Course Title:	**Processor design methodology**
Course Code:	CSE311
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Oussama boufares
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. Course Identification

1. Credit hours: 3 (2-1-0)

2. Course type

a. College ☐ Department ■ Others ☐

b. Fundamental ■ Transversal ☐ Optional ☐

3. Level/year at which this course is offered: 2.1/3

4. Pre-requisites for this course : Digital circuits, Architecture & micro processors

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	**Traditional classroom**	…..	35	80
2	**Blended**	45		
3	**E-learning**	.....		
4	**Distance learning**	.....		
5	**Other ()**	.....		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	-
3	**Tutorial**	15
4	**Others** (specify)	-
	Total	45

B. Course Objectives and Learning Outcomes

Course Description

The Processor Design Methodology course is an advanced training in processor design, focusing on MIPS processor design methods and techniques. Participants will learn how to design a high-level MIPS processor using high-level hardware description (HDL). Processor design steps, advanced design techniques, processor design tools, performance and power optimization considerations as well as the latest trends in processor design such as multi-core processors will also be covered. This course is intended for electronics, computer engineers and processor designers.

Course Main Objective

At the end of the module, the student should be able to:

- ✓ Acquire a calculation of the MIPS process architecture, which complies with the structure, components components and functions.
- ✓ Be able to optimize the design of the MIPS R3000 processor to improve its performance using techniques such as branch prediction and superscalar execution.
- ✓ Allow students to apply their knowledge by designing and simulating a MIPS R3000 processor, as well as solving real-world design problems.

1. Course Learning Outcomes

CLOs		Aligned PLOs
	Knowledge and Understanding	
1.1	Acquire a calculation of the MIPS process architecture, which complies with the structure, components components and functions	PLO.K1
	Skills	
2.1	Be able to optimize the design of the MIPS R3000 processor to improve its performance using techniques such as branch prediction and superscalar execution.	PLO.S.2
3.1	Allow students to apply their knowledge by designing and simulating a MIPS R3000 processor, as well as solving real-world design problems.	PLO S5

C. Course Content

No	List of Topics	Contact Hours
1	Chapter 1: Organization and design of computers	6
2	Chapter 2 : the architecture of the instruction set	8
3	Chapter 3 : Computer arithmetic	3
4	Chapter 4 : Mono_cycle design	3
5	Chapter 5: Design of a Multi-Cycle Processor	5
6	Chapter 6 : Pipeline concept	5
7	**Tutorial**	
	Tut1 : Micro processor architecture	15
	Tut2 : MIPS processor	
	Tut3: Mono-cycle processor and multi-cycle processor.	
	Tut3: Pipeline	
Total		45

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
K.1	- Acquire a calculation of the MIPS process architecture, which complies with the structure, components components and functions	- Lecturing	- Assignments, Quizzes, Exams,
2.0	**Skills**		
S.2	- Be able to optimize the design of the MIPS R3000 processor to improve its performance using techniques such as branch prediction and superscalar execution.	Lecturing Class discussions	- Assignments, , Exams,
3.0	**Values**		
V.3	- Allow students to apply their knowledge by designing and simulating a MIPS R3000 processor, as well as solving real-world design problems.	- Lectures - Class discussions - Assignments - projects	- Assignments, Report, Quizzes, Exams

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	00%
2	Quizzes, Homework assignments	Random	00%
3	First mid Term	8	35%
4	Final Exam	16	65%

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

- Office hours
- Blackboard interface
- Academic advisor
- Bibliotic

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	
Essential References Materials	- Architecture lessons from Peter Niebert: http://www.cmi.univ-mrs.fr/~niebert/archi2012.php - Introduction au MIPS : http://logos.cs.uic.edu/366/notes/mips%20quick%20tutorial.htm - Introduction to MIPS: http://logos.cs.uic.edu/366/notes/mips%20quick%20tutorial.htm - Table de référence du MIPS : https://pageperso.lis-lab.fr/~alexis.nasr/Ens/Compilation/mipsref.pdf
Electronic Materials	- Lecture material in PPT - Any Related material including the YouTube videos relating to Processor design methodology - Blackboard
Other Learning Materials	- NA

2. Facilities Required

Item	**Resources**
Accommodation	**Classroom board** **Computer lab with the necessary software** **Internet access**
Technology Resources	**Data projector**

G. Course Quality Evaluation

Evaluation Areas/Issues	**Evaluators**	**Evaluation Methods**
Effectiveness of teaching and assessment.	Students, course coordinator, Alumni, Employers	Direct/Indirect
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, quality department	Direct
Quality of Learning resources	Faculty, Program Leaders,	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders,	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/10/2022

Course Title:	**Operating systems and concurrent programming**
Course Code:	CSE312
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Mohamed Fadhel SAAD
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. Course Identification

1. Credit hours: **4.5 (2-1-1.5)**

2. Course type

a. College ☐ Department ■ Others ☐

b. Fundamental ■ Transversal ☐ Optional ☐

3. Level/year at which this course is offered: 2.1/3

4. Pre-requisites for this course (if any): Computer architectures, Data structures, Operating systems (OS)

1. **Mode of Instruction** (mark all that apply)

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	**Traditional classroom**	…..	47.5	115
2	**Blended**	67.5		
3	**E-learning**	.....		
4	**Distance learning**	.....		
5	**Other (Specify)**	.....		

2. **Contact Hours** (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	22.5
3	**Tutorial**	15
4	**Others** (specify)	-
	Total	67.5

B. Course Objectives and Learning Outcomes

Course Description

The course aims to provide students with a thorough understanding of the basic concepts of operating systems and concurrent programming. This includes the study of modern operating systems such as Linux and Windows, as well as concepts such as processes, threads, memory management, and interprocess communication.
Students will also learn the concepts of concurrent programming, including concurrency issues, synchronization mechanisms such as semaphores, monitors, and latches, and coordination algorithms.
Finally, students will gain hands-on experience coding concurrent programs using programming languages such as C++, Java, Python, or Go. The ultimate goal is to give students the skills to design, implement, and debug computer systems. efficient and reliable operation and competing programs.

Course Main Objective

- Understand the role of the executive in the execution of a program, and the notion of thread and their communication.
- Understand the problem of concurrent access to shared data.
- Understand the termination of a concurrent program.
- Know the problem of concurrent access to shared data.
- Familiarity with machine architectures, basic software, and 1st year algorithms Practice of UNIX and C Understand.
- These techniques are useful to implement in distributed algorithms.
- practice the role of the executive in the execution of a program, and the notion of thread and their communication.

1. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	✓ Understand the role of the executive in the execution of a program, and the notion of thread and their communication.	PLO.K.1
1.2	✓ Understand the problem of concurrent access to shared data.	
1.3	✓ Understand the termination of a concurrent program.	
1.4	✓ Know the problem of concurrent access to shared data.	
2	**Skills**	
2.1	Familiarity with machine architectures, basic software, and 1st year algorithms Practice of UNIX and C Understand.	PLO.S.1
7.1	Practice the role of the executive in the execution of a program, and the notion of thread and their communication.	PLO.S7

C. Course Content

No	List of Topics	Contact Hours
1	**Introduction to the system and concurrent programming** 1. Introduction operating system 2. Evolution of operating systems 3. User/system interactions 4. System calls 5. Structure of an operating system 6. Definition of concurrency processing 7. Importance of concurrency processing in modern operating systems **1.** 8. Type of concurrency processing in operating system	9
3	**Processes and Threads and Physical and logical resources** 1. Terms and concepts 2. Process states 3. Control structures of an OS 4. Processes – OS-implementations 5. Threads 6. Physical and logical resources	8
5	**Process management** 1. Introduction 2 Scheduling 3 Process status 4 Process control block 5 Multithreading 6 Process scheduling policies 7 Process scheduling algorithms	7
6	**Resource management** 1 Processor 2. Central Memory 3. Disk 3. Virtual memory	8
7	**Concurrent programming** 1. What is concurrent programming? 2. Parallelism vs. competition 3. Anatomy of a process 4. Anatomy of a thread 5. Benefits of Multi-Threading 6. Separation of a program into several threads	9
Total		45

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
K.2	✓ Understand the role of the executive in the execution of a program, and the notion of thread and their communication. ✓ Understand the problem of concurrent access to shared data. ✓ Understand the termination of a concurrent program. ✓ Know the problem of concurrent access to shared data.	Lecturing	Assignments, Quizzes, Exams,
2.0	**Skills**		
S.2	Familiarity with machine architectures, basic software, and 1st year algorithms Practice of UNIX and C Understand.	Lecturing	Assignments, Quizzes, Exams,
S.7	Practice the role of the executive in the execution of a program, and the notion of thread and their communication.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	25%
2	Quizzes, Homework assignments	Random	00%
3	First mid Term	8	25%
4	Final Exam	16	50%

E. Student Academic Counselling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

- Office hours
- Blackboard interface
- Academic advisor
- Bibliotic

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	- "Modern Operating Systems" de Andrew S. Tanenbaum et Herbert Bos (Pearson, 2014) - "Operating System Concepts" de Abraham Silberschatz, Peter B. Galvin, et Greg Gagne (Wiley, 2018)
Essential References Materials	- "Programming Language Pragmatics" de Michael L. Scott (Morgan Kaufmann, 2015) - "C++ Concurrency in Action" de Anthony Williams (Manning Publications, 2019) - "Python Concurrency From the Ground Up" de David Beazley (O'Reilly Media, 2015) - "Concurrency in Go: Tools and Techniques for Developers" de Katherine Cox-Buday (O'Reilly Media, 2017) - "Operating Systems: Three Easy Pieces" de Remzi H. Arpaci-Dusseau et Andrea C. Arpaci-Dusseau (Arpaci-Dusseau Books, 2015) - "Advanced Programming in the UNIX Environment" de W. Richard Stevens et Stephen A. Rago (Addison-Wesley Professional, 2013)
Electronic Materials	- Lecture material in PPT - Any Related material including the YouTube videos relating to engineering measurement - Blackboard
Other Learning Materials	- NA

2. Facilities Required

Item	Resources
Accommodation	**Classroom board** **Computer lab with the necessary software** **Internet access**
Technology Resources	**Data projector**

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students, course coordinator, Alumni, Employers	Direct/Indirect
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, quality department	Direct
Quality of Learning resources	Faculty, Program Leaders,	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders,	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/10/2022

Course Title:	**Algorithm design and analysis**
Course Code:	CSE321
Program:	Computer science Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Rim Afdhal
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. Course Identification

1. Credit hours: **3 (2-1-0)**
2. Course type **a.** College ☐ Department ■ Others ☐ **b.** Fundamental ■ Transversal ☐ Optional ☐
3. Level/year at which this course is offered: 3/3
4. Pre-requisites for this course : CSE131, CSE132, UML, Object Oriented Programming

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	**Traditional classroom**	…..	35	80
2	**Blended**	45		
3	**E-learning**	.....		
4	**Distance learning**	.....		
5	**Other ()**	.....		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	22.5
2	**Laboratory/Studio**	-
3	**Tutorial**	22.5
4	**Others** (specify)	-
	Total	45

B. Course Objectives and Learning Outcomes

Course Description

This course covers the analysis of algorithms: asymptotic notations, types of analysis (worst case, average case), recurrence equations and solution techniques. Strategies for designing sequential algorithms (divide and conquer, dynamic programming, greedy algorithms) deterministic algorithms for exploring combinatorial spaces (backtracking, with separation and progressive evaluation). Various topics: Parallel algorithms, probabilistic algorithms (Monte-Carlo method, Markov chains), heuristics and approximation algorithm for difficult problems.

Course Main Objective

- ✓ Acquire prior knowledge of Complexity of algorithms.
- ✓ Understand iterative and recursive algorithms.
- ✓ Ability to use the design and the analysis of algorithms to resolve problems.
- ✓ Apply principles of algorithm design and analysis to identify, formulate, and solve complex problems.

1. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	- Acquire prior knowledge of Complexity of algorithms.	PLO.K1
1.2	- Understand iterative and recursive algorithms.	PLO.K2
2	**Skills**	
2.1	- Ability to use the design and the analysis of algorithms to resolve problems.	PLO.S1
2.5	- Apply principles of algorithm design and analysis to identify, formulate, and solve complex problems.	PLO. S5

C. Course Content

No	List of Topics	Contact Hours
1	Complexity of algorithms	2
2	Iterative algorithms Recursive algorithms	2.5
3	Complexity of problems	2.5
4	Turing machine P, ZPP, BPP classes	2.5
5	Polynomial transformation	2
6	Programming paradigms	2
7	Divide and conquer approach	2
8	Greedy method	2
9	Dynamic programming Balanced trees	2.5
10	AVL trees / two-tone trees	2.5
Total		22.5

C .1 Tutorial Content

No	List of Topics	Contact Hours
1	Complexity of algorithms, Iterative and Recursive algorithms	4.5
2	Turing machine	4.5
3	Divide and conquer approach	4.5
4	Polynomial transformation	4.5
5	Balanced trees	4.5
Total		22.5

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
PLO.K1	- Acquire prior knowledge of Complexity of algorithms.	- Lecturing	- Assignments, Quizzes , Exams,
PLO.K2	- Understand iterative and recursive algorithms.		
2.0	**Skills**		
PLO.S1	- Ability to use the design and the analysis of algorithms to resolve problems.	- Lecturing	- Assignments, Quizzes , Exams,
PLO.S5	- Apply principles of algorithm design and analysis to identify, formulate, and solve complex problems		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	00%
2	Quizzes, Homework assignments	Random	20%
3	First mid Term	8	25%
4	Final Exam	16	65%

E. Student Academic Counselling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:
- Office hours - Blackboard interface

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	- Wegener. Complexity Theory: Exploring the Limits - Efficient Algorithms. Springer, 2005. - T. Cormen, C. Leiserson, R. Rivest et C. Stein. - INTRODUCTION À L'ALGORITHMIQUE : Cours et - exercices. Dunod, 2002.
Essential References Materials	- NA
Electronic Materials	- Lecture material in PPT - Any Related material including the YouTube videos relating to engineering measurement - Blackboard
Other Learning Materials	- NA

2. Facilities Required

Item	Resources
Accommodation	**Classroom board** **Computer lab with the necessary software** **Internet access**
Technology Resources	**Data projector**

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students, course coordinator, Alumni, Employers	Direct/Indirect
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, quality department	Direct
Quality of Learning resources	Faculty, Program Leaders,	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders,	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/10/2022

Course Title:	**Operational research**
Course Code:	CSE322
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Naziha DHIBI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. Course Identification

1. Credit hours: 3 (2-1-0)
2. Course type **a.** University ☐ College ☐ Department ■ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: 2.1/3
4. Pre-requisites for this course (if any)**:** CSE111, CSE142, Mathematic fundamentals

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	**Traditional classroom**	…..	35	80
2	**Blended**	45		
3	**E-learning**	.....		
4	**Distance learning**	.....		
5	**Other ()**	.....		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	22.5
2	**Laboratory/Studio**	
3	**Tutorial**	22.5
4	**Others** (specify)	-
	Total	45

B. Course Objectives and Learning Outcomes

Course Description

The course " Operational research " covers the basic notions and concepts of operational research, the employability of operational research is made up of two concatenated phases, the first of which consists in mathematically formulating a problem which requires a detailed and sufficiently precise analysis to collect the essential characteristics of the problem posed in addition to know-how and some experience. In the second phase, the problem is solved by the use of rigorous and well-defined algorithms.

Course Main Objective

- ✓ State and relate basics concepts of operational research, fundamental algorithms on operational research, and their applications
- ✓ Master collection of data and information provided by the problem.
- ✓ Learn how to formulate optimization models.
- ✓ Present the different steps to follow to give a global mathematical vision.
- ✓ Have the skill to present the different problem-solving techniques whose goal is to find the best solution (called optimal solution) for the problem studied.
- ✓ Mange the design problems and ethics related to operational research
- ✓ Conclude effectively the basics, principles, and theories related to operational research with other disciplines

1. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and understanding**	
1.1	State and relate basics concepts of operational research, fundamental algorithms on operational research, and their applications	PLOK.2
1.2	Learn how to formulate optimization models.	
1.3	Present the different steps to follow to give a global mathematical vision.	PLOK.3
2	**Skills**	
2.1	Master collection of data and information provided by the problem.	PLOS.1
2.2	Have the skill to present the different problem-solving techniques whose goal is to find the best solution (called optimal solution) for the problem studied.	
2.3	Mange the design problems and ethics related to operational research	
2.4	Conclude effectively the basics, principles, and theories related to operational research.	PLO.S7

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to Optimization	2
2	Definition of Operations Research	1.5
3	Formulation of an optimization problem	3
4	Linear programming	2
5	Solving linear programs	2
6	Graphics resolution	2
7	Simplex Method: Solving by Simplex Tables	3
8	Duality	1.5
9	MidTerm-1	2
10	Linear problems in integer variables	2
11	Dynamic Programming	3.5
16	MidTerm-2	2
Total		22.5

C1.1 Tutorials work Content

No	List of Topics	Contact Hours
1	Tutorial 1: Formulation of an optimization problem	5
2	Tutorial 2: Solving linear programs: Graphics resolution	4
3	Tutorial 3: Solving linear programs: Simplex method and Simplex Tables	5
4	Tutorial 4: Linear problems in integer variables	3.5
5	Tutorial 5: Solving linear programs by dynamic Programming	5
Total		22.5

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**		
PLOK.1	State and relate basics concepts of operational research, fundamental algorithms on operational research, and their applications	Lecturing	Assignments, Quizzes , Exams,
PLOK.2	Learn how to formulate optimization models.	Lecturing Tutorial	
PLOK.3	Present the different steps to follow to give a global mathematical vision.	Lecturing Tutorial	
2.0	**Skills**		
PLOS.1	Master collection of data and information provided by the problem.	Lecturing Tutorial	Assignments, Quizzes, Exams,
PLOS.2	Have the skill to present the different problem-solving techniques whose goal is to find the best solution (called optimal solution) for the problem studied	Lecturing Tutorial Assignments	Assignments, Quizzes, Exams,
PLOS.3	Mange the design problems and ethics related to operational research	Lecturing Tutorial	Assignments, Quizzes, Exams,
PLOS.7	Conclude effectively the basics, principles, and theories related to operational research.	Lecturing Tutorial Assignments	Assignments, Quizzes, Exams,

2. Assessment Tasks for Students

	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	00%
2	Quizzes, Homework assignments	Random	00%
3	First mid Term	8	35%
5	Final Exam	16	65%

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :
1- Office hours 2- Blackboard interface

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	F. Bastin Operational Research Models Department of Computer Science and Operational Research University of Montreal 2010.
Essential References Materials	1. C. Prins and M. Sevaux - Linear programming with Excel: 55 optimization problems modeled step by step and solved with Excel, Eyrolles, 2011.. 2. B. Fortz Operational research and applications 2012-2013. 3. J.C Hennet, Operational Research course 2012.
Electronic Materials	• Lecture material in PPT • Any Related material including the YouTube videos relating to engineering measurement • Blackboard
Other Learning Materials	NA

2. Facilities Required

Item	**Resources**
Accommodation	**Classroom board** **Internet access**
Technology Resources	**Data projector**

G. Course Quality Evaluation

Evaluation Areas/Issues	**Evaluators**	**Evaluation Methods**
Effectiveness of teaching and assessment.	Students, course coordinator, Alumni, Employers	Direct/Indirect
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, quality department	Direct
Quality of Learning resources	Faculty, Program Leaders,	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders,	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/10/2022

Course Title:	**Database design**
Course Code:	CSE323
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Thouraya GOUASMI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. A. Course Identification

1. Credit hours: 3 (1.5-0-1.5)
2. Course type **a.** University ☐ College ☐ Department ■ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: 2.1/3
4. Pre-requisites for this course (if any)**:** Notions of operating systems, File management

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	**Traditional classroom**	…..	29	74
2	**Blended**	45		
3	**E-learning**	.....		
4	**Distance learning**	.....		
5	**Other (Specify)**	.....		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	12.5
2	**Laboratory/Studio**	22.5
3	**Tutorial**	10
4	**Others**(specify)	-
	Total	45

B. Course Objectives and Learning Outcomes

Course Description

In this course, we will focus on the essential elements of the design phase: the development of a conceptual data model, the translation into a logical data model in order to present the relational model by applying certain normalization rules (Normal Forms). It aims to demonstrate its fundamental role in the management and modeling of data (structured data, unstructured data) and to make known their different functionalities, manipulation language of a relational database (SQL) and administration of databases.

Course Main Objectives

- ✓ Acquire prior knowledge of databases concept
- ✓ Design a Conceptual Data Model of an information system, according to the MERISE formalization
- ✓ Translate a CDM into a Logical Data Model based to the dependency rules
- ✓ Manage design and ethical issues related to databases by applying normalization
- ✓ Define and manipulate the database with relational algebra and then develop with SQL.
- ✓ Effectively conclude database-related basics, principles, and theories with other disciplines.

1. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	✓ Acquire prior knowledge of databases concept	PLO.K2
1.2	✓ Design a Conceptual Data Model of an information system, according to the MERISE formalization	
1.3	✓ Translate a CDM into a Logical Data Model based to the dependency rules	PLO.K3
2	**Skills**	
2.1	✓ Manage design and ethical issues related to databases by applying normalization	PLO.S2
2.2	✓ Define and manipulate the database with relational algebra and then develop with SQL.	
2.3	✓ Effectively conclude database-related basics, principles, and theories with other disciplines.	PLO.S7

C.1. Course Content

No	List of Topics	Contact Hours
1	1.1 Introduction and main concepts of databases 1.2 File systems and DBMS	3
2	A conceptual model: The Association Entity model	2.5
3	The relational model of databases 4.1 Logical Data Model (LDM) 4.2 Physical Data Model (PDM)	4
4	Normalization	3
5	MidTerm-1	2
6	Relational algebra Codd Relational algebra	3
7	Structured query language	3
8	MidTerm-2	2
Total		22.5

C.2. Practical Work Content

No	List of Topics	Contact Hours
1	TD1 : Entity-Association Model	4
2	TD2 : Relational Data Model (LDM)	3
3	TD3 :Physical Data Model (PDM)	3
4	TD4 : Normalization	3
5	TD5 : Relationalalgebra	3
6	TD6 : Structured query language (DDL)	3.5
7	TD7 : Structured query language (DML)	3
Total		22.5

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
1.0	**Knowledge and Understanding**		
PLO.K2	Acquire prior knowledge of databases concept (entity, attributes, association, etc) Design a Conceptual Data Model of an information system, according to the MERISE formalization.	Lecturing	Assignments, Quizzes , Exams,
PLO.K3	Translate a CDM into a Logical Data Model based to the dependency rules.		
2.0	**Skills**		
PLO.S2 PLO.S7	Manage design and ethical issues related to databases by applying normalization. Define and manipulate the database with relational algebra and then develop with SQL. Effectively conclude database-related basics, principles, and theories with other disciplines.	Lecturing/Labdemonstrate	Assignments, Quizzes , Exams,

2. Assessment Tasks for Students

#	Assessmenttask*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	25%
2	Quizzes, Homework assignments	Random	00%
3	First midTerm	8	25%
5	Final Exam	16	50%

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :
1- Office hours 2- Blackboard interface

F. Learning Resources and Facilities

1. Learning Resources

Required Text books	1. Noel Novelli, introduction to databases, Functional dependencies and standardization 2. Stéphane Crozat, Database design I: Introduction, 2020 3. Akoka and Comyn Wattiau Design of relational databases, Vuibert Informatique. 4. Raoudhakhcherif, Database Design 5. Cyril Gruau, Database design 6. LORENTZ , D. (s.d.), «Oracle Database SQL Reference, 10g». Oracle Press. 7. WATSON, J., & RAMKLASS, R. (s.d.). « OCA Oracle Database 11g. SQL Fundamentals I». Exam Guide.Oracle Press.
Essential References Materials	1. Database course - Models and languages: http://sql.bdpedia.fr/ 2. Complete course on Databases: https://www.cours-gratuit.com/cours-bases-dedonnees/cours-complet-sur-les-bases-de-donnees
Electronic Materials	-
Other Learning Materials	NA

2. Facilities Required

Item	Resources
Accommodation	**Classroom board** **Computer lab with the necessary software** **Internet access**
Technology Resources	**Data projector**

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students, course coordinator, Alumni, Employers	Direct/Indirect
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, quality department	Direct
Quality of Learning resources	Faculty, Program Leaders,	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders,	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/10/2022

Course Title:	**Software Engineering & agile method**
Course Code:	CSE331
Program:	Computer science Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Rim Afdhal
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. Course Identification

1. Credit hours: **3 (2-1-0)**
2. Course type **a.** College ☐ Department ■ Others ☐ **b.** Fundamental ■ Transversal ☐ Optional ☐
3. Level/year at which this course is offered: 2.1/3
4. Pre-requisites for this course (if any): CSE131, Databases, Programming

1. **Mode of Instruction (mark all that apply)**

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	**Traditional classroom**	…..	35	80
2	**Blended**	33		
3	**E-learning**	.....		
4	**Distance learning**	.....		
5	**Other (Project)**	12		

2. **Contact Hours (based on academic semester)**

No	Activity	Contact Hours
1	**Lecture**	23
2	**Laboratory/Studio**	-
3	**Tutorial**	10
4	**Others** (Project)	12
	Total	45

B. Course Objectives and Learning Outcomes

Course Description

This course covers knowledge of software engineering and its challenges as well as it will introduce different methods and techniques to ensure the development and maintenance of safe and quality software systems for each phase of the software life cycle.

Course Main Objective

- ✓ Define the software engineering and understand its challenges.
- ✓ Study the qualities of software and the basic principles.
- ✓ Explain the software life cycle as well as classic and newer development processes.
- ✓ Manage the design problems and ethics related to software engineering.
- ✓ Solve software engineering issues to judge and reach the optimum solutions

1. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Define the software engineering and understand its challenges.	PLO.K1
1.2	Study the qualities of software and the basic principles.	
1.3	Explain the software life cycle as well as classic and newer development processes.	
2	**Skills**	
2.2	Manage the design problems and ethics related to software engineering.	PLO.S2
2.6	The ability to apply object-oriented programming concepts in the design of embedded software to promote modularity, reusability and ease of maintenance.	PLO.S6
2.7	Solve software engineering issues to judge and reach the optimum solutions	PLO.S7

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to the software engineering: Definitions, Actors, History (Software crisis, …),	2
2	Principles: modularity, abstraction, generics	2
3	Software development process and process models: Terminology	2
4	Phase-based process models	2
5	Agile Models	3
6	Needs engineering: Definitions and issues	2
7	Methods and process of requirements engineering	3
8	Analysis stage: models and techniques	3
9	Requirement's specification stage: models and techniques	3
10	Software system specification	3
11	Design stage: Issues, Activities: overall architecture, design of subsystems, interfaces, data structures, algorithms, …	3

No	List of Topics	Contact Hours
12	Design methods: functional, object-oriented	3
13	Specification formalisms	2
14	Quality assurance and control	2
Total		35

D. Tutorial Content

No	List of Topics	Contact Hours
1	Expression and analysis of Needs	1
2	Case Study	2
3	Software development process and process model	2
4	Conception	2
5	Black and White box testing	3
Total		10

E. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
PLO.K1	Define the software engineering and understand its challenges. Study the qualities of software and the basic principles. Explain the software life cycle as well as classic and newer development processes.	- Lecturing	- Assignments, Quizzes , Exams,
2.0	**Skills**		
PLO.S2	Manage the design problems and ethics related to software engineering.	- Lecturing	- Assignments, Quizzes , Exams,
PLO.S7	Solve software engineering issues to judge and reach the optimum solutions		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	10%
2	Quizzes, Homework assignments	Random	10%
3	First mid Term	8	25%
4	Final Exam	16	65%

Student Academic Counselling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:
- Office hours - Blackboard interface

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	- https://www.eyrolles.com/Informatique/Theme/95/modelisation-et-genie-logiciel/
Essential References Materials	- https://hal.archives-ouvertes.fr/cel-01988734/document
Electronic Materials	- Lecture material in PPT - Any Related material including the YouTube videos relating to engineering measurement - Blackboard - https://www.eyrolles.com/Informatique/Theme/95/modelisation-et-genie-logiciel/
Other Learning Materials	- NA

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	**classroom board software …**
Technology Resources (AV, data show, Smart Board, software, etc.)	**data show;**

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students, course coordinator, Alumni, Employers	Direct/Indirect
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, quality department	Direct
Quality of Learning resources	Faculty, Program Leaders,	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders,	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/10/2022

Course Title:	**Object-oriented analysis and design**
Course Code:	CSE332
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Dr. THOURAYA GOUASMI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. Course Identification

1. Credit hours: 3 (1 -0.5-1.5)

2. Course type

a. University ☐ College ☐ Department ■ Others ☐

b. Required ■ Elective ☐

3. Level/year at which this course is offered: 2.1/3

4. Pre-requisites for this course (if any)**:** POO, Algorithms and data structures, UML

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	**Traditional classroom**	…..	31	76
2	**Blended**	45		
3	**E-learning**	.....		
4	**Distance learning**	.....		
5	**Other (Specify)**	.....		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	22.5
2	**Laboratory/Studio**	22.5
3	**Tutorial**	-
4	**Others**(specify)	-
	Total	45

B. Course Objectives and Learning Outcomes

Course Description

This course assimilates and masters the basic concepts of the object-oriented approach and design information systems based on the UML modeling language and Unified Processes. It is the delicate stage of software life cycle that allows reducing phenomenon complexity and creates a model that eliminates the insignificant details from important objects. Visual model diagrams can be more understandable and can allow students to benefit from the contribution of this approach to object programming. It guide to choose and build a model according to specific view (functional, static, dynamic) and the level of abstraction chosen (expression of needs, analysis, design)

Course Main Objective

- ✓ Acquire prior knowledge of object-oriented approach
- ✓ Master the unified modeling language UML
- ✓ Identify the different UML Models : static, interactive, iterative incremental, centered on the user's needs, centered software architecture
- ✓ Editing UML models and diagrams
- ✓ Manage data dictionary
- ✓ Generate C++, Java,...
- ✓ Reverse engineering from existing code

1. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Prior knowledge of object-oriented approach	PLO.K1
1.2	Master the unified modeling language UML	PLO.K2
1.3	Discovery difference between static and interactive diagrams and in which case using every one.	PLO.K3
2	**Skills**	
2.1	Editing UML models and diagrams	PLO.S1
2.2	Manage data dictionary	PLO.S2
2.3	Encoding project using code C++, Java, etc. generated from UML diagrams.	PLO.S3
2.4	Reverse engineering from existing code	PLO.S7

C. Course Content

No	List of Topics	Contact Hours
1	Introduction oriented-object approach	1.5
2	Identify the basic concepts of the object-oriented approach and its various relationships	1
3	Introduce UML unified modelling language and its structure	2.5
5	Structural / static diagrams 5.1 Use case diagrams 5.2 Class diagrams 5.3 Object diagrams 5.4 Component diagrams 5.5 Deployment diagrams	6
6	MidTerm-1	2
7	Behavior / dynamic diagrams 7.1 Sequence diagrams 7.2 Collaborate diagrams 7.3 State charts diagrams 7.4 Activities diagrams	6
8	Unified process Model	1 .5
9	MidTerm-2	2
Total		22.5

C2. Practical Work Content

No	List of Topics	Contact Hours
1	TP1: Structural modeling: Use case diagrams	3
2	TP2: Object & Class diagrams	2.5
3	TP3: Dynamic modeling: Sequence diagrams	3
4	TP4: Collaboratediagrams	3
5	TP5: State charts diagrams	3
6	TP6: Activitiesdiagrams	3
7	TP7: Unified process Model	3
8	Practical Exam	2
Total		22.5

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
1.0	**Knowledge and Understanding**		
PLO.K1	Prior knowledge of object-oriented approach	Lecturing	Assignments, Quizzes , Exams,
PLO.K2	Master the unified modeling language UML		
PLO.K3	Discovery difference between static and interactive diagrams and in which case using every one.		
2.0	**Skills**		
PLO.S1	Editing UML models and diagrams.	Lecturing/Lab demonstration	Assignments, Quizzes , Exams,
PLO.S2	Manage data dictionary.		
PLO.S3	Encoding project using code C++, Java, etc. generated from UML diagrams.		
PLO.S7	Reverse engineering from existing code.		

2. Assessment Tasks for Students

#	Assessmenttask*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	25%
2	Quizzes, Homework assignments	Random	00%
3	First midTerm	9	25%
5	Final Exam	16	50%

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :
1- Office hours 2- Blackboard interface

F. Learning Resources and Facilities

1. Learning Resources

Required Text books	1. Grady Booch, et al: ***The Unified Modeling Language User Guide*****,** Addison-Wesley
Essential References Materials	- James Rumbaugh, et al: ***The Unified Modeling Language Reference Manual,*** Addison- Wesley - Ivar Jacobson, et al: ***Unified Software Development Process,*** Addison-Wesley - Jos B. Warmer, Anneke G. Kleppe: ***The Object Constraint Language : Precise Modeling With UML,*** Addison-Wesley - Muller P.A., Nathalie G., « Modélisation objet avec UML », 2ème édition, Eyrolles, février 2000, Paris. - Roques P., Vallée F., « UML en action », 2ème édition, Eyrolles, novembre 2002, Paris. - Roques P., « UML 2, Modéliser une application Web », 4ème édition, Eyrolles, octobre 2008, Paris.
Electronic Materials	1. www.uml-diagrams.org 2. https://www.conceptdraw.com/examples/uml-object-oriented-design
Other Learning Materials	NA

2. Facilities Required

Item	**Resources**
Accommodation	**Classroom board** **Computer lab with the necessary software** **Internet access**
Technology Resources	**Data projector**

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students, Faculty, Program Leaders, Peer Reviewer	Direct/Indirect
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, Peer Reviewer	Direct, Indirect
Quality of Learning resources	Faculty, Program Leaders, Peer Reviewer	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders, Peer Reviewer	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/10/2022

Course Title:	**Preparing For The CCNA2 Certification**
Course Code:	CSE341
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Mr. Mounir Telli
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. Course Identification

1. Credit hours: 3 (1-0-2)
2. Course type **a.** College ☐ Department ■ Others ☐ **b.** Fundamental ■ Transversal ☐ Optional ☐
3. Level/year at which this course is offered: 2.1/3
4. Pre-requisites for this course (if any): CCNA1

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	**Traditional classroom**	…..	35	80
2	**Blended**	45		
3	**E-learning**	.....		
4	**Distance learning**	.....		
5	**Other ()**	.....		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	22.5
2	**Laboratory/Studio**	22.5
3	**Tutorial**	
4	**Others** (specify)	-
	Total	45

B. Course Objectives and Learning Outcomes

Course Description

The CCNA2 certification course, or Cisco Certified Network Associate - Part 2, is the second step of the CCNA certification program offered by Cisco Systems. It aims to deepen the skills and knowledge of networking professionals in the field of computer networking.

Course Main Objective

The objectives of the CCNA2 course are as follows:

- ✓ In-depth understanding of routing protocols: Students will learn advanced routing protocols such as OSPF (Open Shortest Path First) and EIGRP (Enhanced Interior Gateway Routing Protocol) to configure dynamic networks.
- ✓ Advanced Switching Technologies: Students will learn how to configure and manage advanced Cisco switches, including support for redundancy and Virtual LAN (VLAN).
- ✓ Advanced IP Services: Students will become familiar with IP services such as network security, quality of service (QoS), and IP address management.
- ✓ Network Management: Students will learn how to manage and monitor Cisco networks using tools such as Simple Network Management Protocol (SNMP) and Syslog.
- ✓ Network Troubleshooting: Network troubleshooting skills will be strengthened to diagnose and resolve network issues.

1. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	- In-depth understanding of routing protocols: Students will learn advanced routing protocols such as OSPF (Open Shortest Path First) and EIGRP (Enhanced Interior Gateway Routing Protocol) to configure dynamic networks.	PLO.K1
	- Advanced Switching Technologies: Students will learn how to configure and manage advanced Cisco switches, including support for redundancy and Virtual LAN (VLAN).	PLO.K3
2	**Skills**	
2.1	- Network Management: Students will learn how to manage and monitor Cisco networks using tools such as Simple Network Management Protocol (SNMP) and Syslog.	PLO.S2
	- Network Troubleshooting: Network troubleshooting skills will be strengthened to diagnose and resolve network issues.	PLO.S6

C. Course Content

No	List of Topics	Contact Hours
1	Chapter 1: WAN and routers • WAN networks • Routers	5
2	Chapter 2: Introduction to routers • Use of the Cisco IOS software platform • Starting a router	6
3	Chapter 3: Configuring a router • Configuring a router	5

No	List of Topics	Contact Hours
	• Finalizing the configuration	
4	Chapter 4: Information on other equipment • Network neighbourhood discovery and connection 94 • Obtaining information on remote equipment	5
5	Chapter 5: Cisco IOS software platform management • Router start-up sequence and verification • Cisco file system management	5
6	Chapter 6: Routing and routing protocols • Introduction to static routing • Overview of dynamic routing • Overview of routing protocols	8
7	Chapter 7: Distance vector routing protocols • Distance vector routing • RIP • IGRP	6
8	Chapter 8: Control and error messages of the TCP/IP protocol suite • Overview of TCP/IP error messages • TCP/IP protocol suite control messages	6
Total		**45**

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
	- In-depth understanding of routing protocols: Students will learn advanced routing protocols such as OSPF (Open Shortest Path First) and EIGRP (Enhanced Interior Gateway Routing Protocol) to configure dynamic networks. - Advanced Switching Technologies: Students will learn how to configure and manage advanced Cisco switches, including support for redundancy and Virtual LAN (VLAN).	- Lecturing	- Assignments, Quizzes, Exams,
2.0	**Skills**		
S.1	- Network Management: Students will learn how to manage and monitor Cisco networks using tools such as Simple Network Management Protocol (SNMP) and Syslog. - Network Troubleshooting: Network troubleshooting skills will be	- Lecturing - Practice Projects	- Assignments, Quizzes, Exams, - Assignments, Report, Quizzes, Exams,

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	strengthened to diagnose and resolve network issues.		

2. Assessment Tasks for Students

	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	25%
2	Quizzes, Homework assignments	-	-
3	mid Term	8	25%
4	Final Exam	15	50%

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:
- Office hours - Blackboard interface - Academic advisor - Bibliotic

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	- Local Area Network Reference (McGraw-Hill Communications Series) 1st. Edition (1989) - J. F. Kurose and W. R. Ross, Computer Networking: A Top-Down Approach Featuring the Internet. 7th Edition (2016) - Technologies des ordinateurs et des réseaux, cours et exercices corrigés ; Pierre-Alain Goupille ; 6ème édition, Dunod - Réseaux locaux ; G.Beuchot ; polycopiés
Essential References Materials	- CCNA 200-301 Official Cert Guide Library
Electronic Materials	- PPT - PC - Cables, hubs, switches, and routers - YouTube videos relating to LAN - Blackboard
Other Learning Materials	- NA

2. **Facilities Required**

Item	Resources
Accommodation	**Classroom board** **Computer lab with the necessary software** **Internet access**
Technology Resources	**Data projector**

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students, course coordinator, Alumni, Employers	Direct/Indirect
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, quality department	Direct
Quality of Learning resources	Faculty, Program Leaders,	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders,	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/10/2022

Course Title:	**Preparing for the LPI 102**
Course Code:	CSE342
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Thouraya GOUASMI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. Course Identification

1. Credit hours: **1.5(00-0-1.5)**

2. Course type

a. University ☐ College ☐ Department ■ Others ☐

b. Required ■ Elective ☐

3. Level/year at which this course is offered: 2.1/3

4. Pre-requisites for this course : digital circuits, Data structure, Operating system (OS), LPI 101

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	**Traditional classroom**	…..	14.5	37
2	**Blended**	22.5		
3	**E-learning**	.....		
4	**Distance learning**	.....		
5	**Other ()**	.....		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	
2	**Laboratory/Studio**	22.5
3	**Tutorial**	
4	**Others**(specify)	-
	Total	22.5

B. Course Objectives and Learning Outcomes

Course Description
LPI 102 is one of two parts of the Linux Professional Institute (LPI) Level 1 certification. This certification is internationally recognized and is designed to validate the skills of IT professionals in administering Linux systems.

Course Main Objective
Students will be able to :
Understand how Linux System works
Master Basic Network Services
Linux Web server Configuration
Install and implement many server or role
Learn how to protect services
Be able to put on production windows server on network

1. Course Learning Outcomes

	CLOs	AlignedPLOs
1	**Knowledge and Understanding**	
1.1	✓ Understand how Linux System works	PLO.K1
1.2	✓ Linux Web server Configuration	
1.3	✓ Linux Web server Configuration	
2	**Skills**	
3.1	✓ Install and implement many server or role	PLO.S3
3.2	✓ Learn how to protect services	
2.2	✓ Be able to put on production windows server on network	PLO.S6

C. Course Content

No	List of Topics	Contact Hours
1	Classroom Lecture and Guided Work	10
2	**1. Install Windows Server 2016, DHCP, DNS…** Objectives: -install and implement many server or role to be able to put them on production in network enterprise. **2.Install and configure Active Directory** Objectives: -To be able to manage every machine in network enterprise	12.5
Total		22.5

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
PLO.K1	✓ Understand how Linux System works ✓ Master Basic Network Services ✓ Linux Web server Configuration	- Lecturing - Class discussion - Labdemonstration - Class discussion	Assignments, Quizzes , Exams,
2.0	**Skills**		
PLOS3	✓ Install and implement many server or role ✓ Learn how to protect services	- Lecturing - Labdemonstration - Class discussion	Assignments, report, Quizzes , Exams,,
PLO.S6	✓ Be able to put on production windows server on network	- Lecturing - Labdemonstration - Class discussion	Assignments, Report, Quizzes , Exams

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	00%
2	Quizzes, Homework assignments	Random	00%
3	First midterm	08	00%
4	Final Exam	16	100%

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

1- Office hours
2- Blackboard interface

F. Learning Resources and Facilities

1. Learning Resources

RequiredTextbooks	1. Sébastien ROHAUT, « Préparation à la certification LPIC-1 », Examens LPI 101 et LPI 102, 5ème édition 2017 ,838 pages. 2. Kay A. ROBBINS, S. ROBBINS. UNIX Systems Programming: Communication, Concurrency and Threads, 2003, Prentice-Hall. 3. W. RICHARD STEVENS, Stephen A. RAGO. Advanced Programming in the UNIX Environment, 2nd Edition, 2005, Addison-Wesley. 4. A. SILBERSCHATZ, P. GALVIN, G. GAGNE. Operating System Concepts. International Student Version, 8th Edition, Wiley, February 2009. 5. A. SILBERSCHATZ, P. GALVIN, G. GAGNE. Operating System Concepts with Java, 8th Edition, Wiley, February 2010. 6. Andrew S. TANENBAUM. Systèmes d'exploitation, 3ème édition, Octobre 2008, Edition Pearson Education. 7. U. RAMACHANDRAN, William D. LEAHY Jr. Computer Systems: An Integrated Approach to Architecture and Operating Systems, First Edition, July 2010, Addison Wesley. 8. A. Tanenbaum. Modern Operating Systems, 1992, Computer Science 9. Benoît Semelin, « Astrophysique et instrumentations associées ». Cours UNIX,2006
Essential References Materials	1. https://www.eyrolles.com/Informatique/Theme/239/theories-des-systemes-d-exploitation/ 2. https://www.bestcours.com/systeme-exploitation/ 3. http://www.advancedlinuxprogramming.com/alp-folder **4. https://www.lpi.org/our-certifications/lpic-1-overview**
Electronic Materials	• Lecture material in PPT • Any Related material including the YouTube videos relating to engineering measurement • Blackboard
Other Learning Materials	NA

2. Facilities Required

Item	Resources
Accommodation	**Classroom board** **Computer lab with the necessary software** **Internet access**
Technology Resources	**Data projector**

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students, course coordinator, Alumni, Employers	Direct/Indirect
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, quality department	Direct
Quality of Learning resources	Faculty, Program Leaders,	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders,	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/10/2022

Course Title:	**English III TOIEC B2.1 certification**
Course Code:	LAC351
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Mrs. Rim RADDADI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. Course Identification

1. Credit hours: **1.5 (1.5-0-0)**

2. Course type

a. College ☐ Department ■ Others ☐

b. Fundamental ■ Transversal ☐ Optional ☐

3. Level/year at which this course is offered: 2.1/3

4. Pre-requisites for this course (if any): LAC151

5. Co-requisites for this course (if any)**:** None

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	**Traditional classroom**	…..	16.5	39
2	**Blended**	22.5		
3	**E-learning**	.....		
4	**Distance learning**	.....		
5	**Other ()**	.....		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	22.5
2	**Laboratory/Studio**	-
3	**Tutorial**	-
4	**Others** (specify)	-
	Total	22.5

B. Course Objectives and Learning Outcomes

Course Description

This course deals with the most widespread English proficiency exam that tests business English skills.
Topics of this are related to business English and computer science.
This course would give an insight of the TOEIC test and give tips that would help managing the time of the exam.
Grammatical points and vocabulary are taught in context.
This course is student centred and incorporates the 21st century skills in the ELT (English Language Teaching) classrooms, hence, creativity, collaboration, critical thinking, and communication are crucial components of the learning process.

Course Main Objective

- listening for general information and for details
- Reading for general information and for details
- Know how to conduct research around computer science in English
- Communicate research findings and oral presentation in English

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Know how to conduct research around computer science in English	PLO K.2
2	**Skills**	
2.1	Communicate research findings and oral presentation in English	PLO S.2

C. Course Content

No	List of Topics	Contact Hours
1 Photos	photos of people and things strategy review strategy practice	4
2 Question response	identifying time and people identifying opinion and choice identifying suggestion, reason, and location strategy review and practice	5.5
3 Incomplete sentences	Word families and Similar words Prepositions, Conjunctions, and adverbs of frequency Causative verbs and Conditional sentences Verb tense Two-word verbs	5
4 Text completion	Words in context Pronouns and Subject-verb agreement Modal auxiliaries and Adjective of comparisons Gerunds or infinitives	6
5 End of term exam		2
Total		22.5

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	- Know how to conduct research around computer science in English	-P. B. L -Activities -Class discussion	- Assignments. - Peer to peer evaluation. - Graphic organiser
2.0	**Skills**		
2.1	- Communicate research findings and oral presentation in English	- TBL	- Assignment - Peer to peer evaluation.

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	0%
2	Quizzes, Homework assignments	Random	0%
3	Mid-term	8	0%
4	Final Exam	16	100%

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:
- Office hours - Blackboard interface - Academic advisor - Bibliotic

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	- TOEIC Speaking and Writing sample test - https://www.ets.org/s/toeic/pdf/speaking-writing-sample-tests.pdf
Essential References Materials	- MacKenzie Ian. English for Business Studies. Cambridge University Press.1997. - Mascull Bill. Business Vocabulary in Use. Cambridge University Press.2002.
Electronic Materials	- You tube video - Talk english.com
Other Learning Materials	- NA

2. **Facilities Required**

Item	Resources
Accommodation	**Classroom board** **Computer lab with the necessary software** **Internet access**
Technology Resources	**Data projector**

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students, course coordinator, Alumni, Employers	Direct/Indirect
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, quality department	Direct
Quality of Learning resources	Faculty, Program Leaders,	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders,	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/10/2022

Course Title:	**French III: Communication technique and preparation for Delf Pro 1**
Course Code:	LAC352
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Noureddine AMEUR
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. Course Identification

1. Credit hours: 1.5 (1.5-0-0)

2. Course type

a. College ☐ Department ■ Others ☐

b. Fundamental ■ Transversal ☐ Optional ☐

3. Level/year at which this course is offered: 2.1/3

4. Pre-requisites for this course (if any): LAC262

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	**Traditional classroom**	…..	16.5	39
2	**Blended**	22.5		
3	**E-learning**	.....		
4	**Distance learning**	.....		
5	**Other ()**	.....		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	12.5
2	**Laboratory/Studio**	
3	**Tutorial**	10
4	**Others** (specify)	-
	Total	22,5

B. Course Objectives and Learning Outcomes

Course Description

This "Communication" course gives a clear vision of the French language of the professional type with its different articulations according to the situations of the communication itself.
The student should be able to:

Course Main Objective

- ✓ Acquire knowledge of organizational communication.
- ✓ To express oneself orally before an audience or a small group, in terms of expression as such, gestures, attitudes and mastery of the material assigned to it.
- ✓ Express oneself correctly in terms of written language and in the context of professional documents (letters, minutes of meetings, notes, files, press reviews, etc.), which presupposes an adequate command of the French language itself and of certain computer tools.
- ✓ Acquire knowledge of organizational communication.
- ✓ Express themselves correctly in terms of written language and in the context of professional documents (letters, minutes of meetings, notes, press reviews, etc.)
- ✓ To present oneself in an internship or job interview on the basis of a good application file and a real psycholinguistic preparation.
- ✓ To obtain the necessary skills to really enter professional life.

1. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	✓ Express oneself correctly in terms of written language and in the context of professional documents (letters, minutes of meetings, notes, files, press reviews, etc.), which presupposes an adequate command of the French language itself and of certain computer tools.	PLO K.1
2	**Skills**	
2.2	✓ Effectively conveying ideas through written language within the realm of professional documents such as letters, meeting minutes, notes, files, and press reviews requires a proficient command of the French language as well as familiarity with essential computer tools.	PLOS.1
	✓ Professional writing: writing an agenda, a memo, a summons, letters, reports, minutes, etc.	PLO S.2

C. Course Content

No	List of Topics	Contact Hours
1	Chapter 1 : Presentation of the course and level test through a discussion topic.	2
2	Chapter 2 : Fundamental concepts of communication (Process, means, functions and obstacles...)	2,5
3	Chapter 3 : Techniques of modern professional communication (supporting text)	3
4	Chapter 4 : Professional writing (report, minutes, note, summary, cover letter, CV...)	3
5	Chapter 5 : How to write a cover letter and a professional CV	2,5
6	Chapter 6 : Speaking (oral presentations...) and conducting meetings (preparation, evaluation and conflict management...)	3,5
7	Chapter 7 : Audio-visual session: videos to watch and comment on (Job interview, how to write a good CV, a covering letter, producing a professional e-mail...)	3,5
8	Chapter 8 : Pre-examination debriefing	1
9	Main review	1,5
Total		22,5

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
PLO.K1	- Express oneself correctly in terms of written language and in the context of professional documents (letters, minutes of meetings, notes, files, press reviews, etc.), which presupposes an adequate command of the French language itself and of certain computer tools.	- Lecturing, speaking & writing	- Assignments, Quizzes, Exams,
2.0	**Skills**		
PLO.S1	- Effectively conveying ideas through written language within the realm of professional documents such as letters, meeting minutes, notes, files, and press reviews requires a proficient command of the French language as well as familiarity with essential computer tools	- Lecturing - Tutorials - Courses project	- Assignments, Quizzes, Exams, -
PLO.S4	- Professional writing: writing an agenda, a memo, a summons, letters, reports, minutes, etc.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Work carried	Weekly	00%
2	Prototype realization	Random	00%
3	Final Evaluation	-16	100%

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:
- Office hours - Blackboard interface - Academic advisor - Bibliotic

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	- Jérôme Koechlin, “La communication professionnelle: les clés pour réussir”(“Professional communication: the keys to success”), Paris : Edition PPUR 2015(1ère edition). - Michel Danilo, Lincoln, Jean-Luc Penfornis, “Le français de la communication professionnelle”(“French for professional communication”), Allemagne : Edition Cle International (collection Le français de) 1993.
Essential References Materials	- Electronic references: - https://www.podbean.com/podcast-detail/hvdrf-37d03/Learn-French-with-French-Podcasts---Fran%C3%A7ais-avec-Pierre - https://www.printbasprix.com/blog/quest-ce-que-communication-professionnelle/ - https://www.reussirmavie.net/Comment-preparer-son-entretien-d-embauche_a118.html
Electronic Materials	- Lecture material in Word & PDF… - Any Related material including the YouTube videos relating to Communication French.
Other Learning Materials	- NA

2. Facilities Required

Item	Resources
Accommodation	**Classroom board** **Computer lab with the necessary software** **Internet access**
Technology Resources	**Data projector**

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students, course coordinator, Alumni, Employers	Direct/Indirect
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, quality department	Direct
Quality of Learning resources	Faculty, Program Leaders,	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders,	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/10/2022