



**L-Università  
ta' Malta**

**DEPARTMENT OF APPLIED  
BIOMEDICAL SCIENCE**

**Faculty of Health Sciences**

Mater Dei Hospital  
University of Malta  
Msida MSD 2080, Malta

Tel: +356 2340 1830  
[app-biomedsci.healthsci@um.edu.mt](mailto:app-biomedsci.healthsci@um.edu.mt)

[www.um.edu.mt/healthsciences](http://www.um.edu.mt/healthsciences)

# **B.Sc. ABS (Hons)(Melit.) Course Handbook**

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This Course Handbook is intended as the main reference for students, academic staff, University Administrative Office Staff and External Examiners. It includes the Applied Biomedical Science course programme (Appendix 1: BSc ABS Course Programme 2020-2021; <https://www.um.edu.mt/courses/overview/UBSCHABSFT-2020-1-O>), including general entry requirements and career opportunities, together with useful information and documentation.

The University of Malta course programme in Applied Biomedical Science is entitled Bachelor of Science (Honours) in Applied Biomedical Science (B.Sc.(Hons)(Melit)). It is a full-time 4-year degree. Students must obtain 240 ECTS credits to be eligible for the degree. The general information is available on the Course website: <https://www.um.edu.mt/healthsciences-old/overview?code=UBSCHABSFT-2020-1-O>

## Course Overview

Applied Biomedical Science deals with the study of the underlying anatomy, physiology and pathology of disease and the techniques and procedures involved in the collection and analysis of samples taken from the human body to enable the identification of pathological conditions. Applied Biomedical Science provides the diagnostic tools for medical care within the laboratory.

Applied Biomedical Science is a vast and multidisciplinary area of health care. A sound knowledge of biology is a prerequisite for this programme of studies.

The course is composed of a theoretical component as well as a very strong practical component. Both components cover the 5 major areas of study described below. Practicals are held throughout the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> years, with placements in the pathology labs of Mater Dei Hospital (called Advanced Practicals in the course programme) held during 3<sup>rd</sup> year and 4<sup>th</sup> year. Students will also engage in a small research project in one of the major areas of study.

The following are the major areas of study in Applied Biomedical Science:

- Cellular Pathology - the study and identification of pathological conditions of cells and tissues
- Clinical Biochemistry and Genetics - the study of the levels of biochemical compounds in the body, toxicology, and the study of genetics, genomics and molecular biology to understand the inherited basis of disease
- Haematology and Coagulation - the study of both the cellular and acellular components of blood
- Medical Microbiology and Virology - the study of microorganisms and viruses that cause disease
- Transfusion Medicine - the study of the methodology involved in the collection, preservation, storage, testing and administration of blood and blood products
- Immunology – the study of the diseases and disorders of the immune system.

## Aims and Learning Outcomes

The degree course in Applied Biomedical Science aims to produce graduates qualified in all major areas of medical laboratory science with a sound knowledge and understanding of all the practical and theoretical aspects underlying all subjects related to Applied Biomedical Science. In addition, on completion of the degree course in Applied Biomedical Science, a graduate would:

- (a) be able to carry out analytical procedures in all areas of medical laboratory science
- (b) be able to manage and supervise any laboratory-related work
- (c) be fully aware of the special needs of the patient and of the ethics involved, as dictated by the code of professional conduct for medical laboratory scientists
- (d) be able to participate in the practical and theoretical training of students registered on courses in Applied Biomedical Science
- (e) participate in both research and continuing education programmes.

## Career Opportunities and Access to Further Study

Graduates in Applied Biomedical Science are registered with the Councils for the Professions Complementary to Medicine (CPCM) and can apply for a licence to practise as medical laboratory scientists. As holders of this licence, they may seek employment as Medical Laboratory Scientists in the Hospital Pathology Laboratories at Mater Dei or with a private hospital. Some graduates may opt to seek employment in industry such as with pharmaceutical companies based in Malta. Others opt to pursue a career in research either locally or abroad.

The BSc (Hons) in Applied Biomedical Science has been accredited by the Institute of Biomedical Science, UK, since 2001. Employment in hospital pathology laboratories in the UK and other countries is therefore facilitated.

Graduates in Applied Biomedical Science may pursue further postgraduate qualifications leading to a Masters degree in Biomedical Sciences or in Research, or directly to a Ph.D.

## Course Intended for

Students who wish to work in hospital labs. Graduates from this course have the benefit that they can apply for a license to practise as Medical Laboratory Scientists.

Those who wish to work in industry, particularly the pharmaceutical and biotechnology industries.

Those who wish to pursue a career in research or post-graduate studies leading to a career in research.

## Mobility Period

Students who wish to participate in an ERASMUS exchange are encouraged to do so during the summer period of the second year of the course or during the second semester of the third year of the course.

The full course programme can be found in Appendix 1 and a detailed course description can be found in Appendix 2 (Detailed ABS Course Description 2020-2021; <https://www.um.edu.mt/healthsciences-old/overview?code=UBSCHABSFT-2020-1-O>).

## Programme Management

### Faculty/school Support, Resources and Infrastructures

The Department of Applied Biomedical Science (<https://www.um.edu.mt/healthsciences/applied-bio-science>) is part of the Faculty of Health Sciences (<https://www.um.edu.mt/healthsciences>) which is located within Mater Dei Hospital (MDH), the main acute general teaching hospital of Malta. The hospital is located directly adjacent to the main University campus. The Department has two teaching labs that each accommodate up to 12 students. These labs are equipped with relevant equipment including microscopes, centrifuges, micropipettes, spectrophotometers, ELISA plate reader, pH meter, weighing balance, water bath, laminar flow hood, fume hood, microtome etc.

Lectures and tutorials are held in lecture rooms at MDH and on Campus. Lecture rooms are equipped with audio-visual equipment which is supported by the University IT Services. Lecturers can utilise laptops loaned out from Faculty to deliver their lectures.

All students are given a University of Malta account and email address which gives them access to online library resources (<https://www.um.edu.mt/library>), the UM Virtual Learning Environment (VLE) (see <https://www.um.edu.mt/itservices/vle> for full details) and the electronic Student Information Management System (eSIMS) (further information on this is available at this link: <https://www.um.edu.mt/services/administrativesupport/sims/esimsfaq>).

Students can utilise a Computer Lab with 20 computer stations within the Faculty which is available for the sole use of students registered with the Faculty of Health Sciences. Bioinformatics sessions with the students are also held there. Library facilities are available where the latest journals and current editions of books can be found. The library also has online access to a number of resources.

There is widespread Wi-Fi at the University to assist students with their online research when required.

The department has two research labs and an electrophoresis room dedicated mainly to research on genetics, molecular biology and protein work. The teaching labs are also used for research when there are no practicals being held. The Department of ABS hosts a number of important sample and data collections on various conditions. The Department has computer servers and software for bioinformatics analysis of high throughput sequencing data. Students can also conduct research projects at other locations including the Centre for Molecular Medicine and Biobanking (CMMB) of which many full-time members of the academic staff are associate members. The CMMB hosts a number of specialised and general lab equipment including latest generation of acoustic flow cytometers, FACS ARIA, real-time

thermal cyclers, a laser micro-dissector, a Luminex system, Licor, cell counters, fluorescent microscopes, cloning facilities, cell culture facilities (primary cells and cell lines), virus lab and drosophila labs amongst others.

Students enrolled on the BSc (Hons) ABS programme attend lectures with other students from the Faculty of Health Sciences (eg Physiology, Introduction to Biomedical Biochemistry), from the Faculty of Medicine and Surgery following the BSc in Medical Biochemistry course (Clinical Biochemistry). Also, some study units are taught by members of staff from other Faculties (eg Faculty of Science for Statistics and Chemistry, and Faculty of Medicine and Surgery for Pathology, Pharmacology and Ethics).

Supervisors for BSc projects include members of the Department of ABS as well as academics from other departments within the Faculty (eg the Department of Food Studies and Nutrition) as well as from other Faculties (eg various departments within the Faculty of Medicine and Surgery).

## Staff Development Arrangements

Teaching staff are encouraged to attend national and international courses and conferences which may include Continuous Professional Development courses organised by the Department of Pathology at Mater Dei Hospital. The Office for Human Resources Management and Development (HRMD) <https://www.um.edu.mt/hrmd/trainingdevelopment> offers a number of courses that are available to all University of Malta staff.

Funds are made available through the Academic Work Resources Fund for attendance at conferences or courses, purchase of books or journals, electronic equipment (computing equipment) and to cover publication costs.

## Quality Assurance Structure

An external visiting Examiner from a University with an IBMS accredited programme is approved by the Visiting Lecturers and External Examiners Committee (VLEEC) for 3 years. Following an annual visit to the University to ensure that standards comparable to those in other accredited courses are maintained, the external examiner submits a report to Rector with possible recommendations for improvements.

Every assessment has a Board of Examiners approved by the Faculty Board. For each exam there are at least one examiner, a reviewer and a Chairperson. In the case of a revision of paper an additional examiner is also available.

At the end of each academic year, a Board of Examiners reviews the marks of students, oversees progression, the spread of marks, quality of responses or work submitted, and proposes the classification of the degree for each student to the Faculty Classification Board.

The Board of Studies includes members from the Department of Pathology at Mater Dei Hospital who are also on the teaching staff, the Chairperson of the Department of Pathology

(effectively the main employer) is also a member of the board, as well as other academic members of staff and two student representatives. The head of department chairs the Board. The Board discusses developments in the course, student requests for extensions and student feedback, the standard of the teaching programme and any other relevant matters. The Board also recommends changes to the programme, following consultation with the relevant teaching staff. Any changes to the course programme require approval by the Faculty Board and by the Programme Validation Committee (PVC) of the University. Changes to the course programme are also reviewed by the IBMS during re-accreditation.

The head of department compiles an annual report summarising the activities of the department and including student numbers, publications and conference attendance as well as dissemination activities. A meeting is held between the Dean and the Head of Department to discuss progress, human resources plans and other resource needs for the course.

An internal audit organised by the University helped to ensure quality of the course programme and departmental procedures.

The BSc (Hons) Applied Biomedical Science programme has been accredited by the Institute for Biomedical Science (IBMS) (UK) since 2001. Re-accreditation occurs every 5 years. Annual Monitoring reports are prepared and submitted to the IBMS (UK).

## Philosophy/Learning Outcomes

The B.Sc. (Hons) degree in Applied Biomedical Science is a co-terminus degree which, upon successful completion, automatically satisfies the Maltese Council for the Professions Complementary to Medicine for State Registration as Medical Laboratory Scientists who are licensed to practise in Pathology labs. The degree course provides a broad base foundation and a multidisciplinary approach encompassing the major areas of medical laboratory science.

## Admission Requirements:

### Knowledge and Skills

The General Entry Requirements include the Matriculation Certificate and Secondary Education Certificate passes at Grade 5 or better in Maltese, English Language and Mathematics(<https://www.um.edu.mt/healthsciences-old/overview?code=UBSCHABSFT-2020-1-0>).

The additional Special Entry Requirements for the B.Sc. ABS (Hons) course, as outlined in the course Bye-Laws (Appendix 3: Bye-Laws B.Sc. Hons - Faculty of Health Sciences 2004; <https://www.um.edu.mt/registrar/documents/regulations/faculties/ihc/d-bachelor/BSch-BL-2005.pdf>), include passes at Advanced Level at Grade C or better in Biology and Chemistry and a pass at Intermediate Level in Physics. From October 2021 the Intermediate level subject can be in Maths (Pure or Applied), IT, Physics or Computing instead of just Physics. Applicants who possess a grade D instead of a grade C in one of the required subjects at Advanced Level

shall be admitted under the condition that if, by the end of the first year of the Course, they do not successfully complete all the requirements to progress regularly to the second year of the Course, they shall be required to withdraw from the Course, and shall neither be entitled to repeat the year nor to progress conditionally as normally permitted under the Principal Regulations.

To be admitted to the course, students are required to submit a recent Police Certificate of Conduct (not more than 6 months old) to the respective Departmental Secretary at the Faculty of Health Sciences.

## Access Arrangements & Equal opportunities

The University provides access arrangements both to students who satisfy the University's entry requirements and wish to continue their education at tertiary level, as well as members of staff who require support during their working time on campus thus ensuring an inclusive community. The University provides reasonable accommodation in order to enable students to choose and follow the academic course they would like to take up.

The guideline document (Appendix 4: The University of Malta Access Arrangements 2018) for Access Arrangements can be found at:

[https://www.um.edu.mt/\\_data/assets/pdf\\_file/0004/378481/UMGuidelinescomplete2018.pdf](https://www.um.edu.mt/_data/assets/pdf_file/0004/378481/UMGuidelinescomplete2018.pdf)

The University provides equal opportunities to all students.

## Credit Transfer

Students who wish to transfer credits need to send a request to the Head of Department. This will be forwarded to the Board of Studies for approval. The Chairperson of the Board of Studies can also approve the request on behalf of the board. Once the approval is issued, the Head of Department forwards a Memo to the Dean, who will then issue the final approval. More information about the Credit Transfer system can be found in the general undergraduate University guidelines (Appendix 5):

[https://www.um.edu.mt/\\_data/assets/pdf\\_file/0010/409852/GeneralRegulationsforUniversityUndergraduateAwards,2019.pdf](https://www.um.edu.mt/_data/assets/pdf_file/0010/409852/GeneralRegulationsforUniversityUndergraduateAwards,2019.pdf).

## Selection Procedures

The BSc (Hons) ABS course is capped at 24 students per year. Should the number of applicants exceed 24, the selection criteria outlined here will be applied (Appendix 6: BSc Hons Applied Biomedical Science Criteria for the Selection of Applicants 2013; [https://www.um.edu.mt/\\_data/assets/pdf\\_file/0008/157058/BScH-Applied-Bio-Med-Science-SelCrit-BL-2012.pdf](https://www.um.edu.mt/_data/assets/pdf_file/0008/157058/BScH-Applied-Bio-Med-Science-SelCrit-BL-2012.pdf)

If less than 24 qualified students apply for admission, mature students over the age of 23 years who do not possess the necessary academic qualifications, can apply to join the course. An interview is held with the Head of Department and another member of the academic staff



to assess motivation and aptitude before a decision is made whether the applicant could be admitted to the course programme.

When applicable, the schedule of interviews for applicants and adult learners can be found here: <https://www.um.edu.mt/healthsciences-old/overview?code=UBSCHABSFT-2020-1-O>

## Student Induction

The first week for first year students is Student Induction week when meetings are organised with the Registrar, the Faculty manager and administrator of programmes, the Dean and the Head of Department.

During these meetings, students are referred to University, Faculty and Department websites which are continuously updated. Students are also given information about registering for courses, add drop periods, the Occupational Health Protocol (OHP) which includes a Health Questionnaire that needs to be submitted by all freshers within the first 2 months of the academic year (Appendix 7: Occupational Health Protocol 2019: [https://www.um.edu.mt/\\_data/assets/pdf\\_file/0018/435231/OHP-IntakeOctober2020.pdf](https://www.um.edu.mt/_data/assets/pdf_file/0018/435231/OHP-IntakeOctober2020.pdf)). As part of the OHP, students are also instructed to plan and take any necessary vaccinations and relevant blood tests to show immunity.

A number of tours are organised for freshers, these are generally organised by the student organisations (the KSU and the MHSA). These include tours of the Faculty and faculty labs, tours of the library and tours of Mater Dei Pathology labs where placements will be held in third and fourth year.

## Assessment

The course has a variety of types of assessments that include assignments, lab reports, poster presentations, research proposal and dissertation, end of semester exams and synoptic exams. The mode of assessment for each study unit can be found at the end of the study unit description. The course programme describes when each study unit is assessed. Descriptions of the Board of Examiners and regulations on assessments are found in the following guidelines:

Appendix 5: General Regulations for University Undergraduate Awards 2019 available at: [https://www.um.edu.mt/\\_data/assets/pdf\\_file/0010/409852/GeneralRegulationsforUniversityUndergraduateAwards,2019.pdf](https://www.um.edu.mt/_data/assets/pdf_file/0010/409852/GeneralRegulationsforUniversityUndergraduateAwards,2019.pdf); and

Appendix 8: Assessment Regulations 2009 available at: [https://www.um.edu.mt/\\_data/assets/pdf\\_file/0010/24868/Assessment\\_Regulations.pdf](https://www.um.edu.mt/_data/assets/pdf_file/0010/24868/Assessment_Regulations.pdf).

Marks will be deducted for lab reports that are handed in late with 5 marks deducted per day until after 7 days the student gets a zero mark. The University Guidelines on Plagiarism and Collusion (Appendix 9: University Guidelines for Plagiarism 2020; [https://www.um.edu.mt/\\_data/assets/pdf\\_file/0007/436651/UniversityGuidelinesonPlagiarism.pdf](https://www.um.edu.mt/_data/assets/pdf_file/0007/436651/UniversityGuidelinesonPlagiarism.pdf)

f) will be followed in the event that any plagiarism or collusion is suspected in any type of assessment. Dissertations and assignments may be passed through Turnitin to assess plagiarism. A resource pack on how to avoid plagiarism can be found in Appendix 10 (How to Avoid Plagiarism by the Faculty of Education 2020;

<https://www.um.edu.mt/operatingprocedures/doc/EDU-012-01>)

## Pastoral Care

The University of Malta has a Chaplaincy which provides spiritual support and pastoral care to staff and students of any faith and none. The Chaplaincy is open every week day between 7:00 and 20:00, and has a dedicated Facebook page. More information on the Chaplaincy can be obtained on <https://www.um.edu.mt/services/health-wellness/chaplaincy>.

## Student Support Mechanisms

The University of Malta has a Health and Wellness Centre that is aimed at enhancing the wellness of staff and students. Several support units form part of the Health and Wellness Centre, and professional support is given in the form counselling service, Chaplaincy, student advisory services, drug-related issues, mental health services, nutritional advice, sexual health clinic, tobacco cessation support, traditional Chinese medicine, and access disability support. A complete guideline for persons with access arrangements can be found in Appendix 4. More information is provided on the University of Malta's Health and Wellness Centre website: <https://www.um.edu.mt/services/health-wellness>.

## Student Representation System

Each Faculty at the University of Malta has student representatives at course level, on Faculty Board, as well as on Council and Senate of the University. Student representatives participate and attend Board meetings and other functions and present the students' voice. Students may contact their representative should they require advice or to file for the representative to deal with a complaint. More information can be found on: <https://www.um.edu.mt/healthsciences/students/studentreps>.

Students can join the Malta Association of Biomedical Scientists as Associate Members, Staff can join as Council members if registered with the CPCM. Further information can be found at <https://www.biomedicalsciencemalta.org/>

## Institute for Biomedical Science (IBMS) Membership

Students and staff can become members of the IBMS by registering through the website (<https://www.ibms.org/join/join-ibms/>). IBMS registered undergraduate students who graduate with a First Class Honours also have the opportunity to be nominated for the President's IBMS award. The award is presented to the successful graduate by an IBMS registered medical laboratory scientist.

## Further Useful Information

A number of appendices are available with useful information on Instructions for Student Practicals (Appendix 11), Writing a Lab Report (Appendix 12), Training Portfolio for Placements (Appendix 13), Guidelines for Special Projects (Appendix 14), the Medical Laboratory Science Code of Practice (Appendix 15), and the Dress Code for Mater Dei Hospital (Appendix 16).

## List of Appendices:

- Appendix 1: BSc ABS Course Programme 2020-2021
- Appendix 2: Detailed ABS Course Description 2020-2021
- Appendix 3: Bye-Laws BSc Hons – Faculty of Health Sciences 2004
- Appendix 4: The University of Malta Access Arrangements 2018
- Appendix 5: General Regulations for University Undergraduate Awards 2019
- Appendix 6: BSc Hons Applied Biomedical Science Criteria for the Selection of Applicants 2013
- Appendix 7: Occupational Health Protocol 2019
- Appendix 8: University Assessment Regulations 2009
- Appendix 9: University Guidelines of Plagiarism 2020
- Appendix 10: How to avoid Plagiarism by the Faculty of Education 2020
- Appendix 11: Instructions Student Practicals 2020-2021
- Appendix 12: Writing a Lab Report 2010
- Appendix 13: Training Portfolio for Placements 2020-2021
- Appendix 14: Guidelines for Special Projects 2020-2022
- Appendix 15: Medical Laboratory Science Code of Practice
- Appendix 16: MDH Dress Code 2008