SUBJECT TEACHING GUIDE

G1662 - Programming Languages

Degree in Computer Systems Engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Degree in Computer Systems Engineering			Type and Year	Optional. Year 4
Faculty	Faculty of Sciences				
Discipline	Subject Area: Computing Mention in Computing				
Course unit title and code	G1662 - Programming Languages				
Number of ECTS credits allocated	6	Term		Semester based (2)	
Web	https://moodle.unican.es/course/view.php?id=12160				
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. MATEMATICAS, ESTADISTICA Y COMPUTACION
Name of lecturer	DOMINGO GOMEZ PEREZ
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Other lecturers	

3.1 LEARNING OUTCOMES
- Practical knowledge of development of compilers for domain specific languages.
- Hands-on experience on back ends and front-ends. The use of Scoping and declarative programming in modern compilers.
- Knowledge of applicability of compilers, as in web browsers.

4. OBJECTIVES
Apply the skills acquired in formal languages for compiler development.
Understand the intrinsic complexity to generate machine code
Understand the use of pushdown automata and their role in a compiler.
Generate concise error messages for source code.
Learn the abilities necessary to use of parser generator tools.

6. COURSE ORGANIZATION	
CONTENTS	
1	Part 1:Theoretical background
1.1	Background and overview of formal languages
1.2	Bottom up parsing
1.3	Types of bottom up parsing
1.4	Attribute grammars
1.5	Type checking and code generation
1.6	Bootstraping
2	Part 2: Tools
2.1	Python
2.2	Lexer generation
2.3	Parser generators
2.4	Intermediate code
2.5	Native code

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Individual assignment	Work	No	Yes	30,00
Group assignment	Work	No	Yes	30,00
Classroom assignment	Activity evaluation with Virtual Media	No	Yes	10,00
Practical exam	Written exam	Yes	Yes	30,00
TOTAL				100,00

Observations

Students can substitute continuous evaluation by a practical exam if:
- they are registered as a part-time student,
- they fail any of the task in the continuous evaluation or want to improve their grades.
The value equals to 50% of the final grade and it lasts for approximately 2 hours. It will be required that the student presents all pending assignments to apply to this condition.

In the case that socio-sanitary conditions advise the end of in-person teaching, the final exam will be replaced by a practical exam and a written exam. The availability of resources will determine how the exams are performed, attempting to implement a asynchronous and telematic method.

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Observations for part-time students

Any student who is registered as partial-time student is allowed to choose between continuous evaluation or two final exams. The percentage of the exams in the final grade will be 50% and 50%, respectively.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Torben Mogensen. Basics of compiler design

Alfred Aho, Monica Lam, Ravi Sethi, and Jeffrey Ullman.
Compilers: Principles, Techniques, and Tools (Second Edition)