



IDENTIFYING DATA

IT: Programming 1

Subject	IT: Programming 1			
Code	O06G460V01103			
Study programme	(*)Grao en Intelixencia Artificial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st
Teaching language	#EnglishFriendly Spanish Galician			
Department				
Coordinator	Borrajó Diz, María Lourdes			
Lecturers	A0570-Ax2tc-3 A0570-Ax2tc-3, A0570-Ax2tc-3 Borrajó Diz, María Lourdes			
E-mail	lborrajo@uvigo.es			
Web	http://moovi.uvigo.gal/			
General description	The subject of Programming enters to the students in the field of the imperative programming, studying basic concepts of programming like variables, operators, loops, arrays and functions. The designs and implementations will be headed to thematic related with IA, and will provide a conceptual and technological base on which develop future projects of Artificial Intelligence.			
	English Friendly subject: International students may request from the teachers: a) resources and bibliographic references in English, b) tutoring sessions in English, c) exams and assessments in English.			

Training and Learning Results

Code	
A2	That students know how to apply their knowledge to their work or vocation in a professional manner and possess the competencies that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study.
A3	That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical issues.
A4	That students can convey information, ideas, problems and solutions to both specialized and non-specialized audiences.
A5	That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.
B1	Ability to conceive, write, organize, plan, and develop models, applications and services in the field of artificial intelligence, identifying objectives, priorities, deadlines, resources and risks, and controlling the established processes.
B2	Ability to solve problems with initiative, decision making, autonomy and creativity.
B3	Ability to design and create quality models and solutions based on Artificial Intelligence that are efficient, robust, transparent and accountable.
B4	Ability to select and justify the appropriate methods and techniques to solve a specific problem, or to develop and propose new methods based on artificial intelligence.
C3	Ability to solve artificial intelligence problems requiring algorithms, from their design and implementation to their evaluation.
C4	To know and apply to the field of artificial intelligence the methodologies of software engineering and user-centered design.
C5	Ability to understand and master the basic concepts of logic, grammars and formal languages to analyze and improve solutions based on artificial intelligence.
D2	Ability to work as part of a team, in interdisciplinary environments and managing conflicts
D3	Ability to create new models and solutions in an autonomous and creative way, adapting to new situations. Initiative and entrepreneurial spirit.
D6	Ability to integrate legal, social, environmental and economic aspects inherent to artificial intelligence, analyzing its impacts, and committing to the search for solutions compatible with sustainable development.

Expected results from this subject				
Expected results from this subject	Training and Learning Results			
RA1: Be able to carry out the process from the abstraction to the implementation of code of high quality.		B1 B4	C3	
RA2: Apply modular programming to resolve specific problems in the field of IA.	A3	B3 B4	C3 C4	D2
RA3: Understand the syntax and semantics of the programming language.			C3 C5	
RA4: Obtain competencies to resolve problems of both methodological and practical form.	A3 A4	B2		D3
RA5: Have the capacity of identifying and selecting the main libraries in the field of IA and Science of Data.	A3 A5	B1 B2 B4		
RA6: Analyze the different alternatives to solve a problem, identifying which ones can be carried out with IA and which do not.		B2 B3 B4	C3	D6
RA7: Apply testing techniques and tools to ensure the quality of results.	A2	B3 B4		

Contents	
Topic	
Imperative paradigm.	Data types and variables. Modules. Program flow control.
Data Structures	Lists. Dictionaries.
Input/output.	Text files. CSV files.
Modular design.	Standard modules. Module creation.
Unit testing.	Module testing. Test Driven Development.

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	20	5	25
Laboratory practical	30	20	50
Autonomous problem solving	0	75	75

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	
	Description
Lecturing	Presentation of the theoretical contents of each subject by means of audiovisual media. This method will combine illustrative examples of code with exercise solving to motivate and increase the interest of the student.
Laboratory practical	The aim is for the student to apply the theoretical contents to the solution of simple problems of programming, that will guide the process to make a complete project. CONTINUOUS ASSESSMENT Mandatory Attendance: Not mandatory OVERALL EVALUATION Mandatory
Autonomous problem solving	The aim is for the student to apply the theoretical contents in an unguided way. CONTINUOUS ASSESSMENT Mandatory Attendance: Not mandatory OVERALL EVALUATION Mandatory

Personalized assistance	
Methodologies	Description

Lecturing All the forms of tutoring will be available by telematic means (email, videoconference, forums in the educational platform, ...) Under the modality of agreed meeting.

Assessment							
	Description	Qualification	Training and Learning Results				
Lecturing	Students will have to pass two written proofs written partials, one roughly at the half of the matter, and another at the end. Results: RA1, RA2, RA3, RA4.	70	A2 A3 A5	B2 B3 C5	C3 C4 C5	D3 D6 D6	
Laboratory practical	Students carried out and presented two practices or projects demonstrating their knowledge in the subject, applying the techniques learned in theoretical sessions. Results: RA1, RA2, RA3, RA4, RA5, RA6, RA7.	30	A4	B1 B2 B3 B4	C3 C4	D2 D3	

Other comments on the Evaluation

GENERAL REMARKS

Students may choose the evaluation system to be applied in the subject. If the student does not indicate anything, it is understood that he/she will follow the continuous assessment. In the first 5 weeks of the semester, students who wish to opt for a global assessment (a single exam at the end of the term) should send an e-mail message to the subject coordinator.

CONTINUOUS ASSESSMENT SYSTEM

TEST 1: 1st partial exam

Description: Partial exam to solve exercises.

Methodology applied: Partial tests for the evaluation of the contents exposed in the lecture.

% of qualification: 35%.

Minimum %: It will be necessary to obtain a grade equal to or higher than 4 points (out of 10).

Assessed skills: A2, A3, A5, B2, B3, C3, C4, C5, D3, D6

Assessed learning outcomes: RA1, RA2, RA3, RA4

TEST 2: 2nd partial exam

Description: Partial test to solve exercises.

Methodology applied: Partial tests for the evaluation of the contents exposed in the lecture.

% of qualification: 35%.

Minimum %: It will be necessary to obtain a grade equal to or higher than 4 points (out of 10).

Assessed skills: A2, A3, A5, B2, B3, C3, C4, C5, D3, D6

Assessed Learning Outcomes: RA1, RA2, RA3, RA4

TEST 3: 1st deliverable/practice

Description: Programming practice.

Methodology applied: Practical exercises.

% of qualification: 15%.

Minimum %: It will be necessary to obtain a grade equal or higher than 4 points (out of 10).

Assessed skills: A4, B1, B2, B3, B4, C3, C4, D2, D3

Assessed Learning Outcomes: RA1, RA2, RA3, RA4, RA5, RA6, RA7

TEST 4: 2nd deliverable/practice

Description: Programming practice

Methodology applied: Practical exercises

% of qualification: 15%.

Minimum %: It will be necessary to obtain a grade equal or higher than 4 points (out of 10).

Assessed skills: A4, B1, B2, B3, B4, C3, C4, D2, D3

Assessed learning outcomes: RA1, RA2, RA3, RA4, RA5, RA6, RA7

OVERALL ASSESSMENT SYSTEM

Procedure for choosing the overall assessment mode: Students may choose the assessment system to be applied in the subject. If the student does not indicate anything, it is understood that he/she will follow the continuous assessment. In the first 5 weeks of the term, students who wish to opt for a global assessment (a single exam at the end of the term) must send an email to the subject coordinator indicating this.

The different tests and practices will be carried out on the official date for each evaluation opportunity (ordinary and extraordinary).

TEST 1: Comprehensive examination

Description: Partial test to solve exercises.

Methodology applied: Partial tests for the evaluation of the contents exposed in the lecture.

% of qualification: 70%.

Minimum %: It will be necessary to obtain a grade equal to or higher than 4 points (out of 10).

Assessed skills: A2, A3, A5, B2, B3, C3, C4, C5, D3, D6

Assessed Learning Outcomes: RA1, RA2, RA3, RA4

TEST 2: Deliverable/practice

Description: Programming practice

Methodology applied: Practical exercises

% of qualification: 30% **Minimum %:** RA1, RA2, RA3, RA4

Minimum %: It will be necessary to obtain a grade equal to or higher than 4 points (out of 10).

Assessed skills: A4, B1, B2, B3, B4, C3, C4, D2, D3

Assessed learning outcomes: RA1, RA2, RA3, RA4, RA5, RA6, RA7

ASSESSMENT CRITERIA FOR EXTRAORDINARY AND FINAL EXAMS

The different tests or deliveries will be carried out on the official date for each assessment opportunity (Extraordinary and End of Degree).

The continuous and global assessment systems described above will be used.

ASSESSMENT DATES

The continuous assessment tests are published in the ESEI calendar of activities.

<https://esei.uvigo.es/docencia/horarios/>

The global and extraordinary assessment tests are published in the calendar of assessment tests officially approved by the ESEI Centre Board: <https://esei.uvigo.es/docencia/exames/>

Grades will be published on the Moovi platform, with access limited to subject teachers and enrolled students. Should it be necessary, for exceptional reasons, to modify or specify the assessment methods indicated in the guide, such modifications or clarifications will be published on the same telematic support.

GRADING PROCESS

- It is necessary to obtain a grade equal to or higher than 4 in any test taken.
- In order to pass the subject, the final grade must be equal to or higher than 5.
- Regardless of the evaluation system and the call, in case of failing any part of the evaluation, even if the overall score is higher than 4 (out of 10), the final grade in the will be set to 4.

USE OF MOBILE DEVICES

All students are reminded of the prohibition of the use of mobile devices or laptops in exercises, practices and tests, in compliance with article 13.2.d) of the University Student Statute, regarding the duties of university students, which establishes the duty to "Refrain from using or cooperating in fraudulent procedures in assessment tests, in work carried out or in official university documents".

CONSULTATION/REQUEST FOR TUTORIALS

Tutorials can be consulted through the teaching staff's personal page, accessible through <https://esei.uvigo.es/docencia/profesorado/>.

Sources of information

Basic Bibliography

García Perez-Schofield, Baltasar, **Programación con Python**, 1, Bubok.es, 2018

Russell Severance et al., **Python para todos**, 979-8633985566, 1, Independiente, 2021

Paul Deitel, **Intro to Python for Computer Science and Data Science: Learning to Program with AI, Big Data and The Cloud, Global Edition**, 978-0135404676, 1, Pearson, 2021

Complementary Bibliography

<https://es.python.org/aprende-python/>, **Aprende Python**, Python.org,

<https://es.py4e.com/book>, **Python para todos**, 2021

Recommendations