

COURSE NAME

Name: **COMPUTER SCIENCE**

Code: 101184

Curriculum: **DEGREE IN ENERGY ENGINEERING AND MINERAL RESOURCES**

Year: 1

Name of the module to which it belongs: BASIC TRAINING MODULE

Subject: COMPUTING

Nature: BASIC Duration: SECOND SEMESTER

ECTS Credits: 6

Classroom hours: 60

Face-to-face classroom percentage: 40%

Non-contact hours: 90

FACULTY DETAILS

Name: QUINTANA MURILLO, JOAQUÍN (Coordinator)

Department: MATHEMATICS area: APPLIED MATHEMATICS

Location of the office: EPS Belmez

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SKILLS

CB4 Solve problems within the study area of Mining Engineering.

CB7 Have the necessary learning skills to undertake studies with a high level of autonomy.

CU2 Know and refine the user level of ITs.

CEB3 Basic knowledge on the use and programming of computers, operational systems, data bases and computer programmes applicable to engineering.

OBJECTIVES

Students should be able to use basic computing notions which allow them to deal with and solve problems at work by using computers, as well as the use of computer software for mathematical problem solving.

CONTENTS:

1. Theoretical contents

Unit 1. Fundamentals of computing

Fundamental context and concepts. Data and information. History of computers.

Unit 2. Representation of information.

Codification. Types of codes. Numbering systems External codes. Error detector codes.

Unit 3. Central computer

Central processing unit. Memory. Input/output units.

Unit 4. Input/output peripherals.

Input peripherals. Output peripherals. Mixed peripherals.

Unit 5. Storage units

Magnetic storage units. Optical storage units.

Unit 6. Introduction to Octave

Running Octave in Linux environments.

Save and recover a work session. Start a work session.

Octave menus. Help in Octave.

Unit 7. Elementary mathematical operations. Mathematical operators.
Numbers in Octave; types of numbers and numerical expressions.
Operations with matrices.

Unit 8. Polynomial and algebraic expressions.
Declaration of variables.
Relationship operators. Equation solving.
Numerical Equation solving. Solving an equation system.

Unit 9. Functions. Definition of functions. Functional operators.

Unit 10. Applications to calculus and analysis. Integration.
Calculation of products.

Unit 11. Graphical representation of functions.
Graphical representation of functions in a plane. Options. Simultaneous representation of functions.
Graphical representation of a function on the basis of its expression. Graphical representation of functions in space.
Graphical representation of inequations.

2. Practical contents.

Practical work of the different units at the computer lab.