

**Code: 1433** Methods of Molecular Analysis

**Degree:** 2<sup>nd</sup> cycle - Functional Biology

**Curricular Year:** 1<sup>st</sup>

**Credits:** 6 ECTS

**Semester Course:** 1<sup>st</sup>

**Compulsory**

**Language:** Portuguese/English

**Responsible:** Ricardo Manuel Seixas Boavida Ferreira

**Other lecturer(s):** Manuel José de Carvalho Pimenta Malfeito Ferreira

**Web Site:** <http://www.isa.utl.pt/home/node/3767>

**1. Contact hours:**

**Lectures 28 Lecture/Practicals 14 Practical/Laboratory 28 Others 14 Total 84**

**2. Objectives:**

To provide the students with the theoretical fundamentals and practical aspects of recent and complex techniques required in biological molecular studies

**3. Programme:**

- Detection of biological compounds by Gas Chromatography
- Real time quantitative PCR: gene expression analysis and quantification of gene copy number
- Evolution of DNA sequencing methods and data analysis
- Amplification of cDNA sequences by RACE (Rapid Amplification cDNA Ends)
- *In vitro* search for antiproliferative polyphenols in extracts prepared from Portuguese endemic plants
- Proteomic analysis of human neuroblastoma cells after incubation with plant-derived antioxidant compounds
- Transcriptomic and genomic analyses with DNA microarray technology
- The use of suppressive subtractive hybridization to identify *Vitis vinifera* and *Erysiphe necator* genes that are regulated in response to pathogenicity
- Protein identification by mass spectrometry
- Preparation and individual presentation of a research proposal

**4. Bibliography:**

Scientific articles and copies of the power-point presentations

**5. Assessment:**

- Individual written examination performed at the end of each class (65%)
- Individual presentation and discussion of the research proposal (35%)

**6. Estimated Workload:**

168	Hours
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**7. Last Update:**

14/7/2010
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