning - Emergency Laboratory Tests (1 Credit)**

Urgent diagnostic tests performed in emergencies, Reporting of night laboratory test results, Common errors in night laboratories.

### **ML 4106 Work Based Learning - Medical Parasitology & Entomology (2 Credits)**

Preparation and examination of wet faecal smears for protozoans and helminthic infections, Preparation & staining of blood smears and identification of malaria parasites, Blood film staining, examination & identification of filarial parasites, Rapid diagnostic tests, Immunological tests, Preparation of stains, Mosquito larva and adult identification, Other important arthropod vectors.

### **ML 4107 Work Based Learning - Sexually Transmitted Diseases (1 Credit)**

The role of the laboratory in the diagnosis and the management of STDs, Laboratory diagnosis of, HIV infection, Syphilis, Gonorrhoea, Cancroids (direct smear - gram stain), Vaginitis.

### **ML 4108 Work Based Learning - Laboratory Management (1 Credit)**

Calculate monthly work load using specimen registers, Calculate and prepare annual indent, Reception and storage of hazardous and non-hazardous laboratory chemicals, Maintain major laboratory equipment, Make local purchasing according to financial regulations, Documentation of local purchases, Identify major and minor supplies for effective laboratory work, Repair and remove unserviceable equipment, Maintain laboratory inventory registers, Document laboratory plan, Develop emergency procedures.

### **ML 4109 Research Methodology and Scientific Writing (2 Credits)**

Traditions, preferences and positions in applied qualitative research, Narrative methodologies and their use in clinical/professional practice, Literature review, Data gathering tools/approaches, Qualitative and quantitative study designing and Questionnaire development, Reference management, Introduction to undergraduate research project proposal preparation, Use of English grammar in scientific writing, Use of statistics & statistical software in data analysis, Preparation of the presentation & how to improve the presentation skills, presentation of the research proposal.

### **ML 4201 Biotechnology (1 Credit)**

Overview of DNA structure and function, Chromosome structure, Applications of biotechnology, advanced recombinant DNA technology, micro-RNA, Functional genomics, Pharmacogenetics and pharmacogenomics, Gene therapy, DNA typing, Genomic imprinting, Microarray analysis, Bioinformatics, Different types of DNA/RNA sequencing.

### **ML 4202 Experimental Laboratory Medicine (2 Credits)**

In-vitro – Introduction to in-vitro and in-vivo experimental techniques, Introduction to cell lines, Maintenances and culturing cells, Specific application of cell lines for research purposes. In-vivo – Use of laboratory animals in research, Laboratory animal Biology & behaviour, Maintenance, Nutrition, Welfare, Planning and Handling of laboratory animals, Alternative techniques used for laboratory animal research.

### **ML 4203 Bioethics (1 Credit)**

Introduction and definition of terms, history, codes of ethics – Hippocratic oath and other codes, principles of medical ethics, ethics in public health – rights, duties, obligations related to health care professionals and patients, ethical issues related to professionalism, truth telling and informed consent, confidentiality, ethics and mental health, ethics in research, the use of animals in research, ethics and biotechnology, major ethical issues–other, organ and tissue donation, biofuels, forensic use of bio information, international collaboration.

### **ML 4204 Healthcare Marketing (1 Credit)**

Introducing marketing and orientation towards marketing, Marketing environment and introduction to marketing research, Consumer market and consumer buying behaviour, Market segmentation and

selecting target markets; Product strategy and new product development; Pricing strategies and programs; Distribution strategy, Marketing communications strategy. Strategic marketing, Ethics and social responsibility in health care marketing; Emerging issues in health care marketing.

### **ML 4205 Applied Statistics (2 Credit)**

Additive and non-additive ANOVA models, Mean separation, incidence data and proportions, Odds and odds ratios, Models for proportions, Non-parametric methods for two-sample case; independent sample and paired observations, Non-parametric methods for data from designed experiments.

### **ML 4206 Research Project (6 Credits)**

Search for and retrieval of information required such as conducting literature surveys, Identification and optimal utilization of available resources, Project execution, Ethical evaluation and safety evaluation when applicable, Follow the approved research methodology, Data collection & analysis, Discussion of the results, Making conclusions, Scientific dissertation writing according to the given format and presentation (oral) of the findings.

### **ML 4207 Human Resource Management (1 Credit)**

Introduction to Human Resource Management, The role of human resource professionals, Job analysis & Human Resource Planning, Employee Recruitment & Selection, Career management, Employee training and employee development, Employee performance management, Compensation and benefits, Emerging issues in Human Resource Management, Talent management.

## Department of Nursing

### 1000 Level

#### **NS 1101 Basic Biochemistry for Nurses (3 Credits)**

pH and Buffer solutions, Structure and function of macro-nutrients and micro-nutrients, Structure of Nucleic acids and protein bio synthesis, Metabolism of macronutrients, Practical: Qualitative and quantitative analysis of macronutrients.

#### **NS 1102 Nursing Theory and Practice I (2 Credits)**

Introduction to Nursing, Nursing Process, Nurse- Patient relationship and communication skills, Standards of nursing practice, Patient education, patient comfort and hygiene, Positioning, Lifting and moving, Transporting patients.

#### **NS 1104 Community Health Nursing I (1 credit)**

Introduction to community health nursing, Family health and primary health care, Theories and models of community health care, Standing orders and policies in community health, Functioning of community health care centers, Determinants of family and community health, Issues in community health nursing.

#### **NS 1105 Sociology and Anthropology (1 credit)**

Introduction to Sociology, Sociology of health, Fundamental concepts, Social groups, Culture, Social control, Social problems, Anthropology.

#### **NS 1201 Human Anatomy for Nurses (2 Credits)**

Applied Anatomy (all systems), Clinical application of Cardiovascular system, Digestive system, Urinary system, Reproductive system, Nervous system, Anatomical regions, Introduction to microscopic anatomy.

#### **NS 1202 Nursing Theory & Practice II (4 Credits)**

Theories in Nursing, Functional health patterns as a framework for nursing, Applying nursing process, Documentation and reporting, Life span development and nursing needs. Patient admission, discharge and transfer, Assessment of Vital Signs, Infection control, Food serving, First aid and Bandaging.

Administration of Oral Medication.

### **NS 1203 Pharmacology I (1 Credit)**

Introduction to Pharmacology, Drug Administration, Pharmacokinetics; Pharmacodynamics, Drug considerations across the lifespan, Holistic pharmacotherapy, Herbal and alternative therapies, Legal and ethical considerations.

### **NS 1205 Microbiology for Nurses (1 Credit)**

Introduction to Microbiology, Growth of microorganisms, Bacterial Types, Introduction to virology, Fungi, Parasite, Importance of microorganisms in human health.

## **2000 Level**

### **NS 2101 Adult Nursing I (4 Credits)**

Nursing management of patients with medical and surgical conditions in respiratory system and cardiovascular system, Nursing management of a patient with pain, Applying nursing process relevant to the above disorders.

### **NS 2102 Nursing Theory and Practice III (4 Credits)**

Nursing procedures pertaining to care of patient with respiratory and cardiovascular system.

### **NS 2103 Pharmacology II (2 Credits)**

Drugs used for patients with disorders of the nervous system, cardiovascular system, respiratory system urinary system, female and male reproductive system, gastro-intestinal system, endocrine and metabolic disorders, communicable diseases, Malignant conditions, Storage and supply of drugs.

### **NS 2104 Community Health Nursing II (2 Credits)**

Major health problems in community, Health planning and management, Role of community health care team, Principles of management of community health services, The use of data / statistics, Role and responsibilities of community health nurse, National health programmes, Family health, Care of the pregnant mothers and children in the community, Family planning, Suggested practical: Field visits.

### **NS 2105 Communication Skills in Nursing (1 Credit)**

Significance of communication skills in nursing practice, Nurse– Client therapeutic relationships, Therapeutic communication skills, Counseling, Team building and group process, Negotiating process.

### **NS 2106 Pathology for Nurses (2 Credits)**

Pathological conditions of major organ systems, Clinical pathology.

### **NS 2201 Adult Nursing II (5 Credits)**

Care of the patient's Gastrointestinal dysfunctions, Musculoskeletal dysfunctions, Endocrine dysfunctions.

### **NS 2202 Nursing Theory and Practice IV (4 Credits)**

Theory and skills practice pertaining to patients with gastrointestinal, musculoskeletal and endocrine systems.

### **NS 2203 Community Health I (2 Credits)**

Environmental Health, disposal of human excreta, Healthy housing sanitation of fairs, festivals & camps, swimming pools, Town planning.

### **NS 2205 Health Promotion (1 Credit)**

Concepts, approaches and models of health and health promotion, Nurse's role in health promotion and health education. Organizations involved in health promotion.

### **NS 2207 Ethical and professional issues (1 Credit)**

Value formation and value conflict, The discipline of ethics, Ethical concept for nursing practice, Standards for ethical behavior, Ethical analysis and decision making in nursing practice, Ethical responsibilities of the nurse: Applying ethics to nursing practice.

### **NS 2208 Trends in Nursing (1 Credit)**

Nursing as a profession, Trends and issues in Nursing education and service, Roles and responsibilities of nurses, The importance of legal implications in Nursing practice, Professional organizations in nursing, Political strategies, Image building strategies, Evidenced-based practice.

## **3000 Level**

### **NS 3101 Adult Nursing III (4 Credits)**

Overview of Human Reproductive system, Reproductive and Sexual Disorders, Care of patients with disorders of the Urinary system, Nervous system, Care of neurologic disorders, Structures, functions and disorders of Eye, Ear, Nose, Sinuses and Throat.

### **NS 3102 Nursing Theory and Practice V (4 Credits)**

Theory and Skills Practice pertaining to care of patients with neurological, genito-urinal, otolaryngological, dermatological and ophthalmic diseases.

### **NS 3103 Community Health II (1 Credit)**

Environmental Health, Food sanitation, Toxins in food, Food adulteration, Food hygiene, Food poisoning, Animals, parasites, insects and their relationship to health, Transmission of diseases by vectors, Health education (review) and role of community health nurse. Practical : Field trips, Study of environmental conditions in the community

### **NS 3104 Child Health Nursing I (2 Credits)**

Introduction to Child health nursing, Growth and Development: Conception, Foetal growth and development, Developmental milestones, Assessment of children, Nursing care of ill child and family. Practical: Health education and counseling to individuals, families and groups, Physical examination, Measuring anthropometric measurements, Developmental assessment.

### **NS 3105 Epidemiology (1 Credit)**

Introduction and concepts of Epidemiology, Theories and Models, History of disease and levels of prevention, Epidemiology of communicable diseases, Surveillance and disease notification, Natural history of diseases, Approaches of epidemiology, Prevention and control of communicable diseases, Role of the nurses in meeting epidemics and emergency situations.

### **NS 3106 A Maternity Nursing I (Theory) (1 Credit)**

Introduction to maternal nursing, Review of Human Reproductive organs, Physiology of Puerperium, Prenatal Development, Embryology, genetics, Preparation of the family and care of the new born (bath, immunization, breast feeding), Practical : Antenatal assessment, Assessment of newborn, Plan nutrition for Antenatal and lactating mother.

### **NS 3106 B Maternity Nursing I (Practical) (1 Credit)**

Observation of the new born, Prenatal Development, Newborn, Preparation of the family for the arrival of the infant, Physical, psychological adjustment soon after birth, Care of the new born (bath, immunization, breast feeding).

### **NS 3109 Nutrition and Dietetics (2 Credits)**

Nutrition in Relation to Health, Common nutritional problems in Sri Lanka, Classification and constituents of food, Energy, Nutritional status, Importance and methods of assessing nutritional status, Nutrition throughout the life cycle, Meal planning, Selection, storage, preparation and preservation of food, Introduction to diet therapy, Modification of normal diet, Diet for patients with gastro-intestinal, liver, cardiovascular, renal, metabolic disorders, obesity and allergy.

### **NS 3116 B Urology I (1 Credit)**

Assessment of urinary- renal system, Collecting mid-stream urine specimen, Placing and removing bed pan/ urinal, Inserting catheters, Indwelling catheter care, Closed and open catheter irrigation.

### **NS 3201 Adult Nursing IV (3 Credits)**

Pain management, Care of unconscious patient, Care of patients with dermatological conditions, Care of patients with geriatric conditions, Oncology nursing and palliative care, Age related demographics changes, The physical, psychological and social impact of ageing, Death and dying and the role of the nurse, The nursing management of chronic wounds.

### **NS 3202 Nursing Theory and Practice VI (4 Credits)**

Theory and Skills Practice pertaining to patients with dermatological and oncologic conditions, elderly patients, and patients with chronic conditions, Death and dying care.

### **NS 3204 Child Health Nursing-II (2 Credits)**

Paediatric nursing interventions/Procedures, Restraining and positions, Collecting specimens, Enema, Administration of medications and I.V. Fluids, Tube Feeding, Cardio pulmonary resuscitation, Assisting with painful procedures, Care of Children in the incubator, Paediatric Respiratory and Gastro-Intestinal disorders.

### **NS 3206 A Maternity Nursing II (Theory) (1 Credit)**

Physiology of normal labor and puerperium, Identification of pregnancy status, duration of pregnancy, presentation, position of foetus and foetal heart rate, Holistic nursing care during pregnancy, Labor and puerperium, Apply nursing process in care of the new born.

### **NS 3206 B Maternity Nursing II (Practical) (1 Credit)**

Assessment and care of the Pregnant Woman, Inducing labor, Preparing for delivery, Partogram documentation, Physical assessment and assessment of foetal responses to labor and birth, Care of the New born, Health Education & discharge plan.

### **NS 3207 Emergency and Disaster Nursing (2 Credits)**

Principles and concepts of emergency and disaster nursing, Emergency resuscitation, Nursing care pertaining to care of patients with trauma, Poisoning, Poisonous bites and altered thermoregulation, National disasters – definition, types, disaster preparedness and the role of the nurse in disaster management.

### **NS 3208 Critical Care Nursing (2 Credits)**

Care of a critically ill patient, Management of Cardiovascular disorders, Tracheostomy, Fluid, electrolyte & Acid-base Balance, Management of respiratory failure, Management of a patient with head injuries, Sedation & pain relief, Care for Renal failure and Multi Organ Failure in ICU, Infection Control in ICU.

### **NS 3216 B Urology II (1 Credit)**

Assessment parameters for determining the status of renal and urinary function, Nursing management of patients with peritoneal dialysis and haemodialysis, Skills in using urinary diversion collecting appliances. Education and preparation for patients undergoing urological surgeries.

## **4000 Level**

### **NS 4102 Nursing Theory and Practice VII (4 Credits)**

Management of nursing care at individual, team and ward level, Skills and competencies required to care for patients with complex needs, Primary and secondary survey management, Nursing management of Head Injury, Thoracic Injury, Abdominal Injury and Vascular Injury, Principles and Skills of first aid, Discharge procedures of a patient, Rehabilitation

### **NS 4103 Leadership & Management (1 Credit)**

Introduction, Philosophy, concept and the principles of management, Principles of administration and their application by the nurse, Nursing services of a unit/ward, Principles of supervision, Responsibilities of the nurse in clinical settings, Administration of nursing education systems, Scope and administration of Community Health Nursing.

### **NS 4104 Child Health Nursing III (2 Credits)**

Care of a child with disorders of the Blood forming organs, Genito-urinary disorders, Neurological disorders and Endocrine dysfunctions, Practical: Collection of specimens, Catheterization and care of child with retention catheter, Urine testing for albumin and sugar.

### **NS 4106 A Maternity Nursing III (Theory) (1 Credit)**

Complications of Childbirth, Stimulation of the process of labor, Caesarean birth, The Process of postpartum psychosocial adaptation and physical recovery with nursing applications, Process of parental and family attachment to the newborn, Maternal psychosocial recovery and adjustment, Adolescent mothers, Assessment process during postpartum period.

### **NS 4106 B Maternity Nursing III (Practical) (1 Credit)**

Assist in conducting abnormal delivery. Provide appropriate intervention in emergency situations in obstetrics. Health education and discharge planning following complicated delivery.

### **NS 4109 Scientific Writing and Communication in Nursing (1 Credit)**

Types of scientific publications, Searching information for scientific writing, Structuring & writing of scientific journal articles and reports, Ethics in scientific writing, Identification of researchable problems, Research objectives, Development of hypothesis & hypothesis testing, Research proposal writing, Writing of progress reports, Thesis writing & formatting.

### **NS 4111 Psychiatric Nursing and Mental Health (5 Credits)**

Introduction to Psychiatric and Mental health nursing, Nursing management of patients with mental health problems, Therapeutic modalities in Mental health nursing, Apply nursing process in specific mental health conditions.

### **NS 4116 B Nursing in Trauma Management I (1Credit)**

Epidemiology of Trauma, Performing First Aid, Initial Management (ABCDE) and Subsequent secondary survey, Nursing management of Head Injury, Thoracic Injury, Abdominal Injury and Vascular Injury, Prevention of injuries, Prevention & management of infection strategies.

### **NS 4202 Nursing Theory & Practice VIII (4 Credits)**

Management of nursing care at individual, team and ward level, Problem solving, Nursing diagnosis, Inter-professional working, Skills and competencies required to care for patients with complex needs.

### **NS 4204 Child Health Nursing IV (2 Credits)**

Caring a child with Integumentary dysfunctions, Skeletal dysfunctions and Neuromuscular dysfunctions, Nursing management of communicable diseases, Disorders of Eye, Ear, and Communication, Caring a child with nutritional disorders, The care of a child with mental health problems, Prevention of accidents.

### **NS 4206 A Maternity Nursing IV (Theory) (1 Credit)**

Complications in Postpartum recovery, Nursing process application in the physiologic adaptation of the neonate to extra uterine life, Physical and psychosocial assessment of the newborn and the family, Ineffective Adaptation of the neonate to extra uterine life.

### **NS 4206 B Maternity Nursing IV (Practical) (1 Credit)**

Management of complications in postpartum recovery, Physical and Psychosocial assessment of the

newborn and the family, Baby bath, Phototherapy, Feeding methods and techniques, Safety methods and handling of new born, Health education and discharge plan for mother and family regarding neonatal care.

### **NS 4209 Research Project (6 Credits)**

Search and appraise literature, Research designs, Research methods, Generating and analyzing data, Research ethics, Quantitative and Qualitative research methods; Ethical issues in healthcare research, Disseminating research findings, Developing a research proposal and presentation, Conducting research, writing report and marking presentation.

### **NS 4210 Teaching and Learning (2 Credits)**

Theories and principles of education, Philosophy of education, Principles and methods of teaching, Organizational pattern of nursing curriculum, Evaluation of a curriculum, Practical: Class room and clinical teaching, Preparation of master plan and rotation plan.

### **NS 4216 B Nursing in Trauma Management II (1 Credit)**

Orthopaedics – basic management, Nursing management of Fracture, Shock, Wounds, Burns, Miscible and explosive injuries, Rehabilitation of trauma victims.

## Department of Pharmacy

### 1000 Level

#### **PM 1101 Social Pharmacy (1 Credit)**

Introduction to healthcare and healthcare delivery systems, Medicines and cultures, Demand and use of medicines in different communities (rural & urban) and patient groups, Social and psychological behaviours of patients, Psychology applied to pharmacy.

#### **PM 1102 General Microbiology (2 Credits)**

Introduction to microbiology/taxonomy & classification of microbes, Nature of microorganisms and their role in causing diseases and spoilage of pharmaceuticals, Physical and chemical agents used to control microorganisms in pharmaceuticals, Principles of sterilization, Aseptic techniques and their applications in pharmacy.

#### **PM 1103 Biochemistry I (2 Credits)**

General introduction and basic biochemical principles, Chemistry of biomolecules: carbohydrates, lipids, proteins and amino acids, nucleic acids, enzymes, vitamins and coenzymes.

#### **PM 1104 Pharmaceutical Mathematics (2 Credits)**

Algebra, Sets and functions, Binomial theorem, Trigonometry, Analytical geometry, Differential calculus, Integral calculus.

#### **PM 1105 Pharmaceutical Chemistry I (Organic Chemistry) (3 Credits)**

Types of intermolecular interactions, Factors affecting electron availability, Acidity and basicity, IUPAC nomenclature, Functional groups, Stereochemistry, Reaction mechanisms, Types of reagents and reaction intermediates, Energy diagrams, Mechanisms of substitution, addition, elimination and condensation reactions, Carbonium ion rearrangements, Resonance stabilization, Mesomeric and inductive effect.

### **PM 1201 Physical Pharmacy I (3 Credits)**

Introduction to physical pharmacy, Solutions: solubilization, ionization, colligative properties, Concentration expressions, Thermodynamics, Micromeritics, Solids and crystallization, Physicochemical processes: precipitation, distillation, complexation and miscellaneous processes.

### **PM 1202 Pharmaceutical Microbiology (3 Credits)**

Contaminations and preservation of pharmaceutical preparations, Microbial standards for pharmaceutical preparations, Microbiological evaluation of pharmaceuticals.

### **PM 1203 Biochemistry II (2 Credits)**

Introduction to metabolism, Metabolism of carbohydrates, lipids, proteins and nucleic acids.

## **2000 Level**

### **PM 2101 Physical Pharmacy II (3 Credits)**

Rheology, Concepts of dispersed systems: colloids, fundamentals of coarse dispersions, Fundamentals of kinetics, Physical interactions of pharmaceutical drugs.

### **PM 2102 Pharmaceutical Dosage Forms 1 (3 Credits)**

Introduction to different types of dosage forms, Principles of dosage form design, Formulation additives, Dosage forms: powders, granules, tablets and capsules. Production process and technology used in manufacturing of powders, granules, tablets and capsules.

### **PM 2103 Pharmacognosy 1 (2 Credits)**

Introduction to pharmacognosy, Classification of crude drugs, Pharmaceutical botany, Cultivation of medicinal plants, Collection, processing & storage of plant materials, Plant growth regulators.

### **PM 2104 Pharmacology 1 (3 Credits)**

General introduction to pharmacology, Role of pharmacist in patient care, Pre clinical and clinical trials, Pharmacokinetics, Pharmacodynamics, Introduction to pharmacovigilance, Drugs affecting gastrointestinal functions, Pharmacology of autonomic nervous systems and autacoids.

### **PM 2105 Community Pharmacy Practice (2 Credits)**

Introduction to concepts of community pharmacy, Community pharmacy management, Communication skills. Prescription handling process, Patient compliance, Education and counselling, Maintaining records, Health promotion, Herbal and other complimentary medicines, Role of community pharmacist in healthcare.

### **PM 2106 Therapeutic Principles (2 Credit)**

Introduction to pharmacokinetics, Therapeutic principles of absorption, distribution, bio-transformation and excretion.

### **PM 2107 Information Technology for Pharmacy (1 Credit)**

Use of statistical software for data analysis, Visual data analysis, Generation of publication quality graphs and chemical structures, Hands on experience with statistical software and chemical structure drawing programs. Basic programming techniques for statistical data analysis.

### **PM 2201 Pharmaceutical Chemistry II (Analytical) (2 Credits)**

Data recording and error analysis, Theoretical considerations, Factors and applications of acid-base titrations, oxidation-reduction reactions, precipitation, complexometric and diazotization titrations. Gravimetric analysis, Electrometric methods of analysis, Conductometric titrations, Polarography and Amperometry, Chromatography.

### **PM 2202 Pharmaceutical Dosage Forms II (3 Credits)**

Dosage forms: solutions, suspensions, emulsions, semisolid products, Production process and technology used in liquid and semisolid preparations.

### **PM 2203 Pharmacognosy II (3 Credits)**

Natural allergens and allergenic preparations, Pharmaceutically important carbohydrates, lipids and enzymes, Poisons of natural origin, Pesticides of natural origin, Medicinal plant biotechnology.

### **PM 2204 Pharmacology II (3 Credits)**

Pharmacology of cardiovascular, respiratory, renal and endocrine systems.

### **PM 2205 Pharmaceutical Technology (4 Credits)**

Industrial hazards and safety precautions, Concepts of mass and heat transfer, Techniques of drying, mixing, milling, filtration, centrifugation, evaporation, distillation, particle size separation, compression and compaction.

### **3000 Level**

#### **PM 3101 Instrumental Methods in Pharmaceutical Chemistry (3 Credits)**

Quality control and quality assessment of analytical data, Calibration of analytical instruments and certification of samples, Theoretical aspects and qualitative/quantitative analysis using following analytical techniques: atomic spectroscopy, molecular spectroscopy, chromatography (GC and HPLC), electrophoresis, PCR and PAGE, mass spectrometry and imaging methods.

#### **PM 3102 Pharmaceutical Dosage Forms III (3 Credits)**

Parenteral products, Surgical products, Blood products, Ophthalmic preparations, Otic preparations, Pharmaceutical aerosols and sprays, Rectal and vaginal dosage forms, Nutraceuticals, Packaging of pharmaceutical products.

#### **PM 3103 Pharmacognosy III (3 Credits)**

Chemistry and bioactivity of natural products: alkaloids, glycosides, tanins and purines, volatile oils, steroids and terpenes, Marine products, Plants acting as tumour inhibitors, Separation and isolation of constituents, Biosynthetic pathways and spectroscopic studies.

#### **PM 3104 Pharmacology III (3 Credits)**

Neuropsychopharmacology, Musculoskeletal pharmacology, Drug treatment of osteoporosis, Drugs used in disorders of ear, eye, skin and nasal cavity, Drug treatment of anaemia, Alcohol, Drugs of abuse, Sports medicine, Drug treatment of migraine.

### **PM 3105 Hospital and Institutional Pharmacy (2 Credits)**

Health care system in Sri Lanka, Organization of a hospital pharmacy, Drugs and therapeutic committee, Hospital formulary, Procurement, distribution, inventory control and storage of pharmaceuticals. Principles and procedures adopted in dispensing medical supplies, Management of accident and emergency pharmacy, Poison & drug information centers.

### **PM 3106 Novel Therapeutic Dosage Forms (2 Credits)**

Introduction to novel drug delivery, Theory of controlled release drug delivery systems, Transdermal drug delivery systems, Targeted drug delivery systems, Drug immobilization techniques.

### **PM 3201 Bio-pharmaceutics (3 Credits)**

Pharmacokinetic of drug absorption, Volume of distribution and distribution coefficient, Determination of pharmacokinetic parameters from plasma and urine, Clearance concepts, Non linear pharmacokinetics, Clinical pharmacokinetics, Bioavailability and bioequivalence formulation factors, Therapeutic equivalence and bioequivalence, Application of computer in designing AUC and the calculations.

### **PM 3202 Pharmaceutical Biotechnology (3 Credits)**

Concepts of molecular biology, Recombinant DNA technology, Bio process technology, Enzyme biotechnology, Medical biotechnology, Animal biotechnology, Recent advances in pharmaceutical biotechnology.

### **PM 3203 Hospital Pharmacy Practice (3 Credits)**

Radiopharmaceuticals and cytotoxic drugs, Safe use of medication, Aseptic dispensing, Hospital manufacturing of bulk and sterile products, Applications of IT in hospital pharmacy, Hospital training.

### **PM 3204 Pharmacology IV (2 Credits)**

Drugs for infectious diseases, Rational use of antibiotics and prevention of antibiotic resistance, Onco-pharmacology, Immuno-suppressants, Disinfectants and antiseptics, Vaccines, Antidotes for poisoning and envenomation, Drugs used in special situations.

### **PM 3205 Research Methodology, Scientific Writing and Presentation (2 Credits)**

Research study design, Ethics in research, Scientific writing and presentation, Use of statistical software in data analysis, Pharmaco-epidemiology, Basics of epidemiology and its applicability to health and pharmacy, Basic principles of epidemiologic research design.

### **4000 Level**

#### **PM 4101 Medicinal Chemistry I (2 Credits)**

Basic principles of medicinal chemistry: drug metabolism, drug latentiation and prodrugs, Structural features and pharmacological activity, Mechanism of action (biochemical and molecular basis), Structure activity relationships including stereo chemical aspects of drug molecules, Physiochemical properties and synthesis of selected classes of drugs.

#### **PM 4102 Clinical Pharmacy I (3 Credits)**

Introduction to clinical pharmacy, Patient data analysis, Laboratory data analysis, Understanding of common medical abbreviations and terminology used in clinical practice, Ward round participation and patient counseling, Presentation of cases. Poison management in drug dependence and drug abuse.

#### **PM 4103 Pharmacognosy IV (2 Credits)**

The global background of the use of medicinal plants, Natural products and drug development, Structure elucidation, Bioassay techniques for the drug development, Evaluation of medicinal plant drugs, Quality assurance and standardization of crude drugs, Good manufacturing practices for phytopharmaceuticals.

#### **PM 4104 Pharmacy Law and Ethics I (2 Credits)**

Introduction to pharmaceutical legislations and ethics, Associations related to pharmacy, Introduction to patients' rights , Introduction to relevant acts for the practice of pharmacy, Medical Ordinance, National Dangerous Drugs Control Board Act, Poison, Opium and Dangerous Drugs Ordinance, Consumer Protection Act, Pharmaceutical/professional negligence, Conventions and agreements related to pharmacy, Good pharmacy practice, Regulatory of neutraceuticals and other healthcare products, Acts for prevention of cruelty to animals and welfare of animals.

### **PM 4105 Pharmacoeconomics (3 Credits)**

Introduction to general economics and health economics. Basic principles of economics, Introduction of pharmacoeconomics, Consumer analysis, Patient outcome management and outcome research, Application of pharmacoeconomics.

### **PM 4106 Research Project (6 Credits)**

Problem identification, Create hypothesis, Conduct proper literature survey, Collect, analyse, interpret and summarize data, Scientific report writing and presentation.

### **PM 4201 Medicinal Chemistry II (3 Credits)**

Mode of action (biochemical and molecular basis), Structure activity relationships and synthesis of selected classes of drugs, Brief introduction to combinatorial chemistry, Principles of drug design, Computer aided drug design (CADD) and molecular modeling in QSAR analysis.

### **PM 4202 Clinical Pharmacy II (3 Credits)**

Professional activities of a clinical pharmacist, Evaluation and review of patient's drug usage, Therapeutic drug monitoring, Clinical toxicology, Clinical training.

### **PM 4203 Pharmaceutical Management (3 Credits)**

Introduction to management, Basic functions in pharmaceutical management, Pharmaceutical management cycle. Procurement & inventory management, Production management, Quality management, Organizational behavior, Human resource management, Pharmaceutical information management & IT, Financial management, Pharmaceutical supply chain management.

### **PM 4204 Pharmacy Law and Ethics II (2 Credits)**

National Medicines Regulatory Act, Relevant regulations & amendments, Food Act, Veterinary Ordinance and related regulations pertaining to veterinary products, Ethical criteria for promotion of medicines, Pesticide Control Act, Ayurvedic Act, Concepts of drug price control, National Medicinal Drug Policy (NMDP), The role of international organizations in drug regulation.

## Optional Modules

### **\*PM 4205 Pharmaceutical Marketing Management (2 Credits)**

Principles of marketing, Situational analysis, Consumer analysis, Product strategy, Pricing strategy, Marketing communication strategy, Sales force selection & management, Dynamics of personal selling, Strategic marketing, Budgeting marketing expenditure, Branding, Corporate social responsibility, Customer relationship marketing, Global trends in pharmaceutical marketing.

### **\*PM 4206 Drug Discovery and Development (2 Credits)**

Introduction to drug design, Computer aided drug design, Software used in CADD, Fundamental molecular interactions important for both detection and diagnostic applications, Advanced analytical methods for the identification of drugs, their metabolites and degradation products, Sources of drugs.

### **\*PM 4207 Advanced Pharmacy Practice (2 Credits)**

Introduction to pharmaco-epidemiology and its applications, Quality use of medicines, Utilization of drug literature, Essential Drugs, Evaluation & drug utilization review, On line pharmaceutical care services and globalization, Pharmacotherapy plan.

## Department of Physiotherapy

### 1000 Level

#### **PT 1101 Biochemistry for Physiotherapists (2 Credits)**

Carbohydrates-lipids-proteins and nucleic acids, Metabolism of carbohydrate-lipids-proteins and nucleic acids, Vitamins, pH and buffers, Biological oxidation, Enzymes, Biochemistry of connective tissues, Haemoglobin formation and catabolism, Mechanisms of hormone action, Biochemistry of neurotransmitters, Detoxification and excretion.

#### **PT 1102 Microbiology for Physiotherapists (1 Credits)**

Introduction to microbiology, Introduction to bacterial, Viral and fungal diseases, Basic concepts of immunology. Classification of microorganisms, Sterilization, Disinfection and handling of infected material, Mode of transmission of diseases, Hospital acquired infections.

#### **PT 1103 Physiotherapy as a Profession (2 Credits)**

Introduction and scope of practice, History, Role of physiotherapy in health care, Values of physiotherapy. Ethical principles, Professional ethics in research, Health care institutions, Confidentiality and responsibility, Malpractice and negligence, Legal aspects, acts and legal responsibility, Liability and obligations, Enforcing standards in health profession-promoting quality care, Professional development.

#### **PT 1104 Pathology for Physiotherapists (3 Credits)**

Cell injury, Acute/chronic inflammation, Wound/fracture healing, Circulatory disturbances, Oedema, thrombosis and embolism, Neoplasia, Tumor epidemiology, Carcinogenesis, Potentially malignant disorders, Respiratory, cardiovascular, musculoskeletal, endocrine pathologies and complications, Neuropathology, Pathologies of kidneys and urinary tract.

#### **PT 1201 Human Anatomy for Physiotherapists (3 Credits)**

Musculoskeletal anatomy – skeletal muscles, bones and joints in detail, upper and lower extremities, trunk, pelvis and head/neck, neuroanatomy, basic applied anatomy.

### **PT 1202 Bio-mechanics I (2 Credits)**

Basic types, location, direction and magnitude of motion, Definition of forces, Force of gravity, Reaction forces, Equilibrium, Objects in motion, Force of friction, Concurrent force systems, Parallel force systems, Work, Moment arm of force, Force components, Equilibrium of levers, Newton's laws, Springs and elasticity, Joint structure and function, Analysis of posture, Activities of daily living, Starting & derived positions, Mechanics of peripheral joints, Prehension & precision handling.

### **PT 1203 Emergency care in Physiotherapy (2 Credits)**

Assessing the patients in need of emergency care, Examination and removal of clothes, Injury due to mechanical causes, abrasion, contusion, trauma, fractures, dislocations and foreign bodies, Intervention principles for injuries due to natural causes, First aid for abnormal signs, Basic life support for children and infants, Application and types of bandages, Transferring/carrying the patient/injured person.

### **PT 1204 Electro Physical Agents in Physiotherapy I (2 Credits)**

Electricity, Static electricity, Current electricity, Valves, Transformers, Types, Principles, Construction and working, Ionization, Magnetism, Thermionic valves, Semi-conductor devices, AC and DC Meters.

### **PT 1205 Pharmacology for Physiotherapists (2 Credits)**

General pharmacology (introduction, regulation & approval, drug classes & schedules, administration, pharmacokinetics, pharmacodynamics), Systemic pharmacology (drugs acting on CNS, PNS, CVS, drugs influencing myocardial contractility & heart rate, bronchodilators, anti-microbial drugs, endocrine pharmacology, immunological agents & vaccines).

## **2000 Level**

### **PT 2101 Bio Mechanics II (2 Credits)**

Mechanics of Peripheral joints, temporomandibular joint, thorax, chest wall, hip, knee, ankle, and vertebral column, Therapeutic gymnasium, Analysis of gait.

### **PT 2102 Physiotherapy Skills I (2 Credits)**

Mechanics of muscles, Types of muscles, Types of muscle contraction, Goniometry, Suspension therapy, Walking aids and wheel chair, Hydrotherapy.

### **PT 2103 Electro Physical Agents in Physiotherapy II (3 Credits)**

Low frequency currents, Types of electrical stimulators, Trans-Cutaneous Electrical Nerve Stimulation (TENS), Electro-diagnosis, Medium frequency, Electro-magnetic spectrum, Short wave diathermy, Pulsed electro-magnetic energy, Microwave diathermy, Ultrasound, Infra-red radiation, Ultraviolet radiation, Laser, Wax therapy, Contrast bath, Moist heat, Whirlpool bath, Cryotherapy, Shock wave therapy.

### **PT 2104 Introduction to Applied Exercise Science (2 Credits)**

Fitness for life, Warm up, stretching and cooling down, Energy metabolism, Cardio-respiratory response to exercise, Endurance and fitness, Muscle development, Exercise in extreme environments, Exercise and coronary heart disease, Diabetics and obesity, Aerobic dance, Exercises for children/youth/older adults/women, Training for physical performance, Exercise/nutrition prescription for weight management, Muscle strength/endurance/flexibility, Body composition, Fitness walking, Swimming.

### **PT 2105 Teaching in Physiotherapy (2 Credits)**

Philosophy & psychological concepts related with teaching, Domains of learning objectives & assessment procedures, Methods of teaching according to the target groups, resources & environment, Teach & evaluate in clinical & class room environment.

### **PT 2106 Physiotherapy in Community Based Rehabilitation (2 Credits)**

Principles of CBR, Planning and management of CBR programmes, Disability and its evaluation, National/district level rehabilitation programmes, Role of Government, social work, and voluntary organizations, Physiotherapy in CBR, Screening/rehabilitation of pediatric disorders in the community, Extension of services/mobile units, Vocational training in rehabilitation, Industrial health and ergonomics.

### **PT 2201 Physiotherapy Skills II (4 Credits)**

Manual Muscle Testing (MMT), Limb girth, chest expansion, Active exercise, Passive exercise, Stretching, Mobilization, Proprioceptive Neuro-muscular Facilitation (PNF), Massaging, Relaxation, Breathing exercises, Postural drainage, Frenkels' exercises, Autonomic drainage.

### **PT 2202 Musculoskeletal Physiotherapy I (3 Credits)**

Traumatology, Fractures and dislocations of upper limb/lower limb, Fractures of spine, Soft tissue injuries, Hand injury, Amputation, Traumatic spinal cord injury, Deformities, Congenital/acquired deformities, Disease of bones and joints, Inflammatory and degenerative conditions, Syndromes, Neuromuscular disorders, Cervical and lumbar pathology, Orthopaedic surgeries, Regional conditions.

### **PT 2203 Neurological Physiotherapy I (3 Credits)**

Neurological assessment, Deafness, Vertigo and imbalance, Lower cranial nerve paralysis, Dysphagia, Cerebrovascular diseases, Head injury, Higher cortical, neuropsychological and neurobehavioral disorders, Movement disorders, Cerebellar/coordination disorders, Spinal cord disorders, Brain tumours and spinal tumours, Infections of brain and spinal cord, Motor neuron diseases, Multiple sclerosis, Disorders of neuromuscular junction, Muscle diseases, Polyneuropathy, Focal peripheral neuropathy, Paediatric neurology, Toxic, Metabolic and environmental disorders, Indications and complications of neurosurgery.

### **PT 2204 Common Medical Obstetrics & Gynaecological Conditions for Physiotherapist I (2 Credits)**

Infection, Poisoning, Food and nutrition, Endocrine disease, Diseases of blood, Diseases of digestive system, Diseases of sin, ENT, Ophthalmology, Obstetrics and gynaecology conditions, Psychiatric disorders.

### **PT 2205 Cardio-respiratory and general Surgical conditions for Physiotherapists I (3 Credits)**

Reasons for surgery, Causes/ clinical presentation/ diagnosis and treatment of thoracic conditions, Surgical oncology, Disorders of the chest wall, lung and mediastinum, Disorders of the heart, Thoracic surgeries, Diseases of the arteries and veins, Indication/incision for various surgeries, Physiological changes and complications following common operations, Burns, Tendon transfer.

## **3000 Level**

### **PT 3101 Paediatrics in Physiotherapy I (2 Credits)**

Normal growth and development of child, Tetanus, diphtheria, mycobacterial infections, measles, chicken pox, and gastroenteritis, Child and nutrition, Malnutrition syndrome, Vitamins and minerals deficiencies in children, Cerebral palsy, Poliomyelitis, Muscular dystrophy, Childhood rheumatism, acute CNS infections, Rheumatic heart disease, Sub-acute bacterial endocarditis (SABE), Congenital heart disease.

### **PT 3102 Musculoskeletal Physiotherapy for upper limb (3 Credits)**

Assessment of orthopaedic conditions, Fractures of upper limb, Soft tissue injuries, Fractures and dislocations of upper limb, Shoulder joint, Elbow and forearm, Wrist and hand, Principles of various schools of thought in manual therapy.

### **PT 3103 Neurological Physiotherapy II (3 Credits)**

Assessment of neurological/neurosurgical conditions, Evaluation and management of brain and spinal cord disorders, Evaluation and management of cerebellar, spinal cord and muscle disorders, Evaluation and management of peripheral nerve injuries and disorders, Pre-/post-neurosurgical assessment and management.

### **PT 3104 Common Medical Obstetrics and Gynecological conditions for Physiotherapists II (2 Credits)**

Inflammation and oedema, Physiotherapy in deficiency diseases, Physiotherapy in common diseases of skin, Physiotherapy in obstetrics and gynecological conditions, Physiotherapy in psychiatric disorders.

### **PT 3105 Cardio-respiratory and general Surgical conditions for Physiotherapists II (03 Credits)**

Evaluation and physiotherapy management of cardiorespiratory conditions and medical and surgical oncology. Management of wound ulcers, Cardiac and pulmonary rehabilitation, Pre-/post-operative management of cardiothoracic, abdominal and vascular surgeries, Role of a physiotherapist in ICU.

### **PT 3106 Physiotherapy in Burns (2 Credits)**

Co-relate the anatomy, physiology & pathology of burns, Pre-/post-surgical physiotherapy management

of the patients with burns in the stages of acute and chronic rehabilitation, Nutrition in the process of healing of wounds.

### **PT 3201 Musculoskeletal Physiotherapy for spine & lower limb (3 Credits)**

Fractures of lower limb and vertebral column, Degenerative, inflammatory and infective conditions, Postural abnormalities of spinal column, Deformities, Cerebral palsy, Poliomyelitis, Amputation, Spinal conditions, Effects of spinal traction, Osteoporosis, Rehabilitation after orthopaedic surgeries - total knee replacement (TKR), total hip replacement (THR), hip, knee, ankle and foot.

### **PT 3202 Physiotherapy in Paediatrics II (2 Credits)**

Developmental milestones and reflexes, Assessment in general paediatric conditions and neonatal respiratory conditions, Assessment and treatment of cerebral palsy, Down's syndrome, syringomyelia, spina bifida, muscular dystrophy, autism, juvenile arthritis and congenital heart diseases.

### **PT 3203 Physiotherapy in Sports (4 Credits)**

Injuries common to several fields in sports, Prevention & management of injuries, Psychology in sports, Doping and banned substance in sports, Obesity and sports, Physical fitness and sports, Sports biomechanics, Role of a coach in sports, Nutrition for optimum sports performance, Traveling with a sports team, Warm up and recovery strategies, Introduction to taping.

### **PT 3204 Evidence Based Practice in Physiotherapy (2 Credits)**

Introduction, Concepts of evidence based physiotherapy, Development of evidence based knowledge, Individual professional, professionals within a discipline and professionals across disciplines, Evidence based practitioner, Finding, searching for, assessing, systematic review, economic evaluation of evidence and using evidence, Practice guidelines, Algorithms, and clinical pathways, Communicating evidence to clients, Managers and funders, Research dissemination and transfer of knowledge.

### **PT 3205 Basic Research Methodology (3 Credits)**

Philosophy of science and the notion of truth, Evidence based practice and clinical effectiveness/efficiency, Traditions, Preferences and positions in applied qualitative research, Narrative methodologies and use in clinical/professional practice, Quantitative reasoning and application in clinical/professional

practice, Data gathering tools/approaches, Ethics in research, Additive and non-additive ANOVA models, Mean separation, Incidence data and proportions, Odds and odds ratios, Models for proportions, Non-parametric methods for two-sample case, Independent sample and paired observations, Non-parametric methods for data from designed experiment.

## **4000 Level**

### **PT 4101 Physiotherapy in Geriatrics (3 Credits)**

Introduction to geriatrics, Anatomical and physiological changes associated with ageing, Age related diseases, Comprehensive geriatric assessment, Medical and social problems related to ageing, Acute and chronic care of the elderly, Rehabilitation, Psychology of ageing, Disease prevention in the elderly, Hospices care, Nutrition, Ethics.

### **PT 4102 Clinical Practice in musculoskeletal physiotherapy (5 Credits)**

Physiotherapy management of patients with Musculoskeletal disorders and related physical and psychological problems, Interventions according to the needs of the individual, Evaluation and modification of intervention when necessary, Recording, referring and making reports, Communication skills to interact with clients/family members/other health care providers, Professional behavior and professional ethics.

### **PT 4103 Clinical Practice in common medical, obstetrics and gynecological conditions for Physiotherapists (3 Credits)**

Assessment and physiotherapy management of patients with medical, obstetrics and gynecological conditions. Interventions according to the needs of the individual, Evaluation and modification of intervention when necessary, Recording, referring and making reports, Communication skills to interact with clients/family members/other health care providers, Professional behavior and professional ethics.

### **PT 4104 Clinical Practice in Rehabilitation and Community Role (3 Credits)**

Problem identification, Setting goals and implementation of physiotherapy intervention, Identification of psychological and economical impact on clients to direct them for other services that are available, Implementation of client specific group exercise programs, Effective communication skills with other professionals to provide a quality care for the client.

### **PT 4201 Clinical Practice in Neurology Neurosurgery (5 Credits)**

Assessment and physiotherapy management of patients with Neurological and Neurosurgical disorders and related physical and psychological problems, Interventions according to the needs of the individual, Evaluation and modification of intervention when necessary , Recording, referring and making reports, Communication skills to interact with clients/family members/other health care providers, Professional behavior and ethics.

### **PT 4202 Clinical Practice in Intensive Care Unit (3 Credits)**

Assessment and physiotherapy management of patients in the Intensive care Unit, Recording, referring and making reports, Communication skills to interact with clients/family members/other health care providers, Professional behavior and professional ethics.

### **PT 4203 Clinical Practice in Cardio-respiratory and Surgical Conditions (3 Credits)**

Assessment and physiotherapy management of patients with cardiovascular and pulmonary conditions and related physical and psychological problems, Interventions according to the needs of the individual, Evaluation and modification of intervention when necessary , Recording, referring and making reports, Communication skills to interact with clients/family members/other health care providers, Professional behavior and ethics.

### **PT 4204 Research Project in physiotherapy (4 Credits)**

Feasible research proposal, formulating a research question or testable hypothesis, Study and analysis of the collected data, Presentation of the study and analysed data in a written document, Dissertation, Article to be published in a journal.

### **PT 4205 Inter-relationship with Health Care Professions (Non- credit)**

Introduction to occupational therapy, hand physical therapy, speech therapy, prosthesis and orthotics, kinesiology, podiatry, ergonomics, nutrition.

## Department of Radiography/Radiotherapy

### 1000 Level

#### **RA 1101 Human Physiology (2 Credits)**

Organization of the body for function, Homeostasis, Body fluids, Blood, Temperature regulation, Growth and development, Ageing, Cardiovascular system, Lymphatic system, Respiratory system, Digestive system, Endocrine system, Nerve, Muscle, Nervous system, Special senses, Urinary system, Reproductive system, ECG- Fundamental concepts.

#### **RA 1102 Basic Biochemistry (1 Credit)**

Structure and Function of cell organelles, Structure and Function of carbohydrates, lipids, proteins and nucleic acids, pH and buffers. Enzymes, properties and kinetics, Biological oxidation, Metabolism of carbohydrate, lipids, proteins and nucleic acids, Integration and regulation of metabolic pathways, Calcium metabolism, Cell cycle and Regulation.

#### **RA 1103 General Physics (2 Credits)**

Units and dimensions, Mechanics, Wave mechanics, Electric and magnetic Fields, Solids and fluids, Modern physics.

#### **RA 1104 Mathematics - I (2 Credits)**

Cartesian coordinate systems, Sets and inequalities, Introduction to vectors, Matrices and determinants, Complex numbers, Linear equations, Quadratic equations, Functions and graphs, Limits, Derivatives, Techniques of integration, Partial derivatives.

#### **RA 1105 Introduction to Electronics and Instrumentation (2 Credits)**

Fundamentals of electricity: DC circuits and AC circuits; Analog electronics: diodes, transistors and operational amplifiers; Digital electronics; Instrumentation: errors, digital instruments, sensors and transducers, calibration; Applications: signal acquisition, demodulation and hardware in Medical imaging.

### **RA 1201 Atomic and Radiation Physics (2 Credits)**

Bohr's theory of Hydrogen like atoms, Nuclear properties, Radioactive decay, Fission, Fusion, Electromagnetic radiation, Properties of electromagnetic waves, Electromagnetic spectrum, X-ray Production, Interactions of X-Rays, Attenuation.

### **RA 1202 Radiobiology and Radiation Protection (2 Credits)**

Background Radiation, Quantities and Units in radiation dosimetry, Radiation Interactions, Biological basis of radiation cell killing, cellular radio sensitivity, Radiation effects on normal tissues, Radiation carcinogenesis, Genetic effects of radiation, Radiation effects on developing embryo, External and Internal hazards of radiation, Basic Principles of Radiation Protection, Radiation Protection Programme.

### **RA 1203 Applied Anatomy - I (2 Credits)**

Anatomy of Appendicular skeleton, Axial skeleton, Muscles, Joints, Surface anatomy, abdomen, Identification of muscles and tendons in appendicular skeleton with cross sectional anatomy, Anatomy of vascular, nervous and lymphatic systems, Cross sectional anatomy of brain, chest, abdomen, pelvis and upper & lower limbs.

### **RA 1204 Medical Imaging Equipment (3 Credits)**

X-ray tube, X-ray production, Transformers, X-ray generators, Exposure switches and timers, X-ray tube rating charts, X-ray filters, X-ray beam restrictors, Grids, Construction and operation of isocentric skull equipment, Tomography, OPG, Intraoral and Cephalostat, Mobile equipment, Digital equipment.

### **RA 1205 Plain Radiography - I (2 Credits)**

Physical principles of radiography, Terminology, Technical evaluation and anatomy of the images of: Upper limb, Lower limb, Spine, Pelvis AP, Single Hip AP, Skull, Chest and Abdomen.

### **RA 1206 Medical Image Processing - I (3 Credits)**

Image Recording Media used in Conventional Radiography, Spectral emission, Latent image formation, Conventional film processing, Sensitometry, Film processor maintenance, Dark room procedures, Image artefacts, Digital Radiography, Computed Radiography, Flat-Panel Digital Radiography, Picture Archiving and Communication Systems, Medical Image Informatics, Quality Control for Digital Radiography.

## 2000 Level

### **RA 2101 Programming Techniques (3 Credits)**

Syntax and Semantics of programming, Structured data (lists, stacks, queues, ordered binary trees ), Storing and accessing data structures, Object Oriented Programming (OOP) concepts, Graphical User Interface (GUI) designs, Digital image manipulation in GUI applications.

### **RA 2102 Fluoroscopy - I (2 Credits)**

Fluoroscopic X-ray tube, Image intensifier, Camera system and Viewing of fluoroscopy image, Fluoroscopy Image recording, Fluoroscopy table and accessories, C arm equipment, Digital Fluoroscopy, Flat-Panel Detectors, Digital Image Post-processing, Quality assurance and quality control.

### **RA 2103 Computed Tomography- I (3 Credits)**

Principles of CT, Data acquisition concepts, Image reconstruction, Basic instrumentation, Image post processing and visualization tools, Spiral/Helical CT, 3-D CT, Image quality, PET CT, Cardiac CT, CT angiography, CT fluoroscopy, Breast CT, Virtual endoscopy, Applications of CT in radiation therapy, Radiation dose in CT.

### **RA 2104 Mathematics – II (2 Credits)**

Vector analysis, First-Order Differential Equation, Higher-Order Linear Differential Equations with constant coefficients, Partial differential equations: Laplace, wave equation, Fourier series, Integral transformations: Laplace at Fourier transformations, special functions: Monte Carlo methods.

### **RA 2105 Modern Physics (2 Credits)**

Electromagnetic theory, Maxwell's equations, Schr dinger equation, Electron spin and fine structure, Quantum Physics, Quantum states, Hydrogen atom energy levels, Hydrogen atom wave functions.

### **RA 2106 Care of Patient - I (2 Credits)**

Routine patient care in an X-ray Department/Radiotherapy unit, Effective communication and team work, First Aid, Infections, Care of patients with tubes and catheters, Care of paediatric and elderly patients, Psychology of illness.

### **RD 2101 Mammography- I (1 Credit)**

Anatomy and Physiology of the breast, Physics of mammography and basic principles, Equipment and accessories, Terminology, Basic projections, Supplementary projections, Breast biopsy and localization, Radiation protection, Other methods of breast imaging, Quality Assurance, Epidemiology of Breast Cancer.

### **RD 2102 Plain Radiography - II (2 Credits)**

Special radiography projections for Upper limb, Lower limb, Spine, Chest, Skull, PNS and Mandible, Pelvis, Facial Bones, Abdomen and Hip Lateral.

### **RT 2101 Radiotherapy Equipment and Physics - I (2 Credits)**

Introduction to radiotherapy equipment: low energy X-ray equipment, Cobalt and other isotopic equipment; imaging equipment; simulators; mould room equipment; treatment setup devices; physical characteristics and comparisons, optical systems and comparisons; radiation safety of above equipment.

### **RT 2102 Molecular Oncology (2 Credits)**

Tumour formation, benign and malignant disease, methods of spread of malignant disease; introduction to genetics, genetic predisposition and high risk groups; radiation effects on malignant cells, tissues; fractionation and its effects, cell survival curve; chemotherapy and effects; radiobiological models; tissue tolerance dose, tumour lethal dose; therapeutic radiation and radio sensitivity.

### **RA 2201 Ethics in Medical Radiation Sciences (1 credit)**

Ethical Issues- Values, Ethical schools of thought, Principles of Beneficence and Non maleficence, Patient Autonomy and Informed Consent, Truthfulness and Confidentiality, Student Rights, Diversity and Caring, and Challenges.

### **RA 2202 Medical Image Processing - II (3 Credits)**

Analog vs. digital images, Medical image modalities, DICOM image format, 2D, 3D and higher dimensional representations, Digital image processing, Visual perception, light and electro-magnetic spectrum, image acquisition, sampling and quantization, pixels, Image transformations, Image processing, Image segmentation, Representation and description, Digital image compression, Object recognition.

### **RA 2203 Common Systemic Diseases (2 Credits)**

Overview of common diseases of man; Cardiovascular Diseases, Respiratory Diseases, Diseases of the Liver and Biliary tract, Diseases of Gastrointestinal Tract, Diseases of Loco motor system, Diseases of Nervous System and Muscle Disorders, Renal Diseases, Hematological Diseases.

### **RA 2204 Magnetic Resonance Imaging - I (3 Credits)**

Magnetic Resonance Imaging: A preview, Classical Response, Rotating Reference Frame, Bloch equation, Precision and Excitation, Longitudinal Relaxation, Signal Detection Concepts, Signal Acquisition Methods: Free Induction Decay, Spin Echoes, Inversion Recovery, One-Dimensional Fourier Imaging, k-space and Gradient Echoes, Multi-Dimensional Fourier Imaging and Slice Excitation.

### **RD 2201 Fluoroscopy - II (3 Credits)**

Introduction to contrast media, Techniques used in investigating Gastrointestinal system, Urinary system and Reproductive system, Cath lab procedures, Angiography, Theatre procedures: Orthopaedic, Neuro, Urological, Vascular Surgery, ERCP.

### **RD 2202 Plain Radiography - III (3 Credits)**

Basic Techniques of: Upper limb, Lower limb, Vertebral column, Chest, Skull, Shoulder, Abdomen and Pelvis.

### **RT 2201 Principles of Radiotherapy and Oncology (2 Credits)**

Radiotherapy treatment modalities, oncology and pathology related to anatomical systems, tumour staging; treatment intent, common cancers treated by each treatment modality and safety aspects; introduction to brachytherapy, radionuclide therapy, introduction to clinical radiotherapy, factors affecting the choice of treatment, technique, dose, documentation, information and communication.

### **RT 2202 Radiotherapy Methods - I (2 Credits)**

Isocentric and non-isocentric treatment, common treatment delivery techniques, specific radiotherapy techniques for common sites: breast, gynaecological, GIT, prostate, bladder, lung, lymphomas, CNS, head and neck with related to cobalt teletherapy; Mould room technology.

## **3000 Level**

### **RA 3101 Nuclear Imaging – I (3 Credits)**

Radioactivity, Decay equation, Successive decay equation, Radiation detectors, Gamma camera, SPECT, PET, PET/CT, Production of radionuclides, Production of radiopharmaceuticals, Nuclear pharmacy, Radioactive waste disposal, Internal radiation dosimetry, Radioimmunoassay, Radiation protection in nuclear medicine, Quality assurance and Quality control in nuclear imaging.

### **RD 3101 Computed Tomography – II (2 Credits)**

Technique of CT: Head, Chest, Abdomen and pelvis, Spine, Extremities, Respiratory system (routine & HRCT), Alimentary Tract, Urinary system, Reproductive system, Cardiovascular system & peripheral angiography, Endocrine System, Spine, Lymphatic System, Paediatric CT, CT guided biopsy.

### **RD 3102 Dental Radiography (2 Credits)**

IOPA, Occlusal, Bite wing techniques, OPG, Cephalogram, Other extra oral radiograph.

### **RD 3103 Plain Radiography – IV (2 Credits)**

Special Techniques of: Wrist, Shoulder Y view, Lower limb, Knee, Spine: Cervical spine, Dorsal spine, Lumbar spine, Chest, Skull, Cranial bones, Facial bones, Pelvis and Abdomen.

### **RD 3104 Applied Anatomy - II (1 Credit)**

Identify the radiographic anatomy in: Basic and special techniques of skull, spine, abdomen, pelvis, chest, upper limb and lower limb, Mammographic projections, Contrast studies of GIT, Urinary, Hepatobiliary, Cardiovascular, Respiratory and Reproductive systems.

### **RD 3105 Radiation Protection in Radiography (2 Credits)**

Radiation exposure control programme, Safe transport of radiation sources, Safe management of radioactive wastes, Methods of dose reduction, Patient dose estimation for exposure to X-ray, Designing of diagnostic radiology and nuclear medicine facilities, Safety Aspects of MRI, Radiation protection through Quality Assurance of machines, Radiation survey meters and dosimeters.

### **RD 3106 Care of Patient - II (2 Credits)**

CPR, Medical emergencies, Surgical asepsis, Care of patients during contrast studies, CT, MRI & Nuclear Imaging, Care of patients with impaired hearing, Care of patients with burns, Care of patients in trauma and mobile radiography, Care of isolated patients, Care of patients with cardiac and respiratory problems, Care of patients with mental disorders, Care of patients with communicable diseases.

### **RD 3107 Pharmacology for Medical Imaging (1 Credit)**

Basic principles of pharmacology, Pharmacokinetic and pharmacodynamic concepts, Contrast media, Proper techniques for venipuncture, Pharmacology of drugs used in medical imaging and interventional procedures, Radiopharmaceuticals, Safety and adverse effects of pharmaceuticals used in medical imaging and interventional procedures.

### **RT 3101 Radiotherapy Physics and Equipment - II (2 Credits)**

Linear accelerators: photon, electron; Intensity Modulated Radiotherapy (IMRT), Image Guided Radiotherapy (IGRT) units; brachytherapy equipment; treatment planning systems; heavy particle accelerators; systemic therapy equipment; comparison of physical characteristics, optical systems; radiation safety of above units.

### **RT 3102 Applied Anatomy in Radiotherapy (2 Credits)**

Surface anatomy: brain, head and neck, thorax, abdomen, nerves, blood vessels; surface marking; middle and lower 1/3 of oesophagus, heart, larynx, pharynx, stomach, liver, lungs, kidneys, spleen, prostate, cervix, pituitary gland, bladder.

### **RT 3103 Treatment Planning - I (2 Credits)**

Tumour localization: patient positioning, immobilization, reproducibility; target volume definitions; ICRU protocols; contouring and transferring data; principles of treatment planning, isodose distributions, devices influencing dose distribution.

### **RT 3104 Clinical Oncology and Radiotherapy - I (2 Credits)**

A focus on cancer and current treatment modalities with emphasis on radiotherapy; cancers of the skin, brain, head and neck, thorax and gastrointestinal tract; anatomy, epidemiology, etiology, natural history,

clinical presentation, patterns of spread, lymphatic involvement, work-up, staging, treatment options, radiotherapy techniques, prognosis, side effects and management and sequelae.

### **RT 3105 Radiotherapy Methods - II (2 Credits)**

Iodine therapy; Three Dimensional Conformal Radiotherapy (3D CRT); Electron Beam Therapy; IMRT; brachytherapy techniques and procedures.

### **RT 3106 Clinical Practice of Radiotherapy - I (2 Credits)**

Preparation of treatment unit, patient and treatment; treatment technique, dose delivery; care and professionalism in cobalt-60 teletherapy unit with regard to techniques described in Radiotherapy Methods - I.

### **RA 3201 Statistics (2 Credits)**

Introduction to Statistics: Random variables, Types of data, Visualization, Descriptive measures, Probability, Sampling Methods: Parameters & Estimates, Hypothesis testing: Concepts, Types of errors, Types of hypothesis test, Correlation, Regression, Categorical data: Chi-square tests, Relative Risks, Odds Ratio, Analysis of Variance, Birth/Death and Fertility/Mortality rates, Life table & expectancy.

### **RD 3201 Magnetic Resonance Imaging – II (2 Credits)**

Fast Imaging in the Steady State, Segmented k-Space and Echo Planar Imaging, MR Angiography and Flow Quantification, Diffusion Imaging, Cardiac MRI , Dynamic Contrast Enhanced-MRI, Parallel Imaging, MR Contrast Agents, Nomenclature, MR spectroscopy, Sampling and Aliasing in Image Reconstruction, Filtering, Reconstruction, Signal, Contrast and Noise, Water/Fat Separation Techniques.

### **RD 3202 Imaging in Common Systemic Diseases – I (1 Credit)**

Respiratory system pathology, Gastrointestinal tract pathology, Genitourinary tract pathology, Central nervous system pathology, Muscular – skeletal system pathology, Cardiovascular system pathology, Paediatric pathology, Breast pathology.

### **RD 3203 Fluoroscopy – III (2 Credits)**

Contrast studies of the: Gastrointestinal system, Urinary system, Reproductive system, Vascular system and Hepatobiliary system.

### **RD 3204 Paediatric Imaging (2 Credits)**

Paediatric Radiology and Applications, Understanding the psychology, Consent and immobilization, Sedation and anaesthesia, Administration of contrast media, Radiation protection in paediatric radiography, Paediatric pathology and radiographic techniques, neonates, Paediatric skeletal trauma, Paediatric orthopaedics, Paediatric non accidental injuries.

### **RD 3205 Mammography – II (2 Credits)**

Practice of mammographic projections, Demonstration of Localization biopsies, Digital mammography (DM): Basic Physics, Advantages and limitations, Film Response, Fixed Display Characteristics, Characterizing Imaging Performances, Sampling, Radiation Dose Levels, PACS Integration, Detectors of DM, Post-Processing Techniques, Contrast-Enhanced DM, Artifacts, Quality Control in DM.

### **RD 3206 Computed Tomography - III (3 Credits)**

CT examinations of: Head (brain, orbits, IAM, PNS, TM joints), Chest (Routine and HRCT), Abdomen and pelvis (Routine and three phase study), Angiography (CTA), Urinary system, Extremities (shoulder joint, elbow joint, wrist joint, hip joint, knee joint, ankle), CT guided biopsy, Spine, Paediatric CT.

### **RT 3201 Radiation Protection and Safety in Radiotherapy (2 Credits)**

Dose from internal exposure; calculation of shielding for gamma and beta rays; safe use of unsealed sources in radiotherapy; accidental exposures, emergency procedures, rules and regulations; construction of radiotherapy bunkers; personal dose monitoring; management of radiation exposed personnel; regulations on source transportation and replacement; regulations on radiographers

### **RT 3202 Care of Patient - II (2 Credits)**

Communication, ethics, care of patients before, during and after radiotherapy, monitoring and management of common side effects; care of chemo irradiated patients; practical problems in radiotherapy room, handling equipment, shielding, immobilization devices; emergency treatments; care of elderly, paediatric,

differently abled and unconscious patients

### **RT 3203 Treatment Planning - II (2 Credits)**

Parameters used in treatment planning; corrections for tissue inhomogeneities and surface irregularities, treatment planning techniques; design of wedge filters; dose calculations for Cobalt-60, linear accelerator; dose distribution in build-up region, separation of adjacent fields, guidelines for field matching, two dimensional manual planning; errors in treatment planning.

### **RT 3204 Clinical Oncology and Radiotherapy - II (2 Credits)**

Further exploration of cancer and current treatment modalities with emphasis on radiotherapy, cancers of genitourinary, lymphoreticular, musculoskeletal, integumentary, hematopoietic and endocrine systems; epidemiology, etiology, natural history, clinical presentation, patterns of spread, lymphatic involvement, , staging, treatment options, radiotherapy. techniques, prognosis, side effects, management and sequelae

### **RT 3205 Quality Assurance in Radiotherapy - I (2 Credits)**

Basics: managing QA programme, QA instrumentation, QA programme for Cobalt-60 units, linear accelerator units, brachytherapy units, simulator units, mould room; detailed periodic QA programme for Cobalt-60 and linear accelerator units; performance of routine QA procedures.

### **RT 3206 Clinical Practice of Radiotherapy – II (2 Credits)**

Preparation of treatment unit, patient, treatment; technique, dose delivery; care and professionalism in brachytherapy and iodine therapy units with regard to techniques described in Radiotherapy Methods – II.

## **4000 Level**

### **RA 4101 Research Methodology (2 Credits)**

Evidence based practice (EBP), scientific method and process of research. Scales of measurements, probability and distributions, hypothesis testing and inferential statistics, Parametric and non-parametric methods. Conceiving a good research question, research designs, sampling, quantitative and qualitative

approaches, principles of questionnaire design, Sources of error in research, Writing a research proposal.

### **RD 4101 Maintenance of Medical Imaging Equipment (2 Credits)**

Health and safety in maintenance work, management of medical equipment, Basic Electricity and Electronics, Instrumentation. Corrective and preventive Maintenance of X-ray generators & high tension cables, X-ray tube and its components, fluoroscopy equipment, mobile radiography equipment, capacitor discharge C-Arm equipment, films, intensifying screens, cassettes and automatic film processors.

### **RD 4102 Nuclear Imaging - II (2 Credits)**

Radiopharmaceuticals, Thyroid, parathyroid, Genito- urinary, Cardiovascular, respiratory system, skeletal, central nervous, hepato biliary, gastro intestinal imaging, labelling techniques, Myocardial stress imaging, infections & tumour imaging, Nuclear imaging procedures in emergency, Therapeutic nuclear medicine.

### **RD 4103 Applied Anatomy – III (2 Credits)**

CT: Brain, Para nasal sinuses, Pituitary, Orbits, temporal bone, Abdomen & Pelvis, Chest, Musculo skeletal, Angiography, MRI: Brain, spine, Para nasal sinuses, Pituitary, Orbits, temporal bone, Musculo skeleton, Abdomen & Pelvis, Angiography, Breast, MRCP.

### **RD 4104 Radiation Dosimetry & Applications (2 Credits)**

Principles of radiation dosimetry (Interactions and energy deposition by ionizing radiation in matter; concepts, quantities and units in radiological physics, principles and methods of radiation dosimetry), Applications in radiography (calibration in diagnostic equipment, measurement of scattered radiation, measurement of dose to patient, dose to radiation workers).

### **RD 4105 Magnetic Resonance Imaging - III (3 Credits)**

MRI examinations of: Central nervous system (Brain & Spine), Abdomen and pelvis, MRCP, Joints (knee, shoulder, ankle, hip), Cardiac MRI, MR Angiography, Extremities, Prostate, Breast, Endocrine system, Fistulogram, Paediatric MRI, MR contrast studies, MR spectroscopy, Whole body MRI.

### **RD 4106 Quality Assurance in Radiography (2 Credits)**

Quality Assurance and Quality Control, Acceptance Testing, Radiographic Quality control routine

performance: X-ray tube Quality control, Image Recording system Quality Control, Processor Quality Control, Quality control in Fluoroscopy.

### **RT 4101 Paediatric Radiotherapy (2 Credits)**

Introduction to paediatric tumours; late effects of paediatric radiotherapy; radiotherapy for CNS tumours, neuroblastoma, soft tissue sarcomas and Wilms' tumour.

### **RT 4102 Quality Assurance in Radiotherapy - II (2 Credits)**

Acceptance tests, commissioning tests, dosimetric checks; detailed QA programme for brachytherapy units, brachytherapy sources and simulator units; QA programme for advanced treatment methods; QA programme for recording and verification; performance of QA procedures.

### **RT 4103 Evidence Based Clinical Practice (2 Credits)**

Introduction to evidence based practice and epidemiology; evaluating the evidence; applying evidence practice principles to professional practice.

### **RT 4104 Maintenance of Radiotherapy Equipment (2 Credits)**

Carry out maintenance of low energy and high energy photon equipment, brachytherapy equipment, treatment planning equipment, equipment used in systemic therapy, treatment set up devices and mould room equipment.

### **RT 4105 Radiation Dosimetry and Applications (2 Credits)**

Principles of radiation dosimetry, Application in radiotherapy: calibration of cobalt, linear accelerator, in vivo and in vitro dosimetry.

### **RT 4106 Clinical Practice of Radiotherapy - III (2 Credits)**

Preparation of treatment unit, patient, treatment; technique, dose delivery; care and professionalism in linear accelerator and CT simulation units with regard to techniques described in Radiotherapy Methods - II.

### **RA 4201 Research Project (6 Credits)**

Problem identification and project formulation search and retrieve information required such as conducting literature surveys, identification and optimal utilization of available resources, project execution, socio-economic, ethical and safety evaluation when applicable, data analysis, scientific report writing and presentation.

### **RA 4202 Medical Data Communication (1 Credit)**

Microsoft Windows and Unix-based operating systems, networking essentials, data communication protocols, system and network monitoring tools.

### **RD 4201 Imaging in Common Systemic Diseases- II (2 Credits)**

Manifestations of pathological conditions which may appear on CT brain (pituitary, orbits, temporal bone) spine, chest, abdomen and pelvis, musculo skeletal system, cardiovascular system and CT Angiography, Manifestations of pathological conditions which may appear on MRI brain, spine, musculo skeletal system, chest, abdomen and pelvis, breast, cardiac MRI and MR Angiography, MRCP

### **RD 4202 Ancillary Imaging Techniques (2 Credits)**

Veterinary radiological procedures, manual & chemical restraining, soft tissue imaging and tomography, Forensic radiological procedures, Bone densitometry, quantitative ultrasound, quantitative computed tomography, Skeletal survey, Macro radiography & Xeroradiography, In - ward radiography, ECG: fundamental concepts of performing, monitoring and interpreting.

### **RD 4203 In Service Training (4 Credits)**

Practice of Plain radiography, fluoroscopy and contrast studies, darkroom procedure and film processing, mobile radiography, dental radiography, trauma radiography, radionuclide imaging, CT, MRI, mammography (for female students).

### **RT 4201 Treatment Planning - III (2 Credits)**

Introduction to three dimensional (3D) planning; 3D planning of different clinical cases; IMRT, electron, brachytherapy treatment planning and dose calculation.

### **RT 4202 Advanced Radiotherapy Methods (2 Credits)**

Stereotactic radiosurgery, stereotactic radiotherapy, Volumetric Modulated Arc Therapy (VMAT), total skin electron treatment, total body irradiation (TBI) , IGRT, tomotherapy, advanced brachytherapy methods, motion sensitive approaches to radiotherapy.

### **RT 4203 In-service Training in Radiotherapy (2 Credits)**

Practice of radionuclide therapy, brachytherapy, 3D planning, electron therapy, IMRT.

## Basic Courses

### **AH 1102 Information Technology (2 Credits)**

Basic concept of computers, History of data processing, Types of computers, Components of a computer, System analysis and design, Data processing, validation and communication, Computer networks, E-mail/ Internet concepts

### **AH 1103 Basic Human Anatomy (2 Credits)**

The structure and function of the cell, Organization of the body, Embryology, Structure of Cardiovascular system, Lymphatic system, Respiratory System, Digestive System, Genito- Urinary System, Endocrine System, Musculoskeletal System, Nervous System, Sensory Organs.

### **AH 1104 Human Physiology I (3 Credits)**

Organization of the body for function, Homeostasis, Body fluids, Temperature regulation, Growth and development, Ageing, Musculo-skeletal system, Blood (RBC, WBC, Platelets, Blood groups and blood transfusion), Haemostasis, Haematological disorders, Body defence mechanisms and immunity, Cardiovascular system, Lymphatic system, Respiratory system, Digestive system.

### **AH 1106 Introduction to Psychology (2 Credits)**

Introduction to psychology with an emphasis on health-related issues, Major perspectives in psychology, Psychology applied to nursing and health care in general, Coping with stressful situations, Promotion of attachment and bonding between infant and care giver.

### **AH 1202 Basic Statistics (2 Credits)**

Description of statistics, Organizing and displaying data, Summarizing data and variation, Curve fitting, Probability, Simple regression and correlation, Test of hypothesis and significance, Student "t", "f" and chi-square distributions, Analysis of variance.

### **AH 1203 General Pathology (2 Credits)**

Introduction to Pathology, Inflammation and Repair, Wound healing and complications, Principles of fracture healing and complications, Growth disturbances, Degeneration and necrosis, Circulatory disturbances, Tissue deposits and Pigments, Immunology, Neoplasia.

### **AH 1204 Human Physiology II (3 Credits)**

Endocrine system, Nerve & muscle, Nervous system, Special senses (vision, hearing), Urinary system, Reproductive system (puberty in male and female, female reproductive system, male reproductive system, pregnancy, lactation and hormonal control, fertility and infertility in males and females, principles of contraception).

## English Language Teaching Unit (ELTU)

### The Foundation Course in English

This course is designed to function as a refresher course for the new entrants, in order to develop the four language skills required to follow lectures in an English medium degree programme. Owing to the fact that students with a variety of proficiency levels enter the Faculty, the course has been designed to cater to all levels after a careful analysis of language competence, standards and needs. The focus is on developing the four language skills, namely Reading, Writing, Speaking and Listening, in order to enable students to use English in practical contexts. This course is designed on the Eclectic approach where the process approach to English Language learning and teaching is used.

### 1000 Level

#### AH 1101 English and Communication Skills (Non-credit)

This main objective of this course is to provide the students with the knowledge of basic grammar and language skills as they transit into a degree programme which is conducted in the English medium. English for General Purposes (EGP) is introduced in an attempt to improve the general English knowledge of the undergraduates and the course will provide them with an insight and the required knowledge of English in order to function within the academic milieu of a University.

Key Areas of Focus: Language development and Writing, Formulating simple descriptions of general and scientific context, Developing methods of note-taking, Surveying a textbook, skimming and scanning texts and processing information appropriately, Introduction to dictionary skills for self-learning purposes, Pronunciation and phonetic symbols, Speech activities related to general and academic contexts.

#### AH 1201 English and Communication Skills (Non-credit)

The course design is more structured in the second semester as complex grammar rules will be introduced. Additionally, emphasis will be on writing and speaking skills of undergraduates, through the means of structured essay writing and a variety of speech activities related to general and subject-specific topics. The students' competency in speech will be tested for the first time at the End of semester examination, through a viva examination.

**Key Areas of Focus:** Language development and Writing, Passive Voice, Paragraph And Essay Writing,

Vocabulary development and expansion, Reading comprehension, Identifying contextual references, Rephrasing, Group discussions, Presentations, Impromptu Speaking on general and general health topics, Speech related to formal and informal settings

## **2000 Level**

### **AH 2101 English and Communication Skills (Non-credit)**

The second year courses are developed with the aim of introducing students to English for Academic Purposes (EAP). A higher level of competency is expected at this level as students will be introduced to technical and formal writing.

Key Areas of Focus: Language development and Writing, Cause-effect relationships, Process writing, Comparisons, Formal Letter writing, Direct-Indirect Speech, Vocabulary expansion, Thesis statements, Idioms and proverbs, Phrasal Verbs, Varieties of English, Exposure to different accents of English, Poster presentations, Debates, Group discussions and puzzles

### **AH 2201 – English and Communication Skills (Non-credit)**

This module caters to the need of English competency for academic and professional purposes. Students will also be familiarized with IELTS, and complex technical writing. Students are expected to undertake writing assignments of some complexity, identify the authorial voice in texts and to state and defend one's position on issues in an argument.

Key Areas of Focus: Developing schemata and description, Transitional devices, Report writing, Conditionals, Preparation of a Curriculum Vitae, Application procedure, Reading and understanding Journal Articles, Précis Writing, IELTS Practice tests, How to face an Interview, How to make a presentation, Presentation of a report, posters, Debates

## **3000 Level**

### **AH 3101 – English and Communication Skills (Non-credit)**

Key Areas of Focus: Developing schemata and description, Critical Analysis, Writing Project proposals, Writing Abstracts, Thesis writing, Academic writing, Writing reviews, Personal Statements Business Communication, Reading Comprehension, Reading and understanding Journal Articles, Understanding Literature, IELTS Practice tests, Public Speaking





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