BACHELOR 'S PROGRAMME
1st YEAR OF STUDY, 2nd SEMESTER

| | |
|---|---|
| COURSE TITLE | INFORMATIONAL TECHNOLOGIES |
| COURSE CODE | |
| COURSE TYPE | full attendance |
| COURSE LEVEL | 1st cycle (bachelor's degree) |
| YEAR OF STUDY, SEMESTER | 1st year of study, 2nd semester |
| NUMBER OF ECTS CREDITS | 5 |
| NUMBER OF HOURS PER WEEK | 4 (2 lecture hours + 2 seminar hours) |
| NAME OF LECTURE HOLDER | PhD. Cristian ENACHESCU |
| NAME OF SEMINAR HOLDER | PhD. Cristian ENACHESCU |
| PREREQUISITES | Advanced level of English |

**A — GENERAL AND COURSE-SPECIFIC COMPETENCES**

General competences:

→ Achievement of professional tasks efficiently and responsibly, in compliance with the field-specific deontology legislation, with qualified assistance.

→ Effective use of information sources and communication resources and assisted professional training, both in Romanian and in a foreign language.

Course-specific competences:

→ Identification of IT basics use (algorithms, programming languages, specific software, numerical modeling) in the study of Physics.

→ Explanation of the specific steps needed to develop algorithms for solving average difficulty problems

→ Comparison of the results given by numerical models or simulations of physical phenomena with data provided by literature and/ or experimental measurements.

→ Proper use of numerical methods and mathematical statistics in the analysis and processing of specific physical data

→ Elaboration of graphs and reports for explaining and interpreting physical results obtained by statistical methods

→ Critical assessment of a scientific communication, a paper/specialty report with a reduced degree of difficulty.

→ Drafting and presenting scientific reports in the field of Physics by using of new media technologies for communication.

**B — LEARNING OUTCOMES**

Upon successful completion of this course, students will be able to:

→ Use computer applications to write scientific papers, make and perform public presentations.

→ Analyze experimental data, perform graphical representations, and identify the functions that characterize the experimental data

→ Perform analytical calculations and graphical representations of functions with specialized applications.

**C — LECTURE CONTENT**

The architecture of a computer. Components and features. Operating systems.
File types. Coding information. Numerical Representations: binary system, fixed-floating representation, floating-point representation.
Using computer programs for data processing in physics
Using the Internet. Search engines. Searching for scientific information in the ISI system
Writing a scientific paper. Achieving a scientific presentation (oral paper, poster)
Scientific calculations using appropriate programs
Digitizing information. Computer Graphics Elements.
Getting started with creating webpages. HTML.
Viruses and other elements that affect the operation of computers. Legal issues in information technology. Copyright.

**D — RECOMMENDED READING FOR LECTURES**

- http://stoner.phys.uaic.ro/moodle/
- William Stallings Computer organization and architecture. Designing for performance, Prentice Hall, Upper Saddle River, NJ 07458, 2010
- Robert Schifreen– The Web Book: The ultimate beginner's guide to HTML, Oakworth Business Publishing Ltd, 2016

**E — SEMINAR CONTENT**

Familiarize yourself with the work environment. Windows operating system: main features. File types. Creating your own directories. Work with files, save, copy.

| | |
|---|---|
| | Editing documents. Tables, equations, automatic correction. Writing references<br>Making calculations and graphical representations in Microsoft Excel<br>Treatment of experimental data. Rules for data representation<br>Microsoft PowerPoint. Techniques for presenting information.<br>Scientific calculations using appropriate programs.<br>Image Processing in Graphics Programs<br>Creating web pages in HTML.<br>Test |
| F | RECOMMENDED READING FOR SEMINARS |
| | - http://stoner.phys.uaic.ro/moodle/<br>- William Stallings Computer organization and architecture. Designing for performance, Prentice Hall, Upper Saddle River, NJ 07458, 2010<br>- Robert Schifreen– The Web Book: The ultimate beginner's guide to HTML, Oakworth Business Publishing Ltd, 2016<br>https://www.originlab.com/<br>https://www.maplesoft.com/support/help/ |
| G | EDUCATION STYLE |
| LEARNING AND TEACHING METHODS | Lecture, didactic explanation, heuristic conversation, video projection, problem solving method, case studies |
| ASSESSMENT METHODS | • Written tests<br>• Practical tests |
| LANGUAGE OF INSTRUCTION | English |