



**L-Università  
ta' Malta**

## **Bachelor of Science (Honours) in Medical Science**

### **Learning outcomes:**

#### **A. Subject knowledge and understanding:**

By the end of the course, you will be able to:

1. explain the structure of the cells and organelles and the various molecular and biochemical interactions that occur in the human body at a cellular level;
2. describe and integrate the relationships between basic anatomy, physiology and biochemistry for each of, and between, the different human biological systems: cardiovascular, respiratory, gastrointestinal, hepatic, endocrine, genitourinary, reproductive, haematopoietic and central nervous system;
3. describe the structure and inter-relationship of the bones and joints to muscles, nerves and blood vessels;
4. outline the embryological development of the different organs and biological systems; and discuss how this relates to common developmental anomalies;
5. describe the microscopic structure of tissues;
6. explain the genetic and environmental factors that cause disease;
7. describe the basis of genetic inheritance;
8. outline major metabolic pathways and identify their points of integration;
9. discuss the basic principles of medical biochemistry and how dysfunction leads to disease;
10. explain the basic principles of general pathology, including the mechanisms of cell injury and cell death, adaptation and ischaemia;
11. explain the features of bacterial, viral, fungal and parasitic infections and non infective inflammatory processes;
12. describe how to identify normal and abnormal blood counts and serum protein profiles;
13. describe the basic principles used in molecular pharmacology and pharmacogenetics;
14. describe the principles of interpersonal communication;
15. contrast the various ethical theories appropriate to health care;
16. discuss the basic principles of communication skills;

17. discuss values, decision processes and negative emotions;
18. describe the importance of lab safety;
19. discuss the principles underlying biochemical and molecular technology techniques currently used in clinical diagnosis and research;
20. describe the different research methodologies: qualitative, quantitative and epidemiological;
21. discuss the ethical principles underlying research (e.g. consent form and data protection issues); and
22. outline the importance of research in personalised medicine.

### **B. Intellectual development**

1. conduct basic research in an area relevant to personalised medicine;
2. carry out research techniques applicable to clinical practice;
3. appreciate the role of biobanks in promoting medical research;
4. participate interactively in lab/class sessions;
5. analyse research options and take decisions;
6. work effectively individually and in a team;
7. implement group dynamics to accomplish a task; and
8. link clinical research to social needs and patients' perspectives.

### **C. Key/Transferable Skills**

1. identify important anatomical structures on the surface of the body as an introduction to clinical examination techniques;
2. interpret normal anatomy on basic ultrasound, X-ray images and Electro-cardiogram (ECG);
3. interpret common clinical cases involving different biological systems in terms of disordered anatomy and physiology;
4. interpret the results of first line investigations used for differential diagnosis of clinical cases;
5. map a genetic pedigree;
6. analyse the important factors in prevention and management of infections;
7. apply knowledge of the molecular mode of action of drugs to specific clinical scenarios;
8. apply basic pharmacological principles in prescribing decisions;
9. select the basic drugs used to treat the abnormal conditions studied;
10. identify factors that may lead patients to abuse prescribed medication;

11. apply ethical principles to basic clinical scenarios;
12. apply ethical principles to interpersonal relationships;
13. recognise stress and burnout;
14. demonstrate how to obtain informed consent and how to give bad news;
15. formulate specific objectives for the research study;
16. draft a research proposal;
17. write an application form for research ethics approval required for 'Research Project 2: Clinical Application';
18. undertake laboratory benchwork under supervision;
19. operate basic laboratory equipment;
20. perform daily maintenance of basic laboratory equipment;
21. apply appropriate experimental techniques to a specific project design;
22. interpret research results;
23. use bioinformatic tools to analyse genetic and proteomic data; and
24. demonstrate communication skills through the delivery of an effective class presentation.

**D. Other skills relevant to employability and personal development**

1. time management;
2. organisation skills;
3. team work;
4. lab safety; and
5. respect for patient's confidentiality and data protection.