ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103000580 - Software construction- analysis of requirements

DEGREE PROGRAMME

10AK - Master Universitario en Software y Sistemas

ACADEMIC YEAR & SEMESTER

2017/18 - Semester 1

Index

Learning guide

1. Description....1
2. Faculty....1
3. Prior knowledge recommended to take the subject....2
4. Skills and learning outcomes....3
5. Brief description of the subject and syllabus....4
6. Schedule....6
7. Activities and assessment criteria....8
8. Teaching resources....13
9. Other information....13

1. Description

1.1. Subjet details

Name of the subject	103000580 - Software construction- analysis of requirements
No of credits	6 ECTS
Type	Optional
Academic year ot the programme	First year
Semester of tuition	Semester 1
Tuition period	September-January
Tuition languages	English
Degree programme	10AK - Master Universitario en Software y Sistemas
Centre	Escuela Tecnica Superior de Ingenieros Informaticos
Academic year	2017-18

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Manuel Carro Li?ares (Subject coordinator)	2303	manuel.carro@upm.es	F - 15:00 - 19:00 Please send an e-mail to set up an appointment before going to the instructor's office.

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

2.3. External faculty

Name and surname	Email	Institution
Gilles Barthe	Gilles.barthe@imdea.org	IMDEA Software Institute
Juan Caballero	Juan.caballero@imdea.org	IMDEA Software Institute
Boris Koepf	Boris.koepf@imdea.org	IMDEA Software Institute
Pierre Ganty	Pierre.ganty@imdea.org	IMDEA Software Institute
César Sanchez	Cesar.sanchez@imdea.org	IMDEA Software Institute
Alexey Gotsman	Alexey.Gotsman@imdea.org	IMDEA Software Institute
Pedro Lopez	pedro.lopez@imdea.org	CSIC
Aleks Nanevski	aleks.nanevski@imdea.org	IMDEA Software Institute
Dario Fiore	Dario.Fiore@imdea.org	IMDEA Software Institute
José Morales	Josef.Morales@imdea.org	IMDEA Software Institute
Alessandra Gorla	alessandra.gorla@imdea.org	IMDEA Software Institute

3. Prior knowledge recommended to take the subject

3.1. Recommended (passed) subjects

El plan de estudios Master Universitario en Software y Sistemas no tiene definidas asignaturas previas recomendadas para esta asignatura.

3.2. Other recommended learning outcomes

- General acquaintance with programming and programming languages is required. All students wishing to take this course are required to get in touch with the coordinator of the subject prior to enrolling to ensure that (s)he has a free slot and topic

4. Skills and learning outcomes *

4.1. Skills to be learned

CEM1 - Identificar, a partir del estado de la cuestión, la presencia de problemas de investigación relacionados con la concepción, la construcción, el uso y la evaluación de sistemas sociotécnicos complejos que hagan un uso intensivo de software

CEM3 - Aplicar métodos de investigación relevantes a problemas abiertos en el área de la Ingeniería del Software, relacionados tanto con las características peculiares del producto software como con la gestión del desarrollo del mismo

CEM4 - Analizar y evaluar los diferentes paradigmas y enfoques de ingeniería de construcción y gestión de sistemas basados en software.

CG12 - Comprensión amplia de las técnicas y métodos aplicables en una especialización concreta, así como de sus límites

CG13 - Apreciación de los límites del conocimiento actual y de la aplicación práctica de la tecnología más reciente.

CG14 - Conocimiento y comprensión de la informática necesaria para la creación de modelos de información, y de los sistemas y procesos complejos

CG17 - Habilidades de gestión y capacidad de liderar un equipo que puede estar integrado por disciplinas y niveles distintos.

CG4 - Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

CG7 - Especificación y realización de tareas informáticas complejas, poco definidas o no familiares

CG8 - Planteamiento y resolución de problemas también en áreas nuevas y emergentes de su disciplina

CG9 - Aplicación de los métodos de resolución de problemas más recientes o innovadores y que puedan implicar el uso de otras disciplinas

CGI20 - Adquirir conocimientos científicos avanzados del campo de la informática que le permitan generar nuevas ideas dentro de una línea de investigación.

CGI23 - Capacidad de leer y comprender publicaciones dentro de su ámbito de estudio/investigación, así como su

catalogación y valor científico

4.2. Learning outcomes

RA10 - RA-IS-8 Cada estudiante deberá ser capaz de articular diferentes vías de investigación, estructuradas como pequeñas propuestas de proyectos, y enraizadas en las limitaciones del estado del arte, para aquellos aspectos que se encuentran en las fronteras del conocimiento en distintas áreas de la Ingeniería del Software.

RA29 - Identificar debilidades en las actividades de análisis y diseño de proyectos llevados a cabo con metodologías no clásicas.

RA31 - Permite al alumno modelar un programa con estructura procedimental a partir del enunciado de un problema

* 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.

5. Brief description of the subject and syllabus

5.1. Brief description of the subject

The contents will depend on the topic jointly chosen by the student and the adviser. However, the student will be asked to fully understand a problem which can be solved by means of a computer program and establish, in close collaboration with an adviser, the requirements of a computer solution, taking into account functional and non-functional issues and the possible different architectural styles that the requirements may lead to. The problem and all of its characteristics will have been clarified previously with the adviser.

Among the possible kinds of software whose requirements can be defined we may cite:

- Analyzers for programming languages.
- Model checkers.
- Plugins for IDE tools.
- General interfaces between languages.
- Interfaces between programming-related tools (compilers, libraries, theorem provers).

- Extensions to compilers or interpreters.
- Implementations of simple compilers / interpreters.

This is of course an incomplete list.

This is a demanding course which requires considerable time and a deep understanding of the problem at hand and the environment in which the software is intended to run. Therefore it will need very frequent contact between instructor and student (typically 3 to 4 hours per week). It is recommended that students taking this course also take the course "Software construction: architecture and interface design issues" in order to synchronize requirements and design as much as possible.

5.2. Syllabus

1. Selection of topic to be defined jointly between the student and the supervisor

6. Schedule

6.1. Subject schedule*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Other face-to-face activities	Assessment activities
1			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
2			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
3			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
4			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
5			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
6			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
7			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
8			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
9			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15

10			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
11			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
12			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
13			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
14			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
15			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
16			**Meeting with advisor (on a weekly basis) to monitor progress and discuss problems / needs.** Duration: 04:00 Additional activities	**Summary of developments since last meetings; plans for next meeting.** Other assessment Continuous assessment Duration: 00:15
17				**Final presentation of project** Individual presentation Final examination Duration: 02:00

The independent study hours are training activities during which students should spend time on individual study or individual assignments.

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 subject schedule is based on a previous theorical planning of the subject plan and might go to through experience some unexpected changes along throughout the academic year.

7. Activities and assessment criteria

7.1. Assessment activities

7.1.1. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
1	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23
2	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23
3	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23

4	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23
5	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23
6	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23
7	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23

8	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23
9	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23
10	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23
11	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23

12	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23
13	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23
14	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23
15	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23

16	Summary of developments since last meetings; plans for next meeting.	Other assessment	Face-to-face	00:15	6.25%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23

7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	Final presentation of project	Individual presentation	No Presential	02:00	100%	0 / 10	CG4 CG8 CG9 CEM1 CEM3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM4 CGI23

7.1.3. Referred (re-sit) examination

No se ha definido la evaluación extraordinaria.

7.2. Assessment criteria

Grading will be based on the performance and advances of the student.

8. Teaching resources

8.1. Teaching resources for the subject

Name	Type	Notes
Various	Others	Will be decided based on the particular project to be addressed.

9. Other information

9.1. Other information about the subject

All students wishing to take this course are required to get in touch with the coordinator of the course prior to enrollment in order to verify whether the requirements for the course are met and to ensure that there are available slots for this course. **Please consult** http://software.imdea.org/graduateschool .