



MCAST

Malta College of Arts, Science & Technology

MQF Level 4

AS4-01-19

**MCAST Advanced Diploma for Pharmacy Technicians
2016 first years and 2016 second years onwards**

Course Specification

Course Description

This diploma course is designed to provide students with the skills and knowledge necessary for a career as a pharmacy technician. Students will be exposed to scientific and pharmaceutical principles as well as be given sound knowledge of health-related material, resulting in an all-round approach to effectively and competently embark on a career as a pharmacy technician. The programme is designed to provide participants with all the necessary information, technical skills, knowledge of procedures, legislation and responsibilities required by such a career, which strongly underpins the provision of health care and services.

Programme Learning Outcomes

At the end of the programme the learner will be able to:

- 1. Assist in the provision of services within the pharmacy environment.*
- 2. Recall the national regulations and policies regarding use, distribution, storage and supply of medicines to patients and pharmacy customers.*
- 3. Explain the uses and limitations of medicines, including their management in practice.*
- 4. Use standard pharmacy resources to provide a service to pharmacy customers.*

Entry Requirements

MCAST Diploma in Applied Science

Or

MCAST Diploma in Health and Social Care (with additional module in Chemistry)

Or

4 SEC/O-Level passes/SSC&P (Level 3) passes Compulsory: English Language, Mathematics, Chemistry Preferred: Biology

Current Approved Programme Structure

Unit Title	ECVET/ECTS
Actions and Uses of Medicines A	6
Actions and Uses of Medicines B	6
Actions and Uses of Medicines C	6
Actions and Uses of Medicines D	6
Pharmaceutics	6
Principles and Standards for good Pharmaceutical Practice	6
Pharmacy Law and Ethics	6
Biological Science & Human Physiology	6
Microbiology and its application	6
Chemistry for Pharmacy	6
Pharmaceutical Activities in the industry	6
Pharmacy Practice	6
Work experience in the Primary Care Setting	12
Work experience in the Secondary Care Setting	12
English	6
Mathematics	6
Entrepreneurship	6
Individual and Social Responsibility	6
Total ECVET/ECTS	120

Actions and Uses of Medicines A

Unit Level (MQF): 4

Credits: 6

Unit Description

This unit provides a framework for students to understand how medicines act (pharmacodynamics) and as well as to provide a basis for the understanding of the movement of medicines in the body over time.

Students will understand how medicines work at a molecular level and also understand mechanisms through which responses through medicines may vary between one individual and another.

Students will become aware of the most important processes involved in pharmacokinetics and will familiarise themselves with the clinical relevance of pharmacokinetic parameters. They will also be able to describe the relationships between dose, concentration, response and toxic effects of medicines.

This unit will also focus on essential features and different types of adverse drug reactions and will help students understand which patients have an increased susceptibility to ADRs and what factors to take into account when assessing causality. They will also explore the importance of medication errors and will learn ways of minimising them.

Students will learn to define and distinguish different types and mechanisms of interactions as well as appreciate the importance of interactions involving Cytochrome P450. They will also learn to predict interaction and learn also ways of reducing the risks of interactions.

The student will familiarise himself with clinical assessment of and parameters that are monitored in the management of the main cardiovascular disorders with a particular emphasis on ischaemic heart disease (including hyperlipidaemia), hypertension, congestive heart failure, arrhythmias and thrombosis. For each cardiovascular disorder the student will be able to appreciate significance of each condition, medications used, and principles of therapy and management goals as well as develop the necessary skills and confidence to be able to assess effectiveness of medication used and monitor patient progress.

The student will familiarise himself with the treatment of respiratory disorders with an emphasis on medications utilised in the treatment of asthma and chronic obstructive pulmonary disease as well as medicines used in the treatment of cough. In the last part of this unit this unit the student will also focus on treatment of various conditions affecting gastrointestinal system. The student will understand diarrhoea and constipation understanding what may contribute to these conditions, understanding management and also identify signs which may warrant referral. The student will also appreciate different types of nausea and vomiting and choice options available for the treatment of antiemetics in a variety of different scenarios.

The student will also develop skills to manage patients presenting with upper gastrointestinal disorders, will understand the role of *Helicobacter pylori* and will become cognisant of properties of antacids and ulcer-healing medications. The student will also be familiarised with inflammatory bowel disease and chronic bowel disorders and with relevant medication, monitoring and evaluation.

Students will learn all the above utilising a case-based interactive approach. Towards the end of the unit, students will conduct a final personal self-assessment to identify the strengths they have enhanced during the unit and areas for development in the future.

Learning Outcomes

On completion of this unit the learners will be able to

1. *Develop a firm basis of pharmacodynamics and pharmacokinetics anchored in practice.*
2. *Understand the development and importance of different types of adverse drug reactions and interactions and develop skills to identify them and to minimize them in practice.*
3. *Develop knowledge and skills to understand and help patients being treated for a wide variety of cardiovascular conditions including ischaemic heart disease, hypertension, congestive heart failure, arrhythmias, thrombosis and hyperlipidaemia.*
4. *Develop knowledge and skills to understand and help patients being treated for a wide variety of gastrointestinal conditions including emesis, diarrhea and constipation, upper gastrointestinal disorders as well as inflammatory bowel disorders.*
5. *Develop knowledge and skills to understand and help patient being treated for a wide variety of respiratory disorders including asthma, chronic obstructive airway disease and allergic rhinitis.*

Actions and Uses of Medicines B

Unit Level (MQF): 4

Credits: 6

Unit Description

This unit provides a framework for students to understand the properties and characteristics of a wide array of classes of antibiotics and anti-infective agents and to acquire the skills of managing their use judiciously and effectively. The students will clearly comprehend what are the risks of antibiotic misuse and the dangers of antibiotic resistance.

Students will also have an opportunity to focus on the role of antiretroviral medications in the management of HIV, appreciating both their utility and their risks and will also gain necessary skills to appreciate and understand the need of individualised patient treatment in HIV. Students will also become aware of management options of chronic hepatitis.

Students will gain a clear understanding of medicines use in dermatology with an emphasis on treatment of various forms of psoriasis, pityriasis capitis (dandruff), seborrhoeic dermatitis, atopic dermatitis, nappy rash, bites and stings, fungal skin infection, onychomycosis (fungal nail infection), hair loss, warts and verrucas, corns and calluses, acne vulgaris, cold sores, eczema and dermatitis, scabies as well as skin exposure and melanoma risk.

The students will familiarise themselves with the treatment of main ophthalmological conditions including the treatment of a red eye, discerning between different possible causes and treatment of a red eye; eyelid disorders; dry eye; management of glaucoma and contact lens use. Students will be exposed to a wide variety of ophthalmological preparations including topical antibiotics.

The students will also familiarise themselves with various ear conditions and their management including ear wax impaction and otitis externa. They will also learn about and how to manage cases of sore throat and rhinitis

Students will learn all the above utilising a case-based interactive approach.

Towards the end of the unit, students will conduct a final personal self-assessment to identify the strengths they have enhanced during the unit and areas for development in the future.

Learning Outcomes

On completion of this unit the learners will be able to

1. *Develop a firm basis of understanding of various antibiotics and anti-infective agents anchored in practice and exposure to treatment options in HIV and hepatitis.*
2. *Clear understanding of medications used in dermatology and in conditions affecting hairs and nails.*
3. *Develop knowledge and skills to understand and help patients being treated for a wide variety of ophthalmological conditions.*
4. *Develop knowledge and skills to understand and help patients being treated for a main conditions affecting the ear as well as nose and throat.*

Actions and Uses of Medicines C

Unit Level (MQF): 4

Credits: 6

Unit Description

This unit provides a framework for students to understand various endocrinological conditions in particular diabetes understanding its implications as well as its long-term complications, to understand prophylaxis and treatment options available for this condition which is particularly prevalent in Malta. Students will also appreciate presentation of hypothyroid and hyperthyroid states and also understand the management of patients with thyroid disorders.

Students will also have an opportunity to understand the actions and uses of corticosteroids and also of corticotrophins as well as sex hormones including oestrogens and hormone replacement therapy. The students will also appreciate characteristics of the menopause and appreciate risk and benefits as well as patient monitoring essential in hormone replacement therapy.

This unit will also deal with other medications important in endocrinology including progestogens and gonadorelin analogues; androgens and anabolic steroids (including the misuse of such substances amongst other in sports] as well as antiandrogens and selective oestrogen receptor modulators and aromatase inhibitors. This unit will also elucidate the role of the naturally occurring peptide hormones somatostatin and its analogues.

This unit will describe some important medications used in obstetrics including prostaglandins and oxytocin.

Various menstrual cycle disorders [including premenstrual syndrome, dysmenorrhoea, menorrhagia, endometriosis and polycystic ovary syndrome] will be reviewed and students will understand the management of each condition.

Student will also in this unit appreciate the characteristics of important genitourinary disorders and appreciate characteristics and principles of therapy of benign prostatic hyperplasia and urinary frequency and incontinence.

This unit will also deal with the presentation and management of rheumatoid arthritis including safety issues and patient monitoring related to various medications used in its management (including disease-modifying antirheumatic medications and

biological agents). The student will also understand the rationale and medications utilised in the management of osteoarthritis and gout.

Student will also understand osteoporosis and its management as well as Paget's disease and its management.

Students will also have the opportunity to explore and understand immunological products and vaccines including immunoglobulins, interferon and vaccines.

Towards the end of the unit, students will conduct a final personal self-assessment to identify the strengths they have enhanced during the unit and areas for development in the future.

Learning Outcomes

On completion of this unit the learners will be able to

- 1. Develop a firm basis of understanding of management of various endocrinologic conditions with an emphasis on diabetes and thyroid disorders.*
- 2. The students will also understand the action of various medications used in endocrinology including steroids and sex hormones amongst many others.*
- 3. Clear understanding of management of various gynaecological and genitourinary disorders as well as medications used in obstetrics.*
- 4. Develop knowledge and skills to understand and help patients being treated for a wide variety of rheumatological and musculoskeletal and joint diseases.*
- 5. Develop knowledge and skills to understand immunological products and vaccines.*

Actions and Uses of Medicines D

Unit Level (MQF): 4

Credits: 6

Unit Description

This unit provides a framework for students to understand disorders various crucial areas of therapeutics.

The first part of the unit will deal with diseases of the central nervous system and their management and treatment. This part of the unit will deal with the management of epilepsy and exposure to the most important antiepileptic medications. Students will also be exposed to anxiolytics and hypnotics and the treatment of anxiety disorders and sleep disorders. The students will also learn to understand most important psychiatric conditions and various treatment options available for depression and mood disorders, psychoses and bipolar disorders, including schizophrenia. Students will also be exposed to dementia and Alzheimer's disease and use of anticholinesterase inhibitors as well as the treatment of migraine.

Students will also be introduced to medications used for the relief of pain as well as to anaesthetic medications. In this context they will be also exposed to palliative care and to different types of analgesics used to treat different types of pain. They will be also exposed to the different types and classes of anaesthetics.

The next section to be dealt in detail is nutrition and blood, with students being exposed to blood, various blood products and products intimately related with blood as well as anaemia and its treatment. This section will also expound on various essential ions and vitamins as well as specialised nutrition required in particular disease states.

Malignant disease and immunosuppression will be the focus of this part of the unit. Students will appreciate different medications utilised for the treatment of various forms of malignancies. Students will also be exposed to utility and most important issues relating to various types of immune suppressants.

Learning Outcomes

On completion of this unit the learners will be able to

1. *Develop a firm basis of understanding of management of various medicines affecting the central nervous system.*
2. *The students will also understand the action of various medications used in anaesthesia and the treatment of pain.*
3. *Clear understanding of medications relating to blood and nutrition*
4. *Develop knowledge and skills to understand and help patients being treated with malignancies and patients stabilized on immune suppressants.*

Pharmaceutics

Unit Level (MQF): 4

Credits: 6

Unit Description

Pharmaceutics includes various aspects. This unit will focus on biopharmaceutics, principles of pharmaceutics, pharmaceutical formulation and pharmaceutical technology.

Students will learn principles of pharmaceutics and will apply them to the vast variety of dosage forms that pharmacy technicians encounter in professional practice. The student will gain knowledge of the formulation of different dosage forms, the properties of different types of excipients used for different dosage forms and the applicability, advantages and disadvantages of different dosage forms.

Students will learn how to prepare different product types and will be able to compound extemporaneous preparations required in different pharmacy settings. The students will be able to apply their knowledge of different ingredients for pharmaceutical preparations and the methods to be adopted for the preparation of different formulations. Students will be able to do calculations of the ingredients required for preparations and choose the appropriate containers. Students will be able to apply this knowledge to compound pharmaceutical preparations in the pharmacies within the primary care and also hospital pharmacies. Refer to units 12 and 13).

Students will learn how to do preparation (reconstitution and dilution) of manufactured products which are prepared before their administration such as preparation of chemotherapy, Centralised Intravenous Additives (CIVAS), radiopharmaceuticals, total paren. Students will be able to apply this knowledge and skill when working in preparation units (refer to Unit 13).

Students will be able to apply this knowledge in practice, for the preparation and labelling of different preparations and to give advice to patients and information to be included on the labels and to be given during dispensing.

Students will gain knowledge of the manufacturing of different dosage forms of medicinal products at an industrial level. Students will be able to apply this knowledge when working in an industrial setting (refer to Unit 14).

Learning Outcomes

On completion of this unit the learners will be able to

1. *Know and comprehend principles of pharmaceuticals particularly biopharmaceuticals, pharmaceutical formulation and pharmaceutical technology.*
2. *Prepare extemporaneous preparations as required in a pharmacy in line with established standards.*
3. *Prepare and reconstitute manufactured medicines to be administered to patients.*

Principles and Standards for Good Pharmaceutical Practice

Unit Level (MQF): 4

Credits: 6

Unit Description

Students acquire knowledge and competence of principles of good practice, legislation and standards as applicable to different areas of pharmaceutical practice in different health care settings within primary care, hospital establishments and within the industry.

Students will apply principles of good practice for different aspects of practice such as quality assurance and quality control; quality management systems; premises, equipment and utilities; installation and validation. Students will receive knowledge to be able to work within a practice which operates in line with a pharmaceutical quality management system and to contribute in the upkeep and writing up of parts of the quality management system.

Students will gain understanding to enable them to map out procedures and contribute to the writing up of standard operating procedures for different processes. Students will gain understanding and be able to use different types of documents within a practice.

Students will be able to understand how to set and achieve targets, key performance indicators for different processes and will monitor the different processes to ensure whether the required standards and targets are being achieved. Students will apply recommendations for improvement in different practice settings, and understand and apply the principle of continuous improvement.

Students will gain experience in the participation in the conduct of an audit in practice settings, both as part of an audit team as well as auditees, participate in the drawing up an audit report and set recommendations for improvement.

Students will be able to utilize and apply their knowledge and skill when they start working as pharmacy technicians to their different areas of practice where they will work. Student will be able to source information, guidelines and legislation and to practice in line with new developments in practice.

Learning Outcomes

On completion of this unit the learners will be able to

- 1. Acquire knowledge of different pharmaceutical practices, general principles, guidelines, legislation and standards for good pharmaceutical practices.*
- 2. Acquire knowledge of pharmaceutical quality system principles relevant to activities within pharmaceutical practices.*
- 3. Premises, equipment and utilities used for different pharmaceutical practices*
- 4. Know, understand and apply principles and knowledge for the manufacturing of medicinal products at industrial level.*
- 5. Monitor and evaluate that standards of good practice are being met and maintained.*

Pharmacy Law and Ethics

Unit Level (MQF): 4

Credits: 6

Unit Description

Students will learn about different forms of regulation (legislation, guidelines and standards) as applicable to the profession and practice of pharmacy technicians. Students will learn about the EU framework for legislation and how EU legislation is transposed into national legislation. There will be a description of different areas of national legislation as applicable to pharmacy technicians.

Students will develop an understanding of professional practice and ethics. They will be nurtured to appreciate that the practice of pharmacy technicians is that of a registered professional and that in addition to the application of technical knowledge and standards they need to apply principles of ethical and professional practice and that the practice is regulated through the code of the Pharmacy Council.

Students will also be able to consider principles relevant to patients (such as patients' rights), other healthcare professionals and other stakeholders (such as principles of better regulation) in their communication and relevant practice.

Students will learn about the regulation covering medicinal products and their quality, safety and efficacy. Students will learn about regulation concerning the prescription, dispensing, supply and use of medicines and specific legislative requirements related to medicinal products such as controlled medicines, unlicensed medicines and off-label use. Students will be knowledgeable of regulation of products other than medicinal products.

Students will be knowledgeable of different regulation regarding different areas of pharmaceutical practice in different practice settings.

Students should be capable of applying regulation and principles of professional and ethical practice to daily work activity as well as to take up the challenge of new developments.

Learning Outcomes

On completion of this unit the learners will be able to

1. *Describe different forms of regulation as applicable to the profession and practice of pharmacy technicians and enable and motivate the students to keep updated.*
2. *Understand and apply general principles of professional and ethical practice relevant to pharmacy technicians.*
3. *Apply knowledge of regulation related to different medicinal and non-medicinal products.*
4. *Understand regulations and standards of practice applicable to the advertising, supply, prescribing, dispensing, administration and use medicines.*
5. *Know and understand healthcare systems and the impact of social determinants of health and apply this information in different aspects of practice.*

Biological Science & Human Physiology

Unit Level (MQF): 4

Credits: 6

Unit Description

This unit provides a framework for students to understand the biological systems and human physiology which is necessary to understand the action and uses of medicines (Unit 4-8) including pharmacodynamics and pharmacokinetics.

Students will understand the structure of cells with an emphasis on parts of the cell where medicines action can occur including major types of receptors and also basic concepts of genetics (for such an understanding students will also need a clear understanding of the most important biological molecules - these will be covered in Unit 3).

Students will also understand main biological factors affecting pharmacokinetics including physiological barriers with an emphasis on cell membrane, blood brain membrane and placenta; administration routes and rationale, local and regional and systemic factors affecting absorption; volume of distribution. The student will also appreciate individual factors affecting metabolism as well as modes of excretion (renal excretion and biliary excretion) as well as concepts such as clearance and half-life (This part is particularly important as a basis for the understanding of concepts described in Units 4-7).

Students will be exposed to the anatomy and physiology of the human body on the whole, will also be exposed to various cell types as well as to various tissues. There will also be a focus on various systems individually. It is important that students appreciate the interaction between all various systems and that important concepts of homeostasis are elucidated. Description of anatomy and physiology of all systems will be anchored into practice with particular reference to the system in question and diseases of that particular system.

Students will be exposed to the anatomy and physiology of the nervous system including cells of the nervous system, the synapse and neurotransmitters; divisions within the nervous system including the central nervous system and the peripheral nervous system which is in turn divided into the sympathetic and the parasympathetic systems.

Students will be exposed to the anatomy and physiology of the cardiovascular system including the heart, the blood vessels, and the role of the blood including components of the blood.

Students will be exposed to the immune system (also in relation to infectious disease and the principles of antimicrobial therapy which will be dealt in more detail in Unit 2) as well as to the lymphatic system.

Students will be exposed to the anatomy and physiology of the endocrine system including hormones, as well as the anatomy and physiology of the reproductive system.

Students will be exposed to the anatomy and physiology of the respiratory, urinary, gastrointestinal and musculoskeletal systems.

Students will also be briefly exposed to newer aspects of biology including lipidomics, metabolomics, pharmacogenomics, epigenetics and biomaterials.

Learning Outcomes

On completion of this unit the learners will be able to

- 1. Understand the structure of cells, basic concepts of genetics and main biological factors affecting pharmacokinetics as well as cell types and tissues.*
- 2. Develop an understanding of the anatomy and physiology of the nervous system and cardiovascular system as well as of the immune system and its relation with infectious disease as well as the lymphatic system and of the endocrine system including hormones.*
- 3. Develop an understanding of the anatomy and physiology of the reproductive system, of the respiratory, urinary, gastrointestinal, and musculoskeletal systems.*

Microbiology and its application

Unit Level (MQF): 4

Credits: 6

Unit Description

This unit provides a framework for students to understand important aspects of microbiology with relevance to all aspects relevant to the role of a pharmacy technician.

The students will be exposed to the fundamentals of microbiology including a clear understanding of viruses, viroids and prions; as well as prokaryotes and eukaryotes with a focus on bacteria, fungi and protozoa. Students will be exposed to various diseases caused by these microorganisms and will also learn about various types of zoonoses.

Student will be exposed to various aspects of pharmacology of bacterial and mycobacterial infections including DNA replication, transcription and translation and cell wall synthesis. They will also learn about aspects of fungal infections as well as parasitic infections including conditions caused by protozoa as well as helminths. Students will also learn about viral infections including physiology of viral replication and viral life cycle.

Students will understand mechanisms of drug resistance of various microorganisms.

The students will also be exposed to good practices for pharmaceutical microbiological laboratories to various techniques of enumeration of microorganisms and to relevance of microbiology in environmental monitoring and verification of aseptic technique.

The students will also understand the role of the microbiology laboratory in the diagnosis and therapeutics of infectious disease.

Learning Outcomes

On completion of this unit the learners will be able to

1. *Understand the fundamentals of microbiology including pharmacology of bacterial infections, fungal infections, parasitic infections and viral infections.*
2. *Understand the development of resistance in microorganisms and concepts of infection control.*
3. *Understand good practices for pharmaceutical microbiological laboratories and identify the relevance of microbiology in environmental monitoring and verification of aseptic techniques.*
4. *Apply principles of microbiology to the diagnosis of disease and therapeutics.*

Chemistry for Pharmacy

Unit Level (MQF): 4

Credits: 6

Unit Description

This unit provides a framework for students to understand important aspects of chemistry relevant to the pharmaceutical field.

Chemistry is a crucial subject to understand various aspects of pharmacy and pharmacy practice including synthesis of medications, determination of purity and formulation of medications as well as action and uses of medications including pharmacodynamics and pharmacokinetics.

Chemistry in pharmacy does in fact provide the necessary basis for the understanding of most of other units in the course.

Students will be exposed to the International System of Units and to basics of chemistry including the periodic table and ionic and covalent bonding. Students will also be exposed to stoichiometry.

Students will be subsequently exposed to organic chemistry [including functional groups] and pharmaceutical chemistry.

Most medications are small organic molecules that behave in solution as weak acids or bases. An understanding of acid-base theory will help the student understand and appreciate most medications. Students will come to appreciate the reasons why medications behave as acids or bases and the effects that ionization has on the properties of medicines.

The students will also come to appreciate importance of chemical reactions in drug metabolism.

The students will also understand concepts related to volumetric analysis of medications including titrations as well as other methods of assaying medications as practiced in research and industry.

Students will also understand the three-dimensional shapes of molecules. This is fundamental for students to understand other aspects of chemistry such as biochemistry and design of medicine. Students will wholly understand basics of

isomerism and its relevance in pharmacy. Students will be exposed to biochemistry and main biochemical issues relevant to pharmaceutical practice.

Students will be exposed to laboratory techniques related to pharmacy. They will be introduced to pharmacopoeial tests carried out in the pharmaceutical industry and perform Uniformity of Weight Ph. Eur. test in the laboratory. Students will also prepare standard solutions from solids, standard solutions by serial dilution and carrying out volumetric analysis of standard solutions.

Learning Outcomes

On completion of this unit the learners will be able to

1. *Develop a firm basis of pharmaceutical chemistry anchored in practice including exposure to the periodic table, ionic and covalent bonding and stoichiometry.*
2. *Develop a firm understanding of chemical reactions, chemical equilibria, acid-base theory, chemistry in the metabolism of medications as well as volumetric analysis of medications.*
3. *Develop a firm basis of stereochemistry and of organic chemistry as well as to biochemistry relevant to pharmaceutical science.*
4. *Perform laboratory techniques related to pharmacy.*

Pharmaceutical Activities in the Industry

Unit Level (MQF): 4

Credits: 6

Unit Description

The student will gain knowledge and work experience of the practice and activities within different areas of the pharmaceutical industry.

Simulations of different activities, work practice in real life situations and visits to real work practices will be used to give the students an experience in different areas of practice in the industry.

Students will work in simulated and real life services and will have practice in drawing up the steps involved in procedures for different activities and practices. Role play and simulated cases will be used to give students the experience of dealing with case scenarios such as complaints, change control, dealing with non-conformities, recalls and corrective and preventive actions within the work environment in the industry.

Students will use knowledge and skills acquired from other and apply them to cases and experiences encountered during the work experiences and / or simulated practices for this unit.

Role play will be used to enable students to practice behavioral aspects within a work environment including communication with other employees and with other stakeholders such as clients.

Students are to fill a logbook during the work experience and visits and to use cases from their Logbook for the industry and from the simulated cases and to present aspects applicable to the different Units of this course and present and discuss them in class.

Students will be assessed on their activities in the simulated practices, on the compiled log book and on the presentation of cases from their Logbook.

Learning Outcomes

On completion of this unit the learners will be able to:

1. *Understand a wide variety of pharmaceutical activities in the Maltese pharmaceutical industry.*
2. *Triangulate/correlate knowledge, skill and experience from different areas for the execution of different activities in the industry.*
3. *Perform an active role in multidisciplinary and multi-stakeholder teams in the industry setting.*
4. *Interface between pharmaceutical industry and other settings.*
5. *Demonstrate experience of work in the industry setting.*

Pharmacy Practice

Unit Level (MQF): 4

Credits: 6

Unit Description

Students will achieve knowledge of the legislation and standards relevant to pharmacy practices and to pharmacies and equipment within pharmacies. Students will receive a comprehensive knowledge of different areas of pharmacy practice and different activities particularly as relevant to dispensing practice, supply of medicines, use of medicines and administration of medicines.

This chapter will enable the application of knowledge from different areas which cut across other units such as bio-pharmaceutics and pharmaceutical technology, principles of good practice, knowledge of physiology and different disease states and pharmacology to the practice of dispensing and provision of advice to patients.

A major component of this unit is the information about symptoms of minor illnesses, application of information from diagnostics tests and the use of this information to give recommendations to patients.

This unit will consider supply and use of medicinal products, non-medicinal products as well as health education, health promotion and disease prevention as a holistic approach to healthcare.

This unit will cut across other units and will support the practice which will be addressed more specifically in practice and during work experience. The assessment of this unit is mainly aimed at ensuring that the knowledge gained in this basic subject as relevant to the practice of pharmacy technicians is utilized and applied in different areas of practice.

Learning Outcomes

On completion of this unit the learners will be able to

1. *Understand and apply legislation and standards related to pharmacy practice and to pharmacies.*
2. *Apply principles of good practice to dispense, supply and administer medicinal products and other activities in a pharmacy.*
3. *Understand, identify and respond to symptoms of minor illnesses.*
4. *Source, supply and advice on products other than medicinal products found in pharmacies.*
5. *Understand and apply behavioural and sociological concepts relevant to pharmacy practice during practice.*

Work Experience in the Primary Care Setting

Unit Level (MQF): 4

Credits: 12

Unit Description

The student will gain knowledge about different pharmaceutical services in the primary care setting, mainly focusing on pharmacies in primary care but also on other services such as domiciliary services, services in residential homes etc. Current services in Malta will be explained and discussed and examples from current services, particularly substantiated from experience during the students' Work Experience in the Primary Care Setting, and simulations of services and activities will be used.

Students will work in simulated services. They will have practice in drawing up the steps involved in different activities and processes and contribute to the writing of standard operating procedures for different procedures and activities in a pharmacy. Students will have experience in dispensing of different types of prescriptions, under supervision. Role play will be used to enable students to practice communication and other behavioural aspects including communication with patients and carers, communication with other employees in pharmacies and other primary health settings and the role of the pharmacy technician as part of the multidisciplinary team.

Students will use knowledge and skills acquired from units 1 to 11 and combine them with cases/ experiences encountered during Work Experience 1 and / or simulated practices. Students are to use cases from their Workbook1 for Work Experience 1 and from the simulated cases and present aspects applicable to the different Units of this course (Unit 1 to 11) during this unit and discuss them in class. The discussions will be based on the Schedule for the Workbook for Work Experience 1.

Students will be assessed on their activities in simulated practices and on the presentation of cases from their Workbook 1.

Students will undergo an accredited course of basic First Aid and will be tested for competence in First Aid.

Learning Outcomes

On completion of this unit the learners will be able to

1. *Demonstrate knowledge of a wide variety of pharmaceutical services and activities in primary care.*
2. *Understand the organisational policies and standard operating procedures within the pharmacy working environment.*
3. *Correlate knowledge, skill and experience from different areas (units) and from the work experience in the primary care setting for the execution of different pharmaceutical activities.*
4. *Demonstrate capability to communicate with different stakeholders.*
5. *Perform basic First Aid.*

Work Experience in the Secondary Care Setting

Unit Level (MQF): 4

Credits: 12

Unit Description

The student will gain knowledge about different pharmaceutical services in the hospital setting, mainly focusing on pharmacies in hospital care but also on other services such as preparation of medicines in the hospital setting etc. Students will gain understanding of aseptic technique as required to be used for the compounding of injectable medicinal products and will be tested for competence in this technique.

Current services in Malta will be explained and discussed and examples from current services, particularly substantiated from experience during the students' Work Experience in the Hospital Setting, Work Experience 2 (WE 2) and simulations of services and activities will be used. Students will practice in life and simulated services within the hospital environment. Students will practice in the drawing up the steps involved in standard operating procedures for processes for different activities in a hospital setting.

Role play will be used to enable students to practice communication and other behavioral aspects including communication with patients and carers, communication with other employees in pharmacies and other hospital settings and the role of the pharmacy technician as part of the multidisciplinary team.

Students will use knowledge and skills acquired from units 1 to 11 and combine them with cases/ experiences encountered during Work Experience 2 and / or simulated practices. Students are to use cases from their Workbook 2 for Work Experience 2 and from the simulated cases and present aspects applicable to the different Units of this course (Unit 1 to 11) during this unit and discuss them in class. The discussions will be based on the Schedule for the Workbook for Work Experience 2.

Students will be assessed on their activities in simulated practices and on the presentation of cases from their Workbook for Work Experience 2.

Learning Outcomes

On completion of this unit the learners will be able to

1. *Apply knowledge and experience of a wide variety of pharmaceutical services and activities in secondary care settings and establishments.*
2. *Understand the organisational policies and standard operating procedures within the pharmacy environment.*
3. *Triangulate/correlate knowledge, skill and experience from different areas for the execution of different pharmaceutical activities.*
4. *Prepare sterile and non-sterile preparations in a hospital pharmacy setting.*
5. *Understand communication and interaction with colleagues and other hospital staff.*