



POLITÉCNICA

INTERNATIONAL
CAMPUS OF
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COORDINATION PROCESS OF
LEARNING ACTIVITIES
PR/CL/001



E.T.S. de Ingenieros
Informáticos

ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103000936 - Programming For Data Processing

DEGREE PROGRAMME

10BB - Eit Digital Master Programme On Fintech

ACADEMIC YEAR & SEMESTER

2020/21 - Semester 2

Index

Learning guide

1. Description.....	1
2. Faculty.....	1
3. Skills and learning outcomes	2
4. Brief description of the subject and syllabus.....	3
5. Schedule.....	4
6. Activities and assessment criteria.....	6
7. Teaching resources.....	7

1. Description

1.1. Subject details

Name of the subject	103000936 - Programming For Data Processing
No of credits	4.5 ECTS
Type	Compulsory
Academic year of the programme	First year
Semester of tuition	Semester 2
Tuition period	February-June
Tuition languages	English
Degree programme	10BB - Eit Digital Master Programme On Fintech
Centre	10 - Escuela Tecnica Superior de Ingenieros Informaticos
Academic year	2020-21

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Angel Herranz Nieva	D-2309	angel.herranz@upm.es	M - 09:00 - 13:00 M - 15:00 - 17:00
Guillermo Antonio Viguera Gonzalez (Subject coordinator)	D-4310	guillermo.viguera@upm.es	Tu - 10:00 - 13:00 Th - 10:00 - 13:00

* The tutoring schedule is indicative and subject to possible changes. Please check tutoring times with the faculty member in charge.

3. Skills and learning outcomes *

3.1. Skills to be learned

CE-FT01 - Capacidad para seleccionar las soluciones de almacenamiento para datos estructurados y no estructurados adecuadas en función del problema a resolver

CE-FT02 - Capacidad para aplicar técnicas para el análisis y la exploración de datos en un contexto financiero, y para la correcta comunicación de los resultados del análisis

CE-FT03 - Capacidad para seleccionar las técnicas y herramientas para la manipulación de datos de tipo financiero, incluyendo su procesamiento y visualización

CE-FT07 - Capacidad para diseñar proyectos robustos relacionados con las finanzas y la tecnología desde el punto de vista Software

3.2. Learning outcomes

RA19 - Perform a business solution planning and development process (dynamics of developing the business, organization needed to implement it, go-to-market).

RA23 - The students will be able to analyze, specify and validate software requirements

RA17 - Being able to translate a data insight into a business decision and action.

RA22 - The students will be able to elicit and conceptualize customer and user's needs

* The Learning Guides should reflect the Skills and Learning Outcomes in the same way as indicated in the Degree Verification Memory. For this reason, they have not been translated into English and appear in Spanish.

4. Brief description of the subject and syllabus

4.1. Brief description of the subject

This course is related with data manipulation and programming using the Python language. The main goal is to introduce main characteristics and programming style using this language of wide adoption for data analysis purposes. Once introduced the language, the course presents to students how to efficiently use the different constructs, control statements and data structures in Python. Based on this, the course describes the main characteristics of a Python framework for data storage and manipulation. All programming concepts presented in the course are accompanied with exercises in order to guarantee correct comprehension and practical knowledge.

4.2. Syllabus

1. Python programming.
 - 1.1. Introduction to Python programming.
 - 1.2. Common Python data structures.
 - 1.3. Programming in Python adopting an imperative paradigm.
 - 1.4. Programming in Python adopting a functional paradigm.
2. Data representation and manipulation.
 - 2.1. Python framework for data representation.
 - 2.2. Revision of data manipulation techniques.
3. Basic parallel constructs for data manipulation.

5. Schedule

5.1. Subject schedule*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Distant / On-line	Assessment activities
1	Python programming Duration: 02:00			
2	Python programming Duration: 02:00	Python programming Duration: 02:00		
3	Python programming Duration: 02:00	Python programming Duration: 02:00		
4	Python programming Duration: 02:00	Python programming Duration: 01:00		Programming Exercise Continuous assessment Presential Duration: 01:00
5	Data Manipulation Duration: 02:00	Data Manipulation Duration: 02:00		
6	Data Manipulation Duration: 02:00	Data Manipulation Duration: 02:00		
7	Data Manipulation Duration: 02:00	Data Manipulation Duration: 02:00		
8	Parallel Constructs Duration: 02:00	Parallel Constructs Duration: 01:00		Programming Exercise Continuous assessment Presential Duration: 01:00 Programming Exercise Final examination Presential Duration: 01:00
9				
10				
11				
12				
13				
14				

15				
16				
17				

Depending on the programme study plan, total values will be calculated according to the ECTS credit unit as 26/27 hours of student face-to-face contact and independent study time.

* The schedule is based on an a priori planning of the subject; it might be modified during the academic year, especially considering the COVID19 evolution.

6. Activities and assessment criteria

6.1. Assessment activities

6.1.1. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
4	Programming Exercise		Face-to-face	01:00	50%	5 / 10	CE-FT01 CE-FT02 CE-FT03 CE-FT07
8	Programming Exercise		Face-to-face	01:00	50%	5 / 10	CE-FT01 CE-FT02 CE-FT03 CE-FT07

6.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
8	Programming Exercise		Face-to-face	01:00	100%	5 / 10	CE-FT01 CE-FT02 CE-FT03 CE-FT07

6.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
Programming Exercise		Face-to-face	01:00	100%	5 / 10	CE-FT01 CE-FT02 CE-FT03 CE-FT07

6.2. Assessment criteria

Sistema general de evaluación continua

Evaluation system during the course will consist of taking two practical exercises performed during lecture hours. The weight in the final grade of each exercise is 50% and a minimum of 5 points out of 10 is required in order to pass each exercise. At least the minimum grade (5/10) must be obtained in both exercises in order to pass the course. In case you don't want to follow the continuous evaluation process and you want to opt for the final exam in June's session, you have to warn the course coordinator in advance during the first 15 days of the course by email.

Sistema de Evaluación mediante Sólo Prueba Final

Evaluation system at the end of the course will consist of taking one written exam performed in the day scheduled for the course evaluation. The weight in the final grade of the exam is 100% and a minimum of 5 points out of 10 is required in order to pass the course.

7. Teaching resources

7.1. Teaching resources for the subject

Name	Type	Notes
Moodle	Web resource	Main communication channel with students. Repository: slides, scripts, data sets and other resources
Data Science from Scratch: First Principles with Python	Bibliography	Joel Grus
Programming in Python 3: A Complete Introduction to the Python Language	Bibliography	Mark Summerfield