UNIVERSITY OF L'AQUILA

Department of Health, Life and Environmental Sciences

Profile of

1st Cycle Degree in
BIOMEDICAL LABORATORY TECHNIQUES

Laurea in
TECNICHE DI LABORATORIO BIOMEDICO

***Programme Leader and Coordinator*: Professor M. Adelaide Continenza**

DEGREE PROFILE OF

Laurea in TECNICHE DI LABORATORIO BIOMEDICO

First Cycle Degree in BIOMEDICAL LABORATORY TECHNIQUES

TYPE OF DEGREE & LENGTH	Single Degree (180 ECTS-credits, 3 years)
INSTITUTION(S)	Università degli Studi dell'Aquila - *University of L'Aquila,* ITALY
ACCREDITATION ORGANISATION(S)	Italian Ministry of Education and Research and Ministry of Public Health Italian Association of Laboratory Technologists A.N.T.E.L. (www.conftecnici.eu), A.I.T.I.C. (www.cadelora.it)
PERIOD OF REFERENCE	Programme validated for 3 years for cohorts starting in October 2014
CYCLE /LEVEL	QF for EHEA: First Cycle; EQF level: 6; NQF for Italy: Laurea

A	PURPOSE
	Graduates of this course are licensed health professionals with a good understanding of the technical procedures needed to use diagnostic methodologies on biologic materials or on individuals, as well as technical care activities in accordance with the Italian *Ministry Decree n.270/2004.* The Bachelor degree in ***Biomedical Laboratory Techniques*** provides the students the knowledge and skills to enable them to better understand the principal elements upon which pathological processes of the developmental, adult and geriatric age are grounded in such a way to support members of the health care team focused on the diagnosis and treatment of human disease. The programme meets the requirements of European and National laws and Directives. Degree holders obtain the credentials for National Certification as "Laboratory Technologists" and to join the Italian Association of "*Professioni Sanitarie dell'Area tecnico diagnostica*", established by Education Ministry Decree n.745/94.

B	CHARACTERISTICS	
1	DISCIPLINE(S) / SUBJECT AREA(S)	Basics on Physics, Applied Biology, Histology, Anatomy, Physiology/ Biochemistry, General and clinical Pathology, Molecular Biology, Genetics/ Technical and Diagnostic Sciences/ Others (English language) (30:30:30:10)
2	GENERAL / SPECIALIST FOCUS	General Laboratory Techniques and Sciences with focus on clinical analysis (genetics, immunology and molecular biology)
3	ORIENTATION	It is an academic degree with a practical based orientation, according to International and National Directives on Allies Health Professions.
4	DISTINCTIVE FEATURES	This degree has a strong component of interdisciplinary learning with other Health Care professionals and in a stimulating research environment. Students have the opportunity to spend a mobility period as exchange students at "De Montfort University" of Leicester (UK).

C	EMPLOYABILITY & FURTHER EDUCATION	
1	EMPLOYABILITY	Upon successful completion of the Programme, graduates are eligible to work as ***Biomedical Laboratory Technologists*** and join the National Associations A.N.T.E.L. (www.conftecnici.eu), A.I.T.I.C. (www.cadelora.it) who have fulfilled the requirements of European Directive ("Professional Qualifications Directive" 2005/36/EC) on the Recognition of Professional Qualifications. Graduates carry out their professional activities in health care facilities, public or private, and in research laboratories (chemical, pharmaceutical, food processing and agrichemical),

		either as employees or freelance workers.
2	FURTHER STUDIES	The Bachelor Degree in ***Biomedical Laboratory Techniques*** normally gives direct access to a Master degree programme in *Health Profession Sciences of (Diagnostic) Techniques*.

D	EDUCATION STYLE	
1	LEARNING & TEACHING APPROACHES	Lectures, group-work, individual study and autonomous learning, inter-professional learning, self-directed study, work placement.
2	ASSESSMENT METHODS	Assessment methods are both Formative and Summative. Formative assessment is a fundamental part of the teaching and learning activities. Throughout the lectures students are encouraged to become independent and self-motivated learners, thriving on challenge and opportunities to think for themselves. At the start of the degree each student is assigned a Tutor who, throughout the studies, provides help in three important areas: supporting academic progress, developing transferable skills and dealing with any welfare issues. Small-group or individual tutorials, run alongside the lecture course and addressing any individual problems, allow the students to consolidate lecture material, as well as test understanding through problem-solving exercises. Summative assessment is performed in several ways, according to the characteristics of each Module. Written exams, oral exams, laboratory and project reports, oral presentations, continuing assessments, course work evaluation, final comprehensive exam. Particular emphasis is given to team work, with a variety of assessment methods of results obtained in either a group or individually (by splitting tasks and assignments), by written reports or a presentation. The aim is to develop a research-orientated approach to a problem and to acquire essential skills that are highly valued by employers and in the profession. During the second and third year the student must work in the laboratories and he carry out experiments focused on specific research themes that will be the topics of their Thesis under the guidance of a tutor/supervisor. The results will be reported in a written text that must possess the characters of originality, exhaustive documentation and scientific investigation, and the final exam, consisting of the presentation of the outcomes to a committee of university professors and experts, aimed to evaluate the acquired knowledge, skills and competences as well as the capacity to be independent in making judgments, updating knowledge and to communicate clearly the learnt concepts. Students are informed of the assessment procedure before the courses start and are also provided with previous examples. The final exam consists of the discussion of a written text and in a practical exam aimed to demonstrate that the candidate has acquired the essential professional skills and competences related to the professional profile. This exam provides the credentials for National Certification as *"Biomedical Laboratory Technologists"* Re-assessment procedures follow the principles decided at institutional level.

E	PROGRAMME COMPETENCES
1	GENERIC
	The degree programme meets the competences and quality assurance procedures required by *Italian Association of Biomedical Laboratory Technologists* established by Italian *Law 14/09/1994* and by the National Higher Education Quality Assurance Agency (AVA) requirements for degree courses at first level. This includes the Generic Competences expected for the first cycle graduated, as follows: — Analysis and synthesis: Knowledge and understanding of the subject area and understanding of the Profession, ability to be critical and self-critical and to make autonomous judgments; — Flexible mind: Ability to make autonomous reasoned decisions and to interact with others in a constructive manner, even when dealing with difficult issues; —Team-working: Ability to work in a team and to interact constructively with others regardless of background and culture and respecting diversity; — Communication skills: Ability to communicate both orally and through the written word in first language and in another European language;

	— Field culture: Ability to apply knowledge in practical situations and to act on the basis of ethical reasoning; — Learning ability: Capacity to learn and stay up-to-date with learning; — Problem solving: Ability to identify, pose and resolve problems in new or unfamiliar environments within broader and multidisciplinary contexts; — Other skills: Ability to evaluate and maintain the quality of work produced.
2	SUBJECT SPECIFIC
	The Programme meets all the Specific Competences as established and agreed in collaboration with the field stakeholders, clustered within the key overarching competences summarized below: *Knowledge and understanding:* - of biological and pathological phenomena, of the principles of the functioning of analytical equipment, of the methodological bases of the analytical process for chemical-clinical-microbiological and clinical pathology tests, (pharmacological-toxicological, pharmaceutical-galenical, biotechnological, immune-haematological, immunometric with radio-immunological method, genetic and anatomical-cyto-histopathological and authoptic tests), as well as the principles of laboratory safety and radioprotection; *Comprehension/understanding*: - ability to identify, analyze and conduct diagnostic procedures using relevant theory, methodology and practical experience; Analysis: - Ability to analyze, assess and evaluate biomedical and biotechnological tests in collaboration with other health care professionals as well as to take actions for the achievement of personnel ethic, social and moral behavioral attitude; *Application:* - Ability to carry out laboratory analysis with respect to biomedical and biotechnological tests, and in particular to biochemistry, microbiology and virology, drug-toxicology, immunology, clinical pathology, hematology and genetic tests in collaboration with the physicians and in accordance with the patient's life, prerequisites, development potential, wishes and expectations; - Ability to check and verify the correct functioning of the used equipment, to take care of ordinary maintenance of the equipment and of the correction of small problems; *Synthesis and Creativity:* - Capacity to provide reasons for, analyze and interpret the chosen actions on the basis of reasoning, decision-making, documentation and evaluation processes; - Ability to plan and adapt instruction, guidance and advice as regards problems with time and equipment management; *Evaluation:* - Ability to perform continuous quality assessment and evaluation of outcomes and results; *Problem managing:* - ability to manage specific diagnostic services and general healthcare services offered to physicians with a focus on health promotion, prevention and resilience; *Communication*: - ability to communicate both verbally and in writing with physicians, relatives, colleagues and other professional groups in multidisciplinary and multi-professional collaboration.

F	COMPLETE LIST OF PROGRAMME LEARNING OUTCOMES
	A newly graduated Bachelor of ***Biomedical Laboratory Techniques*** should be able to: -state the safe limits of equipment operation and report malfunctions to the proper authority; -practice effective communication with physicians and other health professionals; -provide basic patient care, comfort, anticipate physician needs, and patient education; -demonstrate professional conduct and apply legal, social, and ethical responsibilities within the health care environment; -apply basic scientific principles in learning new techniques and procedures; - collect, process, and analyze biological specimens, perform routine clinical laboratory tests in clinical chemistry, hematology/homeostasis, immunology, immunohematology, microbiology, body fluid analysis, and laboratory operations. -perform pre-analytical, analytical, and post-analytical processes and mathematical calculations related to all areas of the clinical laboratory; -perform quality assessment within the clinical laboratory; recognize factors which interfere with analytical tests and take appropriate actions.

Comprehensive Scheme of the First Cycle Degree in *BIOMEDICAL LABORATORY TECHNIQUES*				
YEAR	**CODE**	**COURSE**	**Credits (ECTS)**	**Semester**
I	D0410	Biology and Biochemistry	9	1
	D0413	Histology and Anatomy	6	1
	D0414	Physics and Informatics	10	1
	D0422	Physiology	3	2
	D0423	Medical Laboratory Techniques and Clinical Microbiology	6	2
	Internship I		20	2
II	D0442	Diagnostics and Laboratory Technology	7	1
	D0496	General and Clinical Pathology	7	1
	D4241	Hygiene and Medical Statistics	6	1
	D0500	Cytogenetics and Medical Genetics	4	2
	D3835	Pathological Anatomy Techniques	4	2
	Internship II		20	2
III	D0504	Principles of Pharmacotherapy and Emergency Medicine	6	1
	D0509	Clinical Interdisciplinary Sciences	9	1
	D0513	Applied Technical Medical Sciences	12	2
	D4278	Health Care Management Science Integrated Course	4	2
	D0517	General Psychology	3	2
	Internship III		20	2
	Free choice Course/Courses		6	2
	Other activities (Seminars, Other Labs)		12	1,2
	Thesis		6	2