SOFTWARE ENGINEERING

Course Syllabus

Computer Science Engineering School
DSIC – UPV

Goals ISW

- Study methods, techniques and current tools for high quality software development.
  - Object oriented paradigm during the complete lifecycle.
    - Modeling
    - Design
    - Implementation
    - Testing
- Development of software projects
- Field “Software Engineering”

Teaching structure

6 Credits

- Theory: 4.5

  Theoretical contents: 1.5 & Seminars: 3
- Lab Sessions: 1.5

Teaching organization:

- 10 theoretical content sessions
- 20 seminar sessions
- 10 lab sessions

(Session duration : **1h. 30 min**.)

Lecturers

Group	Lecturers		e-mail
3A (Valencià)	M. Carmen Penadés	TA-3A, TS-3A L1-3A i L2-3ª	mpenades@dsic.upv.es
3B (Castellano)	Manuel Llavador	TA-3B, TS-3B L1-3B y L2-3B	mllavador@iti.es
3C (Castellano)	Carlos Cetina/Antonio Garrido Raúl López Rueda Javier Jaén	TA-3C, TS-3C L1-3C L2-3C	cetina@upv.es / agarridot@dsic.upv.es rloprue@upv.es fjaen@dsic.upv.es
3D (Castellano)	Gema Ibáñez	TA-3D, TS-3D y L2-3D L1-3D	geibsan@upvnet.upv.es cetina@upv.es
3E (English)	Javier Jaén	TA-3E, TS-3E L1-3E y L2-3E	fjaen@dsic.upv.es
3F (Castellano)	Carlos Cetina/ Gema Ibánez José A. Carsí	TA-3F L1-3F	cetina@upv.es geibsan@upvnet.upv.es pcarsi@dsic.upv.es
3G (Castellano)	Manuel Llavador Javier Jaén José A. Carsí	TA-3G y TS-3G L1-3G L2-3G	mllavador@iti.es fjaen@dsic.upv.es pcarsi@dsic.upv.es
4GIA (Castellano)	Carlos Cetina Gema Ibáñez José A. Carsí	4GIA L1-GIA L2-GIA	cetina@upv.es geibsan@upvnet.upv.es pcarsi@dsic.upv.es

Contents

	Chapters	Seminars
UD. 1 - Foundations	**C1. Introduction to Software Engineering**	
	C2. The Software Process	**SeC2_1.** Problems C1 & C2
UD.2- Architecture	**C3. Software Architecture**	**SeC3_1** 3-Layered Architecture Case Study. Visual Studio + AzureDevOps
UD.3- OO Modeling	**C4. OO Modeling with UML Part 1. Class Diagrams**	**SetC4_1, SeC4_2, SeC4_3, SeC4_4.** Class Diagrams problems
UD.4- Design	**C5. Business Logic Design**	**SeC5_1.** Object design from Class diagrams & Code Generation I **SeC5_2.** Object design from Class diagrams & Code Generation II
	C6. Persistence Design	**SeC6_1.** Entity Framework **CASE 1: Class Diagrams & Object design**
		SeC6_2 Case 1 solution discussion
UD.3- OO Modeling	**C4. OO Modeling with UML Part 2. Use Case and sequence Diagrams**	**SetC4_5, SeC4_6, SeC4_7, SeC4_8.** Use case and sequence diagrams problems
UD.6- Presentation	**C7. User Interface Design**	**SeC7_1.** Mockups GUI
UD.6- Testing	**C8. Testing**	**SeC8_1, SeC8_2.** White Box Testing **SeC8_3, SeC8_4.** Black Box Testing **CASE 2: Use Case Diagrams & Testing** Case 2 Solution discussion and problems solving

Lab Assignments

Lab Sessions
Lab 1. Development Environment and Project Management
Lab 2. OO Design. Business Logic(Classes Design)
Lab 3. OO Design. Business Logic (Constructors Design)
Lab 4. OO Design. Persistence Design ***(Coevaluation +Deliverable 1)***
Lab 5. Implementation Use Cases and tests.
Lab 6. Implementation Use Cases and tests.
Lab 7. Implementation Use Cases and tests. ***(Control Point + Questions)***
Lab 8. Implementation Presentation Layer.
Lab 9. Implementation Presentation Layer
Lab 10. Final Evaluation. ***(Coevaluation + Deliverable 2)***

Lab sessions starting:
Week September 22nd

- Visual Studio/C#

-Work in teams: 4 members

Lab Calendar

SEMANA	L	M	X	J	V	
15-sep-25						
22-sep-25	S1	S1	S1	S1	S1	
29-sep-25	S2	S2	S2	S2	S2	
06-oct-25	no prácticas	no prácticas	no prácticas	festivo	no lectivo	
13-oct-25	S3	S3	S3	S3	S3	
20-oct-25	**S4**	**S4**	**S4**	**S4**	**S4**	**ENTREGA1 + Coevaluación**
27-oct-25	S5	S5	S5	exámenes	exámenes	Comprobación
03-nov-25	exámenes	exámenes	exámenes	S5	S5	Comprobación
10-nov-25	S6	S6	S6	S6	S6	
17-nov-25	S7	S7	S7	S7	S7	
24-nov-25	S8	S8	S8	S8	S8	Punto de Control + Preguntas
01-dic-25	S9	S9	S9	S9	S9	
08-dic-25	festivo	no prácticas	no prácticas	no prácticas	no prácticas	
15-dic-25	**S10**	**S10**	**S10**	**S10**	**S10**	**ENTREGA FINAL + Coevaluación**

Grading

Theory	Nº Acts	Weight
Final exam (open answers)	1	40 %
Practical Cases (control exams)	2	10 %

1) Exam: Jan 12 2026 -15:00h
2) Retake: Jan 27 2026 - 11:00h

Seminars
Weight: 5% each

Labs	Nº Acts	Weight
Project	2	40 %
Co-evaluation	1	10 %

Lab Session 4 & 10
weight (10%, 30%)

- Grading conditions
  - Written exam grade >= 4 (Possible Retake)
  - Project overall Grade >= 4 (Possible Retake)
  - Individual project grading based on contribution by each team member
  - Overall Grade >=5
  - Practical Cases may not be retaken

"Any detected copy in the evaluation acts will result in a grade value of 0"

Grading (Students no required attendance)

	Nº Acts	Weight
Written exam (open answers)	1	50 %

1) Exam: Jan 12 2026 -15:00h
2) Retake: Jan 27 2026 - 11:00h

	Nº Acts	Weight
Project	2	40 %
Co-evaluation	1	10 %

Lab Session 4 and 10
Weights (10%, 30%)

- Grading conditions
  - Written exam grade >= 4 (Possible Retake)
  - Project overall Grade >= 4 (Possible Retake) Individual project grading based on contribution by each team member
  - Overall Grade >=5

"Any detected copy in the evaluation acts will result in a grade value of 0"

Traversal Competencies UPV

- http://www.upv.es/contenidos/COMPTRAN/

- *Added value to your CV (annex to your academic record)*
- *Qualitative grading: A, B, C, D*

- **ISW** is control point (contributes to the evaluation):
  - CT6 – Team work and leadership
    - Lab Project, evaluated by means of co-evaluation of co-team members and lecturer assessment
  - CT8 – Effective communication
    - Open answer questions in written tests
    - Video presentation of the work done for your lab assignment, evaluated by means of co-evaluation (class peers)

References

- **Booch, G**. UML. El Lenguaje Unificado de Modelado. Guía de Usuario. Addison-Wesley, 2000.
- **Object Management Group**. Unified Modeling Language Specification, www.omg.org.
- **Rumbaugh, J**. et al., Modelado y Diseño Orientados a Objetos. Prentice-Hall Iberoamericana, 1996.
- **Booch, G**. Análisis y Diseño Orientado a Objetos con Aplicaciones, Addison-Wesley, 1996.
- **Stevens, P., Pooley, R.** Utilización de UML en Ingeniería del Software con Objetos y Componentes. Addison-Wesley Iberoamericana 2002.
- **Robert C. Martin**, UML para programadores Java. Addison-Wesley, 2004

References

- **Sommerville, I.** Ingeniería del Software. (8ª ed.). Addison-Wesley, 2008.
- **Pressman, R.**, Ingeniería del Software. Un enfoque práctico (6ª ed.). McGraw-Hill, 2005.
- **Weitzenfeld, A.,** Ingeniería del Software OO con UML. Java e Internet. Thomson, 2005
- **Budd ,T.**, *Introducción a la Programación Orientada a Objetos,* Addison-Wesley Iberoamericana 1994.
- **Booch, G**. et al., *El Lenguaje Unificado de Modelado. UML 2.0*. 2ª Edición. Addison-Wesley, 2006.
- **Rumbaugh, J**. et al., *UML. El Lenguaje Unificado de Modelado. Manual de Referencia*. Addison-Wesley, 2000.