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Training Activity - Software Engineering

ECTS: 3 ECTS

COORDINATOR: Javier Andrade Garda (javier.andrade@udc.es)

UNIVERSITY WHERE THE COORDINATOR IS: UDC

HAVE YOU GIVEN PERMISSION TO RECORD YOUR CLASSES? No

LECTURER 1: Francisco José Pena Brage (fran.pena@usc.es)

UNIVERSITY WHERE THE LECTURER 1IS: USC

HAVE YOU GIVEN PERMISSION TO RECORD YOUR CLASSES? No

SUBJECT CONTENTS

Theoretical content:

1. Software Engineering. Development paradigms
2. Main paradigms: structured and OO
3. OO paradigm
    - 3.1. Introduction and basic concepts
    - 3.2. Analysis, design and development aspects in OO
    - 3.3. UML basic annotation
    - 3.4. Recommended analysis and design process in OO
4. Design patterns in OO
    - 4.1. Introduction
    - 4.2. Examples

Practical content:

1. Application of the OO for small examples/exercises

2. Application of the OO to generic real cases

3. Application of the OO to real development projects in Mathematics

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METHODOLOGY

Theoretical classes and laboratory classes.

LANGUAGE USED IN CLASS: Spanish

IS IT COMPULSORY TO ATTEND CLASS? Students can attend via conference system.

BIBLIOGRAPHY

Basic bibliography:

"Software Engineering. A Practitioner's Approach". Roger S. Pressman. Mc-Graw Hill

"Unified Modeling Language". Grady Booch, James Rumbaugh and Ivar Jacobson. Addison Wesley

"Design Patterns". Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides. Addison Wesley

Complementary bibliography:

"Unified Development Process". Ivar Jacobson, Grady Booch and James Rumbaugh. Addison Wesley

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SKILLS

Basic:

CG1: To have knowledge that provide a basis or opportunity for originality in developing and / or applying ideas, often within a research context, knowing how to translate industrial needs in terms of R & D in the field of mathematics Industrial.

CG2: To be able to apply the acquired knowledge and abilities to solve problems in new or unfamiliar environments within broader contexts, including the ability to integrate multidisciplinary R & D in the business environment.

CG3: To be able to integrate knowledge in order to state opinions using information that even incomplete or limited, include reflecting on social and ethical responsibilities linked to the application of their knowledge.

CG4: To have the ability to communicate the findings to specialist and non-specialist audiences in a clear and unambiguous way.

CG5: To have the appropriate learning skills to enable them to continue studying in a way that will be largely self-directed or autonomous, and also to be able to successfully undertake doctoral studies.

Specific:

CE2: To model specific ingredients and make appropriate simplifications in the model to facilitate their numerical treatment, maintaining the degree of accuracy, according to previous requirements.

CE3: To determine if a model of a process is well made and well mathematically formulated from a physical standpoint.

CE4: To be able to select a set of numerical techniques, languages and tools, appropriate to solve a mathematical model.

CE5: To be able to validate and interpret the results, comparing them with visualizations, experimental measurements and functional requirements of the physical engineering system.

WILL YOU BE USING A VIRTUAL PLATFORM? Yes. Google Groups and Google Drive

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WILL YOU BE USING ANY SPECIFIC SOFTWARE? No.

CRITERIA FOR THE 1ST ASSESSMENT OPPORTUNITY

Effective learning of the explained theoretical concepts: 40%. The evaluation of this aspect will be carried out through a theoretical exam about the concepts explained.

Capacity to put into operation those concepts: 60%. A practical essay putting into operation the concepts explained in a mathematical context will be carried out by students.

Both aspects (exam and work) are mandatory and should be passed by the student.

CRITERIA FOR THE 2ND ASSESSMENT OPPORTUNITY

The same as in the 1st assessment opportunity.

FURTHER COMMENTS:

Course objectives:

1. Basic understanding of the main paradigms in software development.

2. Study of the Object Oriented (OO) paradigm.

3. Capacity to put in operation the OO.

The subject is oriented to develop the following technical capacities:

1. Capacity for abstraction and synthesis.
2. Ability to implement the theoretical knowledge in the phases of analysis, design and development in OO.
3. Ability to understand the OO models obtained for a software development project.