Degree in Biomedical Laboratory Techniques
Teaching: Clinical practice 2
SSD :MED/46
CFU: 25
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PREREQUISITES
Passed the exam clinical practice 1

LEARNING OBJECTIVES

These are essential goals knowledge of the equipment and methodologies used in laboratory medicine investigations. Another important objective is the knowledge and management of the analytical phase for the processing of biological samples These objectives will be achieved through practical activities in clinical microbiology, transfusion medicine, pathological anatomy, molecular biology and clinical biochemistry laboratories. The practical part foresees an interaction with the professional tutors in order to facilitate learning and improve the ability to face and resolve the main diagnostic questions of laboratory medicine

LEARNING OUTCOMES

(knowledge and understanding)

At the end of this teaching the student will need to know:

- Knowledge and interpretation of analytical controls in daily sessions

-Knowledge of calibrators and interpretation of calibration curves

- Knowledge and interpretation of control charts

-Knowledge of analytical laboratory methodologies applied for laboratory investigations

-Knowledge and correct management of the analytical phase in the microbiology and clinical

virology laboratories, transfusion medicine, pathological anatomy, clinical biochemistry and

molecular biology

- Knowledge of computer systems present in the laboratory

- Knowledge and management of TAT (turn around time)

Applying knowledge understanding

At the end of the course the student will be able to:

Use the laboratory knowledge acquired for the in-depth study of aspects relating to the field of

laboratory diagnostics, to which the student will dedicate himself in the professional activity;

Communications skills
At the end of the course the student must know:
Use scientific terminology, specific in the field of laboratory medicine, in a manner consistent with various laboratory contexts

Making judgements
At the end of the course the student must know:
carry out rough assessments relating to the topics covered in laboratory medicine

These expected learning outcomes are measurable with the final assessment

COURSE SYLLABUS

Clinical biochemistry

-Knowledge of the analytes and methodologies used for their research.

- Knowledge of computer systems present in the laboratory

-TAT (turnaround time)

- Knowledge and interpretation of analytical checks in daily sessions

-Knowledge of calibrators and interpretation of calibration curves

- Knowledge and interpretation of control charts

-Knowledge and execution of blood counts with leukocyte formula and co-coagulation pararmeters

- Chemical and physical examination of urine

- Knowledge and correct management of the analytical and post-analytical phase, with attention to

the validation of the analytical data

Microbiology and virology

-Knowledge of the analytes and methodologies used for their research.

- Knowledge of computer systems present in the laboratory

-TAT (turnaround time)

-Knowledge and interpretation of daily session controls (immunoserology)

-Knowledge of culture media and correct conservation of the same

-Knowledge and application of bacterial seeding methods

-Knowledge of the main colors used (Gram, Ziehl Neelsen, methylene blue and Giemsa)

-Knowledge of the research and identification systems of bacteria present in various biological

fluids (bronchial aspirate, feces, urine, blood culture, sputum, pericardial fluid, peritoneal fluid and

various biological liquids)

-Knowledge and processing of various biological samples (nails, wound pads, bone fragments,

biopsies etc.)

 -Knowledge of the techniques for the processing of cerebrospinal fluid in an emergency regime

-Knowledge about the performance of the antibiogram

-Knowledge of techniques for the detection of aerobic, anaerobic and microaereophilic bacteria

-Knowledge and application of serological methodologies for direct and indirect inquiries for the

identification of bacteria and viruses

- Knowledge and correct management of the analytical and post-analytical phase, with attention to

the validation of the analytical data

Pathological anatomy

-Knowledge on the correct acceptance of biological samples

Knowledge on the correct conservation of tissues

-Knowledge on the processing of fabrics for inclusion in paraffin

-Knowledge on the preparation of histological preparations: inclusion, cutting, hematoxylin eosin staining

-Knowledge for the preparation of urinary samples

-Knowledge for the preparation of cervico-vaginal samples

- Knowledge of the main colors

 -Samples staining according to Pap and May-Grunwald-Giemsa methods

- Knowledge and correct management of the analytical and post-analytical phase, with attention to the validation of the analytical data

Transfusion medicine

Knowledge for the determination of the ABO system and Rh factor

- Knowledge and testing of blood groups. The direct and indirect Coombs technique in erythrocyte immunohematology.

- Knowledge and correct management of the analytical and post-analytical phase, with attention to the validation of the analytical data

Molecular biology

Extraction of nucleic acids DNA and RNA

- Proper conservation of extracted nucleic acids

-PCR Realtime

- Interpretation of realtime PCR curves

- Quality controls

- Knowledge of molecular investigations, for the identification of bacteria and viruses

- Knowledge and correct management of the analytical and post-analytical phase, with attention to

the validation of the analytical data

COURSE STRUCTURE

The course is structured in 625 hours of practical activities, divided into daily 7-hour laboratory activities and scheduled according to the academic calendar. Students will rotate in the microbiology and virology laboratories, transfusion medicine, pathological anatomy, clinical biochemistry and molecular biology. In the aforementioned activities each student will be supported in training by a professionalizing tutor

COURSE GRADE DETERMINATION

The verification of the preparation of the students will take place with a practical exam structured as follows: for each student, there will be an evaluation form in the various training areas, which will contribute to a final evaluation with a minimum score of 12 and a maximum of 20. The remaining 10 points will be awarded by the examination committee, through the practical test in the respective areas. The passing of the exam will be obtained with a score of 18/30 and a maximum of 30/30 with possible praise attributed by the commission with unanimous opinion. The final score derives from the sum of the score on the evaluation form and the practical test. To enter the exam, the student must have totaled at least a minimum of 12 points in the evaluation form. During the test, the examining commission will assess the student's ability to apply the knowledge and ensure that the skills are adequate to support and solve laboratory problems related to clinical biochemistry. The following will also be assessed: making judgments, communication skills (communication skills) and learning skills (learning skills) as indicated in the Dublin descriptors. In the evaluation of knowledge and understanding it has a weight equal to 40%, knowledge and applied understanding ability of 40% and judgment autonomy of 20%

OPTIONAL ACTIVITIES

If the student finds any difficulty in acquiring knowledge in laboratory activities, additional exercises are planned in order to allow the achievement of the objectives of the degree course

READING MATERIALS

The student will be provided with educational material, such as notes and presentations

RESPONSABILE RESORITY

The student reception takes place by appointment by writing or phoning the following contact details:
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