



POLITÉCNICA

INTERNATIONAL  
CAMPUS OF  
EXCELLENCE

COORDINATION PROCESS OF  
LEARNING ACTIVITIES  
PR/CL/001



E.T.S. de Ingenieros  
Informaticos

# ANX-PR/CL/001-01

## LEARNING GUIDE

### SUBJECT

103000584 - Reading group on basic analysis of non-functional global properties

### DEGREE PROGRAMME

10AK - Master Universitario en Software y Sistemas

### ACADEMIC YEAR & SEMESTER

2017/18 - Semester 1

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## 1. Description

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### 1.1. Subject details

<b>Name of the subject</b>	103000584 - Reading group on basic analysis of non-functional global properties
<b>No of credits</b>	4 ECTS
<b>Type</b>	Optional
<b>Academic year of the programme</b>	First year
<b>Semester of tuition</b>	Semester 1
<b>Tuition period</b>	September-January
<b>Tuition languages</b>	English
<b>Degree programme</b>	10AK - Master Universitario en Software y Sistemas
<b>Centre</b>	Escuela Técnica Superior de Ingenieros Informáticos
<b>Academic year</b>	2017-18

## 2. Faculty

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### 2.1. Faculty members with subject teaching role

<b>Name and surname</b>	<b>Office/Room</b>	<b>Email</b>	<b>Tutoring hours *</b>
Manuel Carro Liñares (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
Pedro Lopez	pedro.lopez@imdea.org	CSIC

## 3. Prior knowledge recommended to take the subject

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### 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

- Good knowledge of at least one procedural and one declarative programming language. Knowledge of computational complexity basics. Knowledge of basics of compilation for procedural and OO languages.
- 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 course prior to enrolling to ensure that (s)he has a free slot and topic

## 4. Skills and learning outcomes \*

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### 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

CEM5 - Aportar soluciones a aquellos problemas abiertos relacionados con el ámbito de aplicación y los métodos, técnicas y herramientas de Verificación y Validación de 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

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

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

RA16 - Familiarity with resource consumption analysis and its applications

RA17 - Ability to provide formal specifications on target results and program resource consumption

\* 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

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### 5.1. Brief description of the subject

The course will focus on reading and presentation of research papers in the area of program analysis, optimization, implementation, and verification. Students are expected to read a selection of contemporary research papers, past papers that represent important results, and to give presentations on the contents of these papers. The contents of the papers will be mainly related to the analysis and verification of non-functional properties like resource usage (e.g., energy, execution time, memory, heap, user-defined resources, etc.), non-failure, determinism or cardinality. Special attention will also be paid to general analysis and verification frameworks and their possible instantiations. However, the contents may vary depending on instructor discretion and topics that are of current interest to the wider research community.

Students who take this course will:

1. Gain experience in reading and evaluating research literature.
2. Be exposed to well-written papers. according
3. Develop skills needed to give effective technical presentations.
4. Be exposed to leading edge results in the areas of program analysis and implementation.
5. Gain a background in key past research results that have had a large impact on the direction of research in the area.

## 5.2. Syllabus

1. Selection of topics and papers in view of the goals of the students

## 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	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
2	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
3	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
4	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
5	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
6	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
7	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
8	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
9	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30

10	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
11	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
12	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
13	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
14	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
15	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
16	<b>Paper presentation</b> Duration: 00:30 Additional activities			<b>Discussion of paper and its relation with other topics in CS</b> Individual presentation Continuous assessment Duration: 01:30
17				<b>Final evaluation taking into account all the presentations made during the course</b> Individual work 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 theoretical planning of the subject plan and might go 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	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23
2	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23
3	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23
4	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20

							CGI23
5	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23
6	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23
7	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23
8	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23
9	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23

10	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23
11	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23
12	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23
13	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23
14	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23

15	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23
16	Discussion of paper and its relation with other topics in CS	Individual presentation	Face-to-face	01:30	6.25%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23

### 7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	Final evaluation taking into account all the presentations made during the course	Individual work	No Presential	02:00	100%	0 / 10	CG4 CG8 CEM1 CEM5 CG7 CG12 CG13 CG14 CGI20 CGI23

### 7.1.3. Referred (re-sit) examination

No se ha definido la evaluación extraordinaria.

## 7.2. Assessment criteria

The grading will be based on the interaction with the students, the quality of their presentations, and the degree in which they show to have understood the concepts discussed in the classroom.

## 8. Teaching resources

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### 8.1. Teaching resources for the subject

Name	Type	Notes
Basic papers in the field	Bibliography	Will be decided according to the progress of the students

## 9. Other information

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### 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> .