



**HUMANITAS UNIVERSITY**

**Academic Regulations**

**Degree Programme in Biomedical Laboratory**

**Techniques**

(qualifying licence to practise for the healthcare profession  
of Biomedical Laboratory Technician)

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## **Foreword – Scope**

The degree programme in Biomedical Laboratory Techniques (qualifying licence to practise for the healthcare profession of Biomedical Laboratory Technician) is part of the class of degrees in technical health professions (L/SNT3), lasts three years and requires the acquisition of 180 university credits for the degree to be awarded. These regulations govern its academic specifications and, with due respect for the freedom of teaching and the rights and duties of teaching staff and students, specify its organisational aspects, in analogy with the relevant academic specifications. These Regulations are drawn up according to the provisions of Article 11 of Ministerial Decree 270/04, the Ministerial Decree of 19 February 2009 and the University Academic Regulations of Humanitas University.

### **Article 1 – Training objectives**

The aim of the degree programme in Biomedical Laboratory Techniques is to train technical professionals capable of independently carrying out biomedical and biotechnological analyses for diagnostic and research purposes through the acquisition of functional technical, teaching and management competencies, in order to support the development of state-of-the-art laboratory pathways. Graduates in Biomedical Laboratory Techniques are responsible for the duties laid down in Ministerial Decree No. 745 of 26 September 1994, as amended and supplemented. Ministerial Decree 745/1994 defines Biomedical Laboratory Technicians as health professionals who carry out, independently or in collaboration with other health professionals, analytical and research laboratory activities relating to biomedical and biotechnological analyses particularly in the fields of biochemistry, microbiology and virology, pharmacotoxicology, immunology, clinical pathology, haematology, cytology and histopathology.

At the end of their training pathway, graduates in Biomedical Laboratory Techniques must have acquired knowledge (knowing), competencies (knowing how to do) and interpersonal skills (knowing how to be) that enable them to:

- work in an environment centred on a culture of quality assurance, integrating operations, services and infrastructure into a system that meets applicable regulatory standards, professional guidelines and clinical requirements to ensure and maintain quality and continuously improve laboratory services
- describe, prepare and implement the main laboratory procedures, in both diagnostic and research fields, adhering to regulated quality and safety standards and contributing to the continuous improvement and optimisation of techniques and protocols, including homemade ones
- use, calibrate, and maintain laboratory equipment, including testing its functionality, and basic repair and maintenance procedures

- manage the entire laboratory workflow, from warehouse management to the pre-analytical, analytical and post-analytical phases, including computer parameterisation and retrieval of data for analytical purposes
- analyse and interpret data derived from their activities, framing them in a context of both quality control and scientific research and clinical investigation
- interact competently, ethically and constructively with colleagues and other health professionals, as well as with all those who use the laboratory's services
- contribute to the training of new colleagues, in a system that encourages professional and personal growth and emphasises direct, practical learning in the field

### **Article 2 – Employment opportunities**

The qualification allows access to first-level master's programmes, advanced-level courses and second-cycle degree programmes in the LM/SNT3 class (class of Technical Health Profession Sciences), without academic debits, and in other classes in accordance with the procedures laid down in the respective University regulations. Graduates in Biomedical Laboratory Techniques have the possibility of registering with the TSRM PSTRP (the order of medical radiographers and technical, rehabilitation and prevention health professions) in the biomedical laboratory health technician register.

Working environments of interest for graduates include: hospital and non-hospital laboratories belonging to the Italian National Health Service, private facilities or scientific institutes for research, hospitalisation and healthcare (IRCCS); companies operating in the field of laboratory diagnostics; university and non-university biomedical and biotechnological research laboratories; and quality control laboratories in the biomedical field and the pharmaceutical industry.

### **Article 3 – Access to the degree programme**

To be admitted to the degree programme in Biomedical Laboratory Techniques, students need to hold a secondary school diploma, or another qualification obtained abroad and recognised as suitable pursuant to Article 6 of Ministerial Decree no. 270 of 22 October 2004.

Access to the degree programme is planned nationally in accordance with Law No. 264 of 2 August 1999. The intake of students to the first year of the programme is defined annually by decree of the MIUR (the Italian Ministry of Education, University and Research), based on the university's assessment of its educational capacity and on the requirements expressed by the Lombardy Region and the relevant ministry with regard to the need for medical staff with the professional profile of the class.

The admission test is prepared annually by the university, and registration takes place based on the ranking resulting from the admission test.

The entry requirements for the degree programme in Biomedical Laboratory Techniques include a health assessment, in accordance with the procedures laid down by the current regulations concerning fitness to perform the functions of the specific professional profile.

#### **Article 4 – Academic specifications**

The academic specifications for the degree programme in Biomedical Laboratory Techniques, established in accordance with current legislation, are an integral part of the Humanitas University teaching and learning regulations.

The teaching committee approves the academic specifications in accordance with current law, which provides for their subdivision into basic, characterising, related or complementary teaching and learning activities, and other activities. The specifications provide for 18 examinations leading to the acquisition of 96 university credits in various subject areas, to which the relevant scientific disciplinary fields relate. The remaining credits will be acquired through other teaching and learning activities such as internships, seminars, professionalising workshops, and the final examination for graduation.

The first year is primarily devoted to the acquisition and development of the management and technical capacities required for initial laboratory attendance (basic skills and technical competencies), through lectures and professionalising activities in the laboratories of the relevant healthcare facility.

During the second and third years, students will study these topics in greater depth, supplementing them with all the knowledge and competencies necessary for their internship and work in the specialised field. This applies not only to the classic laboratory macro-areas identified in the care sector, but also to the areas of basic and specialist research in which Biomedical Laboratory Technicians may be employed. Particular emphasis will be placed on acquiring knowledge and competencies in advanced molecular diagnostic techniques and processes, with courses designed specifically to serve as an integration between the world of hospital diagnostics and that of research. Each year, the teaching committee approves the teaching and learning activity planning, defining its structure and who is responsible for teaching. The list of the subjects constituting the Biomedical Laboratory Techniques degree curriculum, the number of credits and the indication of the scientific disciplinary sectors are set out in Table I, which forms an integral part of these regulations.

The final examination for graduation has the value of a state examination, conferring a licence to practise.

#### **Article 5 – Duties of teaching staff**

Acceptance of the teaching assignment by all degree programme teaching staff entails the observance of teaching duties according to higher education criteria, compliance with the degree programme regulations, and participation in all activities pertaining to the teaching assignment, including participation in examination committees.

#### **Article 6 – Teaching and Learning and Professionalising Activity Coordinator**

The teaching and learning and professionalising activity coordinator is appointed by the CEO on the recommendation of the head of the degree programme. Only staff with the professional profile of the degree programme may be appointed.

Among the functions assigned to the teaching and learning and professionalising activity coordinator are:

- responsibility for the design and organisation of the internship, and supervision of the suitability of the facilities accredited as affiliated theoretical and practical teaching structures
- responsibility for the correct implementation of the training planning
- coordinating professionalising teaching and learning activities between the theoretical and clinical teaching staff
- proposing clinical tutors
- managing the induction and training development of degree programme tutors
- coordinating tutoring activities

#### **Article 7 – Tutoring activities**

According to the provisions of the University Academic Regulations, tutoring for the degree programme in Biomedical Laboratory Techniques is provided by clinical tutors.

The teaching and learning coordinator puts forward the names of the clinical tutors to the head of the degree programme, who takes them to the teaching committee for approval. Clinical tutors are chosen from among medical professionals with a professional profile relevant to the specific degree programme based on their clinical and teaching competencies.

The main functions of the clinical tutor are:

- using appropriate teaching methods to help students develop technical and interpersonal competencies, directly in a clinical setting but with support and supervision
- guiding students during clinical practice, making them active participants in the training process
- assessing the achievement of the training objectives of the students' professionalising activities and contributing to the certification evaluation

The optimal student/tutor ratio is defined on a case-by-case basis, as part of internship planning, by the teaching and learning coordinator.

## **Article 8 – University credits**

The unit of measurement of the total commitment required of students in completing each teaching and learning activity, as outlined in the academic specifications relating to attaining the qualification, is the university credit.

The degree programme in Biomedical Laboratory Techniques requires a total of 180 university credits, spread over three years.

Each university credit corresponds to 25 hours of student work broken down as follows:

- a. 10 hours dedicated to lectures or equivalent teaching and learning activities, the remaining 15 hours to personal study
- b. 8 seminar hours, the remaining 17 hours dedicated to personal study
- c. 20 hours of internship and practical activities, the remaining 5 hours dedicated to personal reflective study

Students acquire the credits corresponding to each course by passing the relevant examination or, for activities not involving an examination, by means of certification by the teaching staff.

Students acquire the credits corresponding to internships upon completing each academic year, by being awarded a positive evaluation by the appropriate internship evaluation committee.

## **Article 9 – Typology of teaching and learning activities**

The degree programme in Biomedical Laboratory Techniques can make use of the following types of teaching and learning activities:

- *Lectures*: treatment of a specific topic identified by a title, given by one or more teaching staff members in the classroom and addressed to all students.
- *Active teaching approaches*: active learning involves alternative ways in which students participate in their own learning process. These are interactive activities, addressed to small groups of students and coordinated by a tutor, with the aim of facilitating students' acquisition of technical and behavioural knowledge and skills. Learning primarily occurs through problem analysis and the application of the methodological competencies essential for problem-solving and decision-making. This takes place within the context of practical exercises and/or attendance at clinical departments, outpatient clinics or community facilities.
- *Seminars*: thematic in-depth studies, possibly multidisciplinary, aimed at improving specific technical competencies. Seminars may be held by experts in the field and teaching staff from within or external to Humanitas University.

- *Exercises*: practical workshops on the development of technical competencies, including advanced skills, through virtual reality simulations.
- *Journal club*: seminars presenting articles from the scientific literature.
- *Clinical internship*: a practical teaching and learning activity, corresponding to the standards defined at European level, carried out under the supervision and guidance of specially assigned professional tutors, coordinated by a teacher with the appropriate professional profile.

#### **Article 10 – Curricular courses**

The curricular courses or teaching may be extended over one or more semesters and may include non-formal teaching and learning modes, in addition to lectures and/or seminars.

Even when extended over several semesters and/or taught by several teaching staff members, including ones from different scientific disciplinary sectors, curricular courses culminate in a single examination with a single grade expressed in thirtieths.

#### **Article 11 – Internship activities**

Internship activities are an integral and qualifying part of professional training, aimed at enabling students to acquire specific skills. Clinical internships are an indispensable way of learning professional competencies, through practical experimentation and the integration of theoretical and scientific knowledge with professional and organisational operational practice, with a view to progressively acquiring functional and managerial autonomy.

The structure and organisation of internship activities are delegated to the teaching and learning coordinator, who prepares a detailed plan of their implementation. Internship activities take place under the guidance and responsibility of clinical tutors.

In addition to existing partner healthcare facilities, the teaching and learning coordinator may suggest, to the university bodies, non-university, hospital and/or local care facilities at which the internship may take place once their didactic suitability and consequent partnership has been evaluated.

Attendance at internships is compulsory and cannot be substituted. It is certified and evaluated by the clinical tutor by filling in the appropriate evaluation form. The teaching and learning coordinator monitors the achievement of the planned number of internship hours for every single student.

The internship evaluation grade, expressed in thirtieths, includes the attendance assessment and the outcome of the final examination at the end of each year of the programme.

Internships undertaken abroad under the Erasmus programme will be assessed based on the ECTS recognition system.



Students on the degree programme in Biomedical Laboratory Techniques are required to attend a compulsory health and safety training course, pursuant to Article 37 of Legislative Decree no. 81 of 9 April 2008, with a final test and issue of the relevant certificate. The course will take place before the start of the internship activities at the times and with the criteria indicated by the university. This training course does not entitle the holder to acquire any university credits.

### **Article 12 – Elective teaching and learning activities**

The degree programme in Biomedical Laboratory Techniques coordinates the provision of elective teaching and learning activities, either standalone or interconnected in "homogeneous learning paths". These activities are conducted through lessons, seminars, interactive courses in small groups, and clinical internships. Students must attend elective activities equivalent to a total number of 6 university credits over the three years.

Elective activities can also include elective internships in research facilities or in particular clinical settings; participation in conferences and congresses; and other international study programmes. Elective activities that cannot be planned during the annual assignment of teaching hours and duties must be submitted to the teaching committee for approval.

The acquisition of language and computer skills beyond those required by these regulations, and potentially obtained prior to enrolment in the degree programme, will be regarded as an elective activity chosen by the student.

The evaluation of individual elective teaching and learning activities is not expressed in a numerical grade but only in the recognition of the corresponding credits, subject to certification of attendance at the activity. The timetable of elective teaching and learning activities will be published in good time, generally together with the timetable of compulsory teaching and learning activities.

### **Article 13 – Compulsory attendance**

Attendance at all theoretical, practical and internship teaching and learning activities included in the study plan is compulsory.

In order to be allowed to take the relevant assessment, students must have attended at least 75% of the number of hours of teaching and learning activities scheduled for each course. The internship activity must normally be completed at 100 per cent, with the possibility of catching up in the event of justified absences, subject to planning by the teaching and learning coordinator. The teacher in charge of the programme and the teaching and learning coordinator are responsible for checking that students have complied with the compulsory attendance requirement.

Should a student fail to achieve the stipulated percentage of attendance hours, they are ineligible to take the examination, other than in exceptional cases authorised by the teacher and the teaching and learning coordinator.

## **Article 14 – Assessments**

Pursuant to the University Academic Regulations, every course that is not an elective course, including integrated courses, culminates in a single, individual examination.

The committees formulate their judgement through a grade expressed in thirtieths. The examination is deemed to have been successfully passed with an evaluation between a minimum of 18/30 and a maximum of 30/30, to which honours may be added. Passing the examination results in the allocation of the university credits related to the course. In addition to the final examination, continuous assessment tests may be set to evaluate the effectiveness of the learning and teaching processes with regard to particular objectives, without a registered mark.

In accordance with statutory regulations, examination committees are appointed by the teaching committee on the recommendation of the head of the degree programme and the teaching and learning coordinator and are composed of at least two teaching staff members. The assessment methods (oral interview, written and practical tests, etc.) are defined by the teaching staff of each course and must be communicated to the students concurrently with the delivery of the course syllabus at the start of the academic year/semester. The contents of the assessment must correspond to those of the programmes effected.

Oral tests are public, and written tests must provide for the possibility of verification by the students. In the case of written tests, students may withdraw at any point in the entire length of the test. In the case of oral tests, students may withdraw at any point up to the moment before a written record is made of the final evaluation. Students have the right to reject the proposed grade. The committee must always make a written record of examinations even in the event of failure or withdrawal by a student.

## **Article 15 – Examination periods and dates**

Examinations for current students take place during specific periods when other teaching and learning activities are suspended. During these periods, clinical internship activities may still be carried out.

There are three examination periods:

- from the end of the first semester courses to 28 February
- from the end of the second semester courses to 31 July
- from 1 September to 30 September, except for those enrolled in the third year who have completed attendance at all the teaching and learning activities set out in the curriculum, who may take examinations until 31 January

The examination dates are set at least 60 days in advance of the tests. The timetable must be agreed between the teaching staff of the courses in the same semester in order to avoid overlapping and render it as easy as possible for students to make use of the examination dates. The length of each

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exam date must be such that all students who have planned to do so may take the examination on that date.

Without prejudice to the provisions on compulsory attendance and prerequisites, an examination may be taken in any examination period starting from the one immediately following the end of the relevant course.

The professionalising internship examinations take place in the period from 1 to 30 September.

### **Article 16 – Progression and status of students repeating/outside the prescribed course timeframe**

Students who have an academic debit of 10 or more credits and have not passed the clinical internship, which is considered a compulsory examination, are enrolled as repeat students in the year it relates to. The clinical internship evaluation committee's judgment of insufficiency imposes compulsory attendance of the entire annual schedule of clinical internship experiences planned for that year.

Students who accrue 180 university credits in accordance with the procedures set out in the degree programme academic regulations, including those relating to the preparation of the final examination for graduation, are allowed to take the final examination and obtain the qualification, regardless of the number of years they have been enrolled at the university.

To take examinations, students must comply with the following prerequisites:

- **Diagnostic Methods in Pathological Anatomy** requires the passing of:
  - Cell and Organ Morphology
- **Diagnostic Methods in Clinical Microbiology** requires the passing of:
  - Immunology, Pathology and Microbiology
- **Diagnostic Methods in Clinical Pathology** requires the passing of:
  - Chemistry and Biochemistry
- **Diagnostic Methods in Medical Genetics** requires the passing of:
  - Molecular Biology and Elements of Genetics
- **Advanced Diagnostics and Research Methods** requires the passing of:
  - Diagnostic Methods in Pathological Anatomy
  - Diagnostic Methods in Clinical Microbiology

### **Article 17 – Final examination and awarding of qualification**

Pursuant to Article 7 of the Interministerial Decree of 19 February 2009, the final examination for graduation, which has the value of a state examination and confers a licence to practise, consists of:

- a practical test during which students must demonstrate that they have acquired the theoretical and practical, and technical and operational knowledge and skills of the specific professional profile
- preparation of a written thesis and its oral defence

The thesis must be written under the guidance of a supervisor.

The dates are set by decree of the Ministry of University and Research, in agreement with the Ministry of Health, in two nationally defined sessions.

In order to be admitted to the final examination for graduation, it is necessary to have obtained all the credits in the teaching and learning activities set out in the study plan, including those relating to internship and seminar activities. Six university credits are allocated to the preparation of the thesis. The final mark is expressed in hundredths.

#### **Article 18 – Obsolescence of credits and loss of student status**

A student who interrupts their enrolment in the degree programme for six consecutive academic years or has not fulfilled attendance obligations, or has failed examinations, must apply for the credits previously acquired to be validated. This request is assessed by a special committee appointed by the teaching committee. The special committee will present its assessment to the teaching committee.

1. The status of students who fail examinations, or who interrupt or suspend their studies for a period of more than eight consecutive academic years, will lapse. Students whose status has lapsed may, after passing the admission test, re-enrol in the academic degree programme. To this end, and at the request of the person concerned, the teaching committee will proceed to recognise the credits acquired previously, after checking that they are not obsolete.
2. The status of students who have passed all their examinations and who are in default only of their degree examination does not lapse.

#### **Article 19 – Incoming transfers from other universities**

Students coming from another academic degree programme who wish to apply for transfer to the Biomedical Laboratory Techniques programme must pass the admission test and be placed in the ranking.

Those wishing to transfer from Biomedical Laboratory Techniques degree programmes at other universities may apply to the call for applications that the university publishes after checking the number of places available.

Applications for transfer from Biomedical Laboratory Techniques degree programmes at other universities must include all the documentation needed to evaluate the students' university credits.

These requests are assessed, based on available places, by a special committee for transfers and previous qualifications, appointed by the teaching committee.

After hearing the committee's opinion, the teaching committee recognises the appropriateness of the credits acquired and reaches a decision on their recognition, allowing students to enrol in the relevant year, pursuant to current legislation and the university academic regulations.

#### **Article 20 – Recognition of credits acquired in other degree programmes**

Students must submit their request for recognition of credits acquired in a different degree programme according to the deadlines and procedures indicated by the student office at the beginning of the academic year. These requests are assessed by the teaching staff of the courses for which recognition is sought.

After hearing the opinion of the teaching staff, the teaching committee decides on the recognition of credits acquired in previous programmes.

#### **Article 21 – Recognition of degrees obtained abroad**

Students wishing to apply for recognition of a degree obtained abroad must submit an application to the student office, enclosing the complete course of study, a detailed syllabus of university examinations taken, and any other relevant documentation (in certified translation). The qualifications submitted by students are assessed by a special committee appointed by the teaching committee.

#### **Article 22 – Evaluation of teaching effectiveness and efficiency**

Like all the university's other degree programmes, the academic degree programme in Biomedical Laboratory Techniques reviews the efficiency and effectiveness of its study programme every semester, through the quality assurance coordinator and in agreement with the university's evaluation committee, with particular regard to:

- organisational efficiency of the academic degree programme and its academic bodies
- quality and quantity of services made available to students
- ease of access to information related to each area of teaching and learning activity
- effectiveness and efficiency of teaching with reference to both formal and non-formal theoretical activities and to professionalising practical internship activities
- teaching and learning activities of the teaching staff in the assessment of students
- quality and organisation of tutoring assistance to students
- students' average educational performance, determined based on their academic achievements and the constancy of their progression through the university
- opinion questionnaires, whose anonymity is guaranteed

The results of the evaluation are presented to the University Evaluation Committee, which reports annually to the Board of Directors

### **Article 23 – Joint teaching staff / student committee**

The joint teaching staff / student committee is responsible for assessing the correspondence of the results achieved with the teaching and service objectives, using student opinion surveys and other available institutional sources.

In particular, it assesses:

- the expected learning outcomes and the competencies necessary to fulfil employment prospects
- the effectiveness of the teaching and learning activity, teaching and examination methods, equipment and the logistics system
- the effectiveness of remedial actions and the transparency of the information published about the academic degree programmes

The committee is made up of an equal number of teaching staff and students, appointed in accordance with procedures defined by the applicable regulations, and taking care that the student component is adequately representative.

The committee prepares an annual report containing recommendations for improving the quality and effectiveness of the academic bodies, particularly concerning achieved learning outcomes, in relation both to employment prospects and personal and professional development, and to the needs of the economic and production system.

The recommendations are prepared after monitoring the relevant indicators referred to in Article 12, paragraph 4 of Legislative Decree No. 19/2012. They are also based on questionnaires or interviews with students duly informed about the university's quality system.

The joint teaching staff / student committee's report is submitted to the Quality Assurance Unit and the Internal Evaluation Committee by 31 December each year.

**Table I: Study plan**

Year	Semester	Integrated course	SDS	Module	TLA	Subject area	UCs
1	1	Chemistry and biochemistry	BIO/10	Chemistry and biochemical propaedeutics	Basic	Biomedical sciences	3
			BIO/10	Biochemistry	Basic	Biomedical sciences	2
	1	Molecular biology and elements of genetics	BIO/13	Molecular biology	Basic	Biomedical sciences	3
			MED/03	Human genetics	Basic	Biomedical laboratory sciences and techniques	2
	1	Cell and organ morphology	BIO/13	Cell biology	Basic	Biomedical sciences	2
			BIO/17	Histology	Basic	Biomedical sciences	2
			BIO/09	Physiology	Basic	Biomedical sciences	2
			BIO/16	Human anatomy	Basic	Biomedical sciences	1
	1	Immunology, pathology and microbiology	MED/04	Immunology	Basic	Biomedical sciences	2
			MED/04	General pathology	Characterising	Biomedical laboratory sciences and techniques	2
			MED/07	General microbiology	Characterising	Biomedical laboratory sciences and techniques	2
	1	Safety and protection in the workplace	MED/42	General and applied hygiene	Characterising	Prevention and health services sciences	2
			MED/42	Technical sciences in safety and protection	Characterising	Prevention and health services sciences	1
			MED/44	Occupational medicine	Characterising	Prevention and health services sciences	1
			MED/36	Radiation protection	Characterising	Interdisciplinary	1

						and clinical sciences	
2	Mathematical, physical and computer sciences	FIS/07	Physics applied to medical sciences	Basic	Propaedeutic sciences	1	
		MED/01	Medical statistics	Basic	Propaedeutic sciences	2	
		INF/01	Informatics	Basic	Propaedeutic sciences	2	
		MED/46	Elements of electronics	Related and complementary	Related and complementary	1	
2	Laboratory management organisation	MED/42	Organisational models in healthcare	Characterising	Prevention and health services sciences	1	
		BIO/12	Laboratory organisation	Basic	Biomedical sciences	2	
		MED/46	Sampling techniques and management of the extra-laboratory pre-analytical phase	Characterising	Biomedical laboratory sciences and techniques	1	
2	1st year internship	MED/46	Internship	Internship	Internship	13	
2	1st year professional workshop	MED/46	Workshops	Workshops	Workshops	1	
2	Foreign language – scientific English	L-LIN/12	Language	Other activities	For knowledge of at least one foreign language	3	
2	Elective activities		Elective activities	Other activities	Elective activities	2	
2	1st year seminars		Seminars	Other activities	Seminars	2	
2	1	Diagnostic methods in pathological anatomy	MED/08	Pathological anatomy	Characterising	Biomedical laboratory sciences and techniques	2
			MED/08	Cytopathology and cervical cytology	Characterising	Biomedical laboratory sciences and techniques	2
			MED/08	Histopathological, immunohistochemical and ultrastructural diagnostics	Characterising	Biomedical laboratory sciences and techniques	2
			MED/08	Anatomy, histology	Characterising	Biomedical	2



				and cytology methods and techniques		laboratory sciences and techniques	
			MED/46	Management of pre-analytical phase in pathological anatomy	Characterising	Biomedical laboratory sciences and techniques	1
			MED/08	Autopsy techniques	Related and complementary	Related and complementary	1
1	Diagnostic methods in clinical microbiology	MED/07		Clinical microbiology	Characterising	Biomedical laboratory sciences and techniques	3
		MED/17		Infectious diseases	Related and complementary	Related and complementary	2
		MED/07		Diagnostic microbiology methods and techniques	Characterising	Biomedical laboratory sciences and techniques	1
		MED/46		Management of pre-analytical phase in microbiology and virology	Characterising	Biomedical laboratory sciences and techniques	1
2	Diagnostic methods in clinical pathology	BIO/12		Clinical biochemistry	Characterising	Biomedical laboratory sciences and techniques	3
		MED/05		Clinical pathology	Basic	Biomedical sciences	3
		MED/05		Clinical pathology methods and techniques	Basic	Biomedical sciences	2
		MED/46		Management of pre-analytical phase in clinical pathology	Characterising	Biomedical laboratory sciences and techniques	1
2	Parameterisation informatics	ING-INF/05		Parameterisation informatics in microbiology and clinical pathology	Characterising	Interdisciplinary sciences	1
2	Diagnostic methods in medical genetics	MED/03		Medical genetics and genomic analysis	Basic	Biomedical sciences	3

			MED/46	Recombinant biotechnology and cell cultures	Characterising	Biomedical laboratory sciences and techniques	1
			MED/46	Molecular biology applied to medical genetics	Characterising	Biomedical laboratory sciences and techniques	1
			ING-INF/05	Bioinformatic analysis of genomic data	Characterising	Interdisciplinary sciences	1
	Annual	2nd year internship	MED/46	Internship	Internship	Internship	22
	1	2nd year laboratory	MED/46	Workshops	Workshops	Workshops	1
	1	Elective activities		Elective activities	Other activities	Elective activities	2
	2	2nd year seminars		Seminars	Other activities	Seminars	2
3	1	Diagnostic methods in transfusion medicine	MED/05	Immunohaematology and transfusion medicine	Basic	Biomedical sciences	2
			MED/05	Immunohaematology and transfusion centre methods and techniques	Basic	Biomedical sciences	1
	1	Blood diseases	MED/15	Haematology	Characterising	Interdisciplinary and clinical sciences	2
			MED/46	Haematological methods and techniques	Characterising	Biomedical laboratory sciences and techniques	1
	1	Pharmacological sciences	MED/41	Anaesthesiology	Basic	First aid	1
			MED/46	Methods and techniques of pharmacology, toxicology and pharmaceutical formulation	Characterising	Biomedical laboratory sciences and techniques	1
			BIO/14	Pharmacological sciences	Characterising	Medical and surgical sciences	1
			BIO/14	Pharmacotoxicology	Basic	First aid	2

2	Advanced diagnostics and research methods	MED/08	Advanced diagnostics in pathological anatomy	Characterising	Medical and surgical sciences	1
		MED/07	Advanced diagnostics in microbiology	Characterising	Biomedical laboratory sciences and techniques	1
		MED/15	Advanced diagnostics in haemato-oncology	Characterising	Interdisciplinary and clinical sciences	1
		INF/01	Digital pathology	Basic	Propaedeutic sciences	1
2	Health care law and organisation	MED/43	Forensic medicine	Characterising	Prevention and health services sciences	1
		IUS/07	Labour law	Characterising	Health management sciences	1
		PSI/01	Psychology and bioethics	Characterising	Humanities and psycho-educational sciences	2
		MED/45	Integration between health professions	Related and complementary	Related and complementary	1
		SECS-P/07	Business economics	Characterising	Health management sciences	1
2	Quality management system	MED/01	Medical statistics	Basic	Propaedeutic sciences	2
		ING-INF/05	Biomedical data management and analysis	Characterising	Interdisciplinary sciences	1
		MED/46	Quality systems and laboratory accreditation	Characterising	Biomedical laboratory sciences and techniques	1
Annual	3rd year internship	MED/46	Internship	Internship	Internship	25
1	3rd year laboratory	MED/46	Workshops	Workshops	Workshops	1
2	Elective activities		Elective activities	Other activities	Elective activities	2
1	3rd year seminars		Seminars	Other activities	Seminars	2
2	FINAL		Final examination	Other activities	For the final	6

		EXAMINATION				examination	
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