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|------------------|---|----------------|--|
| Course Unit      | Internship in Biomedical Laboratory Sciences II | Field of study | Biomedical Laboratory Sciences         |
| Bachelor in      | Biomedical Laboratory Sciences                  | School         | School of Health                       |
| Academic Year    | 2023/2024                                       | Year of study  | 4                                      |
| Type             | Semestral                                       | Semester       | 2                                      |
| Level            | 1-4   | ECTS credits   | 30.0                                   |
| Code             | 9995-804-4201-00-23                             |                |  |
| Workload (hours) | 810   | Contact hours  | T - TP - PL - TC - S - E 580 OT 30 O - |

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Antonio Jose Madeira Nogueira, Celso Tome dos Santos Lopes, Jose Pedro dos Santos Neves, Josiana Adelaide Vaz, Rossana Pilar Marcelino Correia, Sandra Isabel Nunes Pinto

### Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Develop and deepen knowledge and practices, through the intervention of the Diagnostic and Therapeutic Technician in the areas of Pathological anatomy, Cytological, Thanatological and Public Health.
2. Demonstrate technical and scientific capabilities and practical application of knowledge acquired during the theoretical component / practice course
3. Reveal own ethical and deontological attitudes of professions and be receptive to new concepts, ideas and suggestions
4. Assume an ethical and deontologically correct stance, respecting professional secrecy, maintaining a stance conducive to the social relationship necessary to exercise the profession
5. Contribute to the welfare of the working team, as well as to the effective profitability of the work
6. Organize the time available in order to plan, implement and evaluate effective and efficient, routine techniques in a laboratory
7. Elaborate accurately reports / dossier of all practical activity developed, and research works under the stage
8. Identify and use methods, techniques and essential tools for research

### Prerequisites

Before the course unit the learner is expected to be able to:  
Not applicable

### Course contents

During the internship, students should have contact with the different technical areas, macroscopic registration, tissue processing, tissue inclusion, microtomy, routine staining, cytopathology, frozen sections, histochemistry, Immunohistochemistry. Thanatological technique in the Legal Medicine component. Molecular Biology Techniques. Chemical and microbiological analysis of water, in the Public Health component.

### Course contents (extended version)

1. Macroscopic registration - confirm receive and pack the parts as well as record parts
2. Tissue processing - understand the processing order and change the processors
3. Inclusion of tissues : including in paraffin and guide all types of tissues
4. Microtomy : handling a microtome and cut paraffin blocks with different processed tissues
5. Routine staining (Htaining perform, manually and automatic
6. Cytological technique : understanding types of samples , fasteners, processing and coloring
7. Cytopathology technique : View and diagnose gynecologic cytology and non gynecological samples
8. Frozen tissues and frozen sections - include and guide fresh fixation and staining tissues
9. Additional techniques Diagnoses : histochemistry , immunohistochemistry : manual and automatic
10. Thanatological technique - performing autopsies and dissection of cadavers
11. Public Health - Evaluate the importance of microbiological analysis of water in public health
12. Public Health - Evaluate the importance of chemical analysis of water in Public Health
13. Public Health - Interpret the analytical result of water and food against the Law
14. Molecular Biology - perform PCR techniques, DNA extraction, probes, interpret results.

### Recommended reading

1. Bancroft, J. ; Gamble, M. (2002). Theory and Practice of Histological Techniques, 5th edition. London: Churchill Livingstone
2. Cook D. J. (2006) Cellular Pathology: An Introduction to Techniques and Applications, 2nd ed. UK: Scion Publishing, 2006. ISBN 1-904842-30-
3. Kiernan J. A. (2003) Histological & Histochemical Methods – Theory & Practice, 4rd ed. London: Arnold ISBN 978-1-9048424-2-2
4. Kennedy, Alexander (1977). Basic techniques in diagnostic histopathology. Churchill Livingstone : distributed in the U. S. A. by Longman, Edinburgh [Scot. ] ; New
5. Mendes, B. , Oliveira, J. F. S. (2004). Qualidade da água para consumo humano. Lisboa: Lidel, edições técnicas, Lda

### Teaching and learning methods

The Learning Stage develops in public and private laboratories of APTC and Public Health distributed throughout the country in which students visualize and implement the techniques of the different areas under the supervision of a training supervisor for the local and by area (macroscopic registration, histology, cytology, immunohistochemistry, histochemistry, thanatology and public health) .

### Assessment methods

- Continuous evaluation (by the adviser) - (Regular, Student Worker) (Final)
- Laboratory Work - 80% (Continuous assessment of the internship)
- Reports and Guides - 20% (Internship report)

### Language of instruction

Portuguese, with additional English support for foreign students.

## Electronic validation

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|---|----------------------------|---------------------------------|---------------------------------------|
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| 10-05-2024  | 11-05-2024                 | 14-05-2024                      | 14-05-2024                            |