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**COURSE: Clinical Biochemistry and laboratory**

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**ACADEMIC YEAR:2016/2017**

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**TYPE OF EDUCATIONAL ACTIVITY: Characterizing**

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**TEACHER: Dott.ssa Maria Francesca Armentano**

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phone: **0971205626 0971205948**mobile (optional):

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Language: **ITALIAN**

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**ECTS: 8**  
(6 lessons and 2  
tutorials/practice)n. of hours:**72**  
(**48 h** lessons and **24 h**  
tutorials/practice)Campus: Potenza  
Dept./School: **Sciences Dept.**  
Faculty: **DIAGNOSTIC MEDICAL,  
PHARMACEUTICAL AND  
VETERINARY BIOTECHNOLOGY  
(LM-9)**Semester: **I**  
beginning and end  
dates of course:  
03/10/2016-  
31/01/2017

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**EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES**

Objectives of Clinical Chemistry are to enable the student to acquire the basic knowledge (theoretical and practical) to enable them to critically evaluate both the methodologies relevant to Clinical Chemistry and the meaning of the data obtained in relation to the pathological conditions. At the end of the course, the student will be able to:

- describe the diagnostic laboratory, according to the main stages: pre-analytical, analytical and post-analytical
  - describe the diagnostic significance of the main laboratory investigations
  - know the problems related to the preparation of the patient, the collection and knowledge of the samples
  - describe the principles of analytical measurement in Clinical Chemistry
  - Identify the meaning and use of laboratory investigations in connection with diseases of the major organs and systems
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**PRE-REQUIREMENTS**None

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**SYLLABUS****Part I: general problems in the clinical chemistry laboratory**

- Quantities and units of measurement
- Patient preparation and biological materials collection
- Preanalytical variability - Treatment and storage of biological materials
- Analytical variability - General characteristics of the measurement techniques - The lab error
- Quality assurance in laboratory
- Biological variability and reference values
- Nomenclature and reporting

**Part II: laboratory techniques**

- Notes on the methods of separation / Chromatography
  - Electrophoresis and Isoelectrofocusing
  - Immunochemistry
  - Enzymes and enzymatic activity determination
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- Notes on Electrochemistry
  - Turbidimetry and nephelometry
  - Osmotic pressure and osmolality

**Part III: abnormal metabolism**

- Biochemical aspect of anaemia/haemoglobinopathies
- Sodium, water, potassium and ion hydrogen: homeostasis and their disorders
- Clinical enzymology: indices of tissue suffering
- Renal function, normal and pathological
- Functionality of the liver, normal and pathological
- Disorders of carbohydrate metabolism: hyperglycemia and hypoglycemia
- Lipid Metabolism and Cardiovascular Disease
- Tumor markers
- Bone diseases

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**TEACHING METHODS**

The course includes 72 hours of teaching, including Theoretical lessons (48 h) and Laboratory tutorials (24 h); if necessary, for lab tutorials students will be divided into groups (max 20 students per group). If possible, will be carried out technical visits to hospital laboratories.

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**EVALUATION METHODS**

The aim of the written examination is to test the level of achievement of the previously mentioned learning objectives. The assessment method is different for attending and non-attending students. Only students attending the course regularly can carry out two written verification tests, an half-course one and a final one. Overcoming two partial tests is equivalent to the general exam. Partial exams are not compulsory, although they are strongly recommended. The teacher at the beginning of the course will explain the details of evaluation method.

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**TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL:**

- L. Spandrio: Principi e Tecniche di Chimica Clinica Piccin, 2001.
- C. De Marco, C. Cini Principi di Metodologia Biochimica Piccin, 2009.
- L. Spandrio: Biochimica Clinica 3a Edizione, Sorbona, 2000.
- Antonozzi, E. Gulletta: Medicina di Laboratorio – Logica & Patologia Clinica, Piccin 2013
- G. Federici, S. Bernardini, A. Bertoli, P. Cipriani, C. Cortese, A. Fusco, P. Ialongo e C. Milani: Medicina di Laboratorio 2a Edizione, McGraw-Hill, 2003.
- R.A. Sacher, R.A. McPherson: Interpretazione clinica degli esami di laboratorio 11a Edizione, McGraw-Hill, 2001.
- W.J. Marshall, S.K. Bangert Clinical Biochemistry – Metabolic and Clinical aspect 2nd Edition, Churchill Livingstone (Elsevier), 2008.
- Class notes

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**INTERACTION WITH STUDENTS**

At the beginning of the course, after describing the objectives, program and evaluation methods, the teacher will collect the list of students who intend to join the course (name, surname, matriculation number, email).

Office hours:

Monday-Wednesday-Friday: 9:30-13:30; 3A SUD Building, 2<sup>nd</sup> floor, 3A238 room.

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The teacher is always available for contact with the students through their own email.

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EXAMINATION SESSIONS (FORECAST)<sup>1</sup>

Partial test's dates: to be defined

General exam dates : 24/02/2017 10/03/2017 23/06/2017 21/07/2017 15/09/2017 18/12/2017

General exam dates (for students enrolled in supplementary years): 24/02/2017 24/03/2017 23/06/2017  
21/07/2017 15/09/2017 15/12/2017

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SEMINARS BY EXTERNAL EXPERTS YES  NO

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FURTHER INFORMATION

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<sup>1</sup> Subject to possible changes: check the web site of the Teacher or the Department/School for updates.