



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Scienze e Tecnologie Biologiche, Chimiche e Farmaceutiche		
<b>ACADEMIC YEAR</b>	2016/2017		
<b>MASTER'S DEGREE (MSC)</b>	MOLECULAR AND HEALTH BIOLOGY		
<b>SUBJECT</b>	ADVANCED BIOCHEMISTRY		
<b>TYPE OF EDUCATIONAL ACTIVITY</b>	B		
<b>AMBIT</b>	50507-Discipline del settore biomolecolare		
<b>CODE</b>	15454		
<b>SCIENTIFIC SECTOR(S)</b>	BIO/10		
<b>HEAD PROFESSOR(S)</b>	DE BLASIO ANNA	Professore Associato	Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>			
<b>CREDITS</b>	6		
<b>INDIVIDUAL STUDY (Hrs)</b>	98		
<b>COURSE ACTIVITY (Hrs)</b>	52		
<b>PROPAEDEUTICAL SUBJECTS</b>			
<b>MUTUALIZATION</b>			
<b>YEAR</b>	1		
<b>TERM (SEMESTER)</b>	1° semester		
<b>ATTENDANCE</b>	Mandatory		
<b>EVALUATION</b>	Out of 30		
<b>TEACHER OFFICE HOURS</b>	<p><b>DE BLASIO ANNA</b></p> <p>Monday 14:00 16:00 Dipartimento STEBICEF, ed. 16 viale delle Scienze, Palermo</p> <p>Tuesday 13:00 14:00 Aula Teams "ricevimento studenti" link di accesso: <a href="https://teams.microsoft.com/channel/19%3a960f6e49ef91459b83d5f0dae1c43718%40thread.tacvGenerale?groupId=7981a70a-4c99-4814-883f-721b8bac75b6&amp;tenantId">https://teams.microsoft.com/channel/19%3a960f6e49ef91459b83d5f0dae1c43718%40thread.tacvGenerale?groupId=7981a70a-4c99-4814-883f-721b8bac75b6&amp;tenantId</a></p> <p>Thursday 12:00 13:00 Ingegneria Biomedica-Sede di Caltanissetta (via Real Maestranza)</p> <p>Friday 10:00 11:00 Dipartimento FISICA E CHIMICA, aula AP4, ed. 18 viale delle Scienze, Palermo</p>		

DOCENTE: Prof.ssa ANNA DE BLASIO

<b>PREREQUISITES</b>	To fully understand the content and meet the objectives of the course, the student will have property of basic knowledge of Biochemistry. In detail: structure and function of proteins; protein folding; mode of action and regulatory mechanisms of enzymes; signal transduction mechanisms; main metabolic pathways and hormonal control; metabolic interrelationships of major tissues.
<b>LEARNING OUTCOMES</b>	<p>Knowledge and understanding To depth the study on the biochemical mechanisms that govern the main metabolic processes human body's and related pathological changes, taking into account of the most recent advances acquired by basic and clinical research.</p> <p>Capacity understanding of texts and scientific works; capacity to report contents by use of an appropriate terminology.</p> <p>Applying knowledge and understanding The skills acquired during the course will be useful for future professional training in clinical and health field or continue under the research, with particular concern for human health. Particular attention will be given to methods of basic research, the theoretical aspects of the current diagnostic/therapeutic procedures dedicated to the human health care.</p> <p>Making judgments The course aims to guide students to critical and competent learning of the discipline contents.</p> <p>Enable communication The course aimed at developing the students ability to properly define a language on topics covered during the course; to acquire capacity of synthesis and communication also with a non-expert public.</p> <p>Learning Capacity Students will be addressed in the autonomous search for scientific information useful to deep the discussed arguments, to propose new topics and to properly prepare reports and thesis.</p>
<b>ASSESSMENT METHODS</b>	<p>The exam is an oral test.</p> <p>The test consists of an interview, in order to assess the expected student learning of the outcomes for the course. The exam consists of a minimum of four questions, including a topic chosen by the student. Additional secondary questions, will help to assess: the rational and critical learning content; the capacity of exposure and use of an appropriate scientific language; the ability to synthesis and to establish connections between topics; having studied some topics and the ability understanding of scientific texts; knowledge of clinical and related health issues with the subjects of the discipline.</p> <p>The evaluation is expressed in thirtieths.</p> <p>The final evaluation will consist of the maximum score if the student demonstrates that he has the capacity previously described (competence on the covered topics, descriptive capacity; language proficiency; ability to establish connections, deepening of the study ). The student who demonstrates to know the basic content of the discipline and to relate with appropriate language will get a minimum assessment.</p> <p>An "in itinere" evaluations will be help during the course with the aim of explore the learning status and highlight possible gaps.</p>
<b>EDUCATIONAL OBJECTIVES</b>	The course " Advanced Biochemistry " aims to broaden and deepen their knowledge on the biochemical mechanisms that govern major metabolic processes of the human organism and its pathological changes, taking into account the most recent advances acquired by basic and clinical research. This knowledge will provide the basis for the training of experts in the field of clinical biochemistry, useful to monitor the human health.
<b>TEACHING METHODS</b>	Frontal lessons (5 CFU) Laboratory Exercises (1 CFU)
<b>SUGGESTED BIBLIOGRAPHY</b>	Nelson & Cox. I Principi Di Biochimica Di Lenhinger. Zanichelli. VI edizione Siliprandi Tettamanti. Biochimica Medica. IV edizione. Piccin Marks. Biochimica Medica. Ambrosiana Monografie e lavori scientifici indicati dal docente durante il corso

## SYLLABUS

Hrs	Frontal teaching
2	Course presentation and objectives analysis
8	Advances on the knowledge of the metabolic processes: carbohydrate, lipids, proteins and nitrogen bases metabolism. The main metabolic diseases (diabetes, atherosclerosis and obesity). New diagnostic methods and therapeutic perspectives .
4	Liver functional biochemistry. Clinical parameters of liver functions.
8	Biochemistry of blood proteins. The coagulation cascade. The iron homeostasis .
8	Metabolic specializations of the cell: the skeletal and cardiac muscle cells; the erythrocyte, the cancer cell; the stem cell cancer; cancer diagnostic markers .

## SYLLABUS

<b>Hrs</b>	<b>Frontal teaching</b>
4	Special topics: biochemistry of inflammation and immunity; autoimmune diseases. ROS and RNS, oxidative stress and scavengers enzymes. Endoplasmic reticulum stress and cell death pathways (apoptosis, autophagy, anoikis): implications for human health.
6	Protein folding and misfolding diseases
<b>Hrs</b>	<b>Practice</b>
12	Basics of Clinical Biochemistry and Molecular Diagnostics: theoretical/practical aspects of the most advanced diagnostic and therapeutic techniques. Main biochemical methods used in research and in clinical approach: protein assays; SDS-PAGE ; immunofluorescence.