

SEMESTER 5



Course Title:	Business Communication
Course Code:	LAC511
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. 0	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4.	4. Pre-requisites for this course (if any): LAC441, LAC351		
5.	5. Co-requisites for this course (if any): None		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	15	100
3	E-learning	-	-
4	Distance learning		-
5	Other	-	_

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

* The course would introduce the learner to business English communication. It would facilitate their integration and their communication within a business context in a real life situation. * The course is divided into three units: telephoning, emailing and business meetings.

2. Course Main Objective

- Identifying the essential means of communication within a business situation

- Being able to use to us computer science for the sake of communication
- Being able to communicate effectively and fluently within a business situation.



3. Course Learning Outcomes

	CLOs		
1	Knowledge and Understanding		
1.1	Aware with basics of general english	K2	
1.2	identifying and discussion different types of business communication	K3	
2	Skills		
1.2	Using technology and computer for an effective communication	S.2	
2.2	Evaluate and analyze the performance and sustainability	S.4	
3	Values		
3.1	Mange to handle a business conversation within a real-life situation	V.1	
3 7	Customize the use of business english in Computer science engineering	V.3	
5.2	practices		

C. Course Content

No	No List of Topics	
1	Unit one: telephoning	5
2	Unit two: emailing	5
3	3 Unit three: business meetings	
	Total	15

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	Aware with basics of general english	- Lecturing	AssignmentsPeer to peer
K.3	identifying and discussion different types of business communication	- Group work	evaluation
2.0	Skills		
S .2	Using technology and computer for an effective communication	e - CLecturing	AssignmentsPeer to peer
S.4	Evaluate and analyze the performance and sustainability	- Group work	evaluation
3.0	Values		
V .1	Mange to handle a business conversation within a real life situation		- Assignments
V.3	Customize the use of business english in Computer science engineering practices	- Role Play	evaluation



2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	15%
2	Homework assignments	Random weekly	20%
3	First mid Term	7	15%
4	Second mid Term	-	00%
5	Final Exam	6	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 Reso	1. Learning Resources		
Required Textbooks	- John V. Thill, "Excellence in business communication ", 11 th Edition. Courtland		
Essential References Materials	1.1. John V. Thill, "Excellence in business communication ", 11 th Edition. Courtland		
Electronic Materials	• You tube		
Other Learning Materials	NA		

2. Facilities Required	eure d'Ingénieurs
Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Teaching class room with board and internet access. Computer Lab.
(AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.



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	21/09/2021



Course Title:	Human rights
Course Code:	LAC512
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Mr. Mohamed KAROUI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)



A. Course Identification

1.	Credit hours: 3 (1.5-0-0)		
2. 0	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4. Pre-requisites for this course (if any):			
5.	5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	15	100%
3	E-learning	-	-
4	Distance learning		-
5	Other	-	_

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. <u>Course Description</u>

The objective of this course is to introduce some basic theoretical concepts about human rights to students. For this reason, an important part of the course is devoted to introducing the student to the concept of human rights in laws, history, and some concepts of human rights

2. Course Main Objective

Human rights can be classified and arranged in various forms. It is common for human rights to be divided into three groups:

- Personal safety rights.
- Civil liberties.
- Social and economic rights.



3. <u>Course Learning Outcomes</u>

	CLOs	Aligned PLOs
1	Knowledge and Understanding	
1.1	Demonstrate basics of software engineering.	K.1
2	Skills	
2.1	Master the concept of software life cycle, and compare some classic	C 1
2.1	and newer development processes.	5.1
3	Values	
3.1	Mange the design problems and ethics related to software engineering.	V.4

C. Course Content

² List of Topics		Contact Hours
1	Introduction	1.5
2	Concept and characteristics	1.5
3	Philosophical foundations	2
4	Human dignity: Notion and evolution	2
5	Human Dignity: Realization	2
6	The Emergence and Evolution of Human Rights at the National Level: Part 1	3
7 The Emergence and Evolution of Human Rights at the National Level: Part 2		3
	Total	15

D. 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	Demonstrate basics of software engineering.	LecturingGroup work	Assignments Peer to peer evaluation
2.0	Skills		
S.1	Master the concept of software life cycle, and compare some classic and newer development processes.	 Lecturing Group work 	 Assignments Peer to peer evaluation
3.0	Values		
V.1	Mange the design problems and ethics related to software engineering.	Role Play	AssignmentsPeer to peer evaluation



2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	25%
2	Homework assignments	Random weekly	10%
3	First mid Term	-	00%
4	Second mid Term	-	00%
5	Final Exam	6	65%

E. Student Academic Counselling and Support

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

- 1- Office hours
- 2- Blackboard interface
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	 GAUTHIER Florence, La Révolution des droits de l'homme et du citoyen, La documentation photographique N° 6098, 12/1988 KRIEGEL Blandine, Philosophie de la République, Plon, 1998
Essential References Materials	
Electronic Materials	
Other Learning Materials	Prérieure d'Ingénieure

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show



Other Resources

(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)

Traditional Machine shop, Metrology Lab.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and	Students survey, Program	Direct
assessment.	Leaders, Quality manager,	Direct
Extent of achievement of	Faculty, Students survey,	
course learning outcomes	Program Leaders, Quality	Direct
course rearining outcomes.	manager, Peer Reviewer	
Quality of Learning resources	Faculty, Program Leaders,	Verification
Teaching and learning quality	Students survey, Program	Follow up
and effectiveness.	Leaders, Quality manager	ronow-up

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	21/10/ 2021



Course Title:	Project management
Course Code:	LAC513
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Mrs. Safa ELGHAIB
Institution:	Private Higher School of Engineers of Gafsa (ESIP)



A. Course Identification

1.	Credit hours: 3 (3-0-0)		
2. (Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4.	4. Pre-requisites for this course (if any):		
5.	5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	15	100%
3	E-learning	-	-
4	Distance learning		-
5	Other	-	_

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

The course aims to provide students with the basic knowledge related to project management, entrepreneurship and business plan.

This course introduces the student to entrepreneurship from idea to project and shows the difference between an idea and a business opportunity.

Topics covered include: The objectives and different parts of the business plan, as well as financial forecasting, how to define your market, segmentation and prioritization of segments. Also, learning how to set concrete objectives and a clear strategy (the marketing plan) and how to define the sales process (the sales plan).

The second part of the course is devoted to the study of the structure, the operating mode and the legal and financial aspects, through a study of the fundamental principles of the 9 blocks of the Business Model Canvas.

Project management requires organization, preparation and the use of methodologies and tools that must be known and mastered to be sure to lead your project to success.

The course covers the basic concepts related to project management, entrepreneurship and the business plan.

The last part of the course deals with the last phase of the analysis to a successful start-up through the identification and management of risks and the market of business creation.



2. Course Main Objective

- 1. Introduction to the concepts of entrepreneurship, project management and business plan.
- 2. Present the different types of entrepreneurial profiles and the genesis of the idea.
- 3. Build and write an efficient business plan, an essential tool for the creation and
- management of a company, and understand the different parts of the business plan.
 - 4. Understand the entrepreneurial process.
- 5. Distinguish the main elements of the business model canvas and obtain practical knowledge through case studies (How to develop a BM Canvas ?).
 - 6. Detect weaknesses and failures in business creation.
 - 7. Obtain knowledge of entrepreneurship in different sectors of activity.
 - 8. Understand how to achieve a successful project start-up.
 - 9. Understand the risk management and the start-up market.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge and Understanding	
1.1	State and relate basics, principles, and theories related to the entrepreneurship and project management.	K.2
1.2	Explore entrepreneurship and project management contemporary issues constraints to judge and reach the optimum solutions.	К.3
2	Skills	
2.1	Apply the knowledge of project management, business plan and business plan Canvas principles and concepts to produce entrepreneurship solutions and designs that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	S.2
2.2	Evaluate and analyze the performance and sustainability of designed and/or existing project management.	S.4
3	Values	
3.1	Customize the use of technical and scientific management tools in project management practice.	V.2
3.2	Justify the standards and codes in practice and analysis of entrepreneurship and project management design problems and ethics.	v.3
3.3	Persuade, present, communicate, supervise and lead effectively the basics, principles, and theories related to entrepreneurship with other disciplines.	V.4



C. Course Content

No	List of Topics	Contact Hours
Ι	From idea to project	
1	Having an idea	1
2	Evaluating the opportunity	1
3	The business plan	2
4	Financial forecasts	1
II	Defining your positioning	
5	Defining your market	1
6	Segmentation	1
7	Ranking the segments	1
8	The marketing and sales plan	1
III	Structure and operating model	
9	Structure and organization	1
10	Business model	2
11	Legal and financial aspects	1
IV	From analysis to a successful start-up	
12	Identification and management of risks	1
13	The start-up market	1
	Total	15

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	State and relate basics, principles, and theories related to the entrepreneurship and project management.	Lecturing	Assignments, Quizzes
K.3	Explore entrepreneurship and project management contemporary issues constraints to judge and reach the optimum solutions.	Debate Gafsa	Homework
2.0	Skills		
S.2	Apply the knowledge of project management, business plan and business plan Canvas principles and concepts to produce entrepreneurship solutions and designs that meet specified needs with consideration of public health, safety, and welfare, as	Lecturing Research activities Assignment work	Assignments, Quizzes Homework Course project report and presentation



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	well as global, cultural, social, environmental, and economic factors		
S.4	Evaluate and analyze the performance and sustainability of designed and/or existing project management.		Assignments, Report, Quizzes, Exams,
3.0	Values		
V.2	Customize the use of technical and scientific management tools in project management practice.		Assignments, Report, Quizzes Homework Team-work
V.3	Justify the standards and codes in practice and analysis of entrepreneurship and project management design problems and ethics.	 Lectures Class discussions Assignments Projects 	Course project report and presentation
V.4	Persuade, present, communicate, supervise and lead effectively the basics, principles, and theories related to entrepreneurship with other disciplines.		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	40%
2	Quizzes, Homework assignments	Random	10%
3	First mid Term	-	-
4	Second mid Term	3	00%
5	Final Exam	6	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
- 3- Academic advisor
- 4- Bibliotic



F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	 Guide du corpus des connaissances en management de projet (Guide PMBOK), Project Management Institute, 6^e édition (septembre 2017) Andreas Führer, Rita-Maria Züger, Compendio Bildungsmedien, 2011, « Gestion de projet – Compétences de base en gestion », ISBN: 978-3-7155-9523-8 	
Essential References Materials	 base en gestion », ISBN: 978-3-7155-9523-8 Alain Fernandez, « Le chef de projet efficace : 12 bonnes pratiques pour un management humain », Editions d'organisation, 5^e édition (novembre 2013). Jérôme Maes et François Debois, « La boîte à outils du chef de projet – 74 outils et méthodes », Dunod, 2^e édition (mars 2017) PMI, (Ed.), 2000. A Guide to the project Management Body of Knowledge (PMBOK): Project Management Institute. Roger Aïm, « L'essentiel de la gestion de projet », Gualino Editions, 11^e édition (juillet 2017). Turner, J. R., "1993. The handbook of project-based management", Cambridge: McGraw-Hill. 	
Electronic Materials	 Lecture material in PPT Any Related material including the YouTube videos relating to the project management Blackboard 	
Other Learning Materials	NA	

2. Facilities Required

Item	Resources
Accommodation	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
demonstration rooms/labs, etc.)	Teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Leure d ² Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	ee de Gatsa Traditional Machine shop, Metrology Lab.



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	21/06/2020



Course Title:	IT Security	
Course Code:	CSE532/1	
Program:	Master Degree In Computer Engineering	
Department:	Computer Engineering	
Course coordinator:	DR. Wajdi SAADAOUI	
Institution:	Private Higher School of Engineers of Gafsa (ESIP)	



A. Course Identification

1.	Credit hours: 3 (1.5-0-1.5)		
2. 0	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4. Pre-requisites for this course (if any):			
5.	5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	15	100%
3	E-learning	-	-
4	Distance learning		-
5	Other	-	_

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

The objective of this course is to master the concepts as well as the basic bricks of computer security

2. Course Main Objective

- 1. Acquire a global vision of the security of an information system.
- 2. Understand the current issues in terms of security and analyze the risks, the security of computer systems (workstations and servers).
- **3.** Learn the methods and means of securing the information system of a computer network. And finally know the methods to evaluate the security put in place.



3. Course Learning Outcomes

CLO	Aligned PLOs	
1	Knowledge and Understanding	
1.1	State and relate the basics, principles and theories related to testing in an IT SECURITY	K.2
1.2	Acquire technical knowledge on the threats affecting the application components of an IS and acquire know-how in the detection of vulnerabilities and flaws within applications.	k.3
2	Skills	
2.1	Master the basic concepts and mechanisms of Cryptography	S.2
2.2	Analyze and Evaluate the performance of Cryptography algorithms	S.4
3	Values	
3.1	Customize the use of Associate risk-threats-services-mechanisms security device.	V.2
3.2	Establish a secure application exchange	V.3
3.3	effectively overseeing and directing techniques to assess the security in place	V.4

C. Course Content

No	No List of Topics	
1	Chapter 1: Basic concepts	3
2	2 Chapter 2: Computer attacks	
3	3 Chapter 3: Operating system security	
4	4 Chapter 4: File Security	
5 Chapter: Introduction to Cryptography		5
6 Chapter: Introduction to Access Control		5
7	7 Chapter: Web Security	
	Total	30

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	State and relate the basics, principles and theories related to testing in an IT SECURITY		Assignments
K.3	Acquire technical knowledge on the threats affecting the application components of an IS and acquire know-how in the detection of vulnerabilities and flaws within applications.	Lecturing	Quizzes, Exams,
2.0	Skills		



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
S.2	Master the basic concepts and mechanisms of		Assignments,
	Cryptography	Lecturing	Quizzes, Exams,
S.4	Analyze and Evaluate the performance of		Assignments, Report,
	Cryptography algorithms		Quizzes, Exams,
3.0	Values		
V.2	Customize the use of Associate risk-threats- services-mechanisms security device.	- Lectures - Class	Assignments, Report, Quizzes, Exams
V.3	Establish a secure application exchange	- Assignments	Assignments, Report,
V.4	effectively overseeing and directing techniques	- projects	Quizzes, Exams
	to assess the security in place		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	15%
2	Quizzes, Homework assignments	Random	5%
5	Final Exam	11	80%

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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

Required Textbooks	 <u>https://www.cours-gratuit.com/cours-reseau/cours-sur-les-principes-de-securite-informatique</u> 'Sécurité informatique' Dominique PRESENT I.U.T. de Marne la Vallée "Cours de Sécurité Informatique " Pierre-François Bonnefoi
Essential References Materials	· · · · · · · · · · · · · · · · · · ·
Electronic Materials	 Lecture material in PPT Any Related material including the YouTube videos relating to engineering measurement Blackboard



Other Learning Materials

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators Evaluation Method	
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	20/09/2021	~
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Privée de Gafsa



Course Title:	Artificial intelligence
Course Code:	CSE542/1-2
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Mohamed OTHMANI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)



A. Course Identification

1.	Credit hours: 3 (1.5-0.5-0)		
2. (Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4.	4. Pre-requisites for this course (if any): CSE132, CSE112,		
5.	5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100%
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	7.5
4	Others (specify)	-
	Total	15

B. Course Objectives and Learning Outcomes

1. Course Description

The objective of this course is to enable students to master the foundations of artificial intelligence. It is for this reason that an important part of the course is devoted to:

- To identify the applications of artificial intelligence already present in everyday life (social networks, e-commerce, etc.);

-Raise awareness of issues related to privacy or data bias (if AI is watching us, who is watching AI?);

and many other issues!

2. Course Main Objective

- 1. explain what artificial intelligence is;
- 2. identify its challenges and opportunities;
- 3. scientifically describe an AI project and its sub-disciplines.



3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Understanding basics of artificial intelligence	K.2
2	Skills	
2.1	explain what artificial intelligence is	S.1
2.2	Apply artificial intelligence to produce solutions and designs that meet specific needs	S.2
3	Values	
3.1	scientifically describe an AI project and its sub-disciplines.	V.1

C. Course Content

No	List of Topics	Contact Hours
1	Chapter1: Introduction	3
2	Chapter2: Solve a problem by research • Formulation of a problem • width first • depth first • limited depth • iterative limited depth • best-first search • glotom algorithm • A* algorithm, heuristics • beam search • Strategic games and research: min-max and alpha-beta	11
3	Chapter3: Logic Propositional logic Predicate logic 	8
4	Chapter4: Expert systems • Knowledge base: fact bases, rule base • Inference: forward, backward and mixed chaining Total	e ⁸ 30

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	Understanding basics of artificial intelligence	Lecturing	Assignments, Quizzes, Exams,
2.0	Skills		



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
S .1	explain what artificial intelligence is		Assignments
S.2	Apply artificial intelligence to produce solutions and designs that meet specific needs	Lecturing	Quizzes, Exams,
3.0	Values		
	ocientifically describe on Alexaicst and its	- Lectures - Class	Assignments, Report, Quizzes, Exams
V.1	sub-disciplines.	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	15%
2	Quizzes, Homework assignments	Random	10%
5	Final Exam	10	75%

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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources		
Required Textbooks	 I. Bratko, Programmation en Prolog pour l'intelligence artificielle, 2001 N. Nilsson, Artificial Intelligence: A New Synthesis, Morgan Kaufmann, 1998. S. Russell, P. Norvig, Artificial Intelligence: A Modern Approach, 2nd edition, 2002. 	
Essential References		
Materials		
	Lecture material in PPTPC	
Electronic Materials	 Any Related material including the YouTube videos relating to Numerical analysis algorithms 	
	• Blackboard	
	Matlab Software	

NA



2. Facilities Required

Other Learning

Materials

Item	Resources
Accommodation	Accommodation (Classrooms, laboratories,
(Classrooms, laboratories,	demonstration rooms/labs, etc.)
demonstration rooms/labs, etc.)	Teaching classroom with board and internet access.
Technology Resources	
(AV, data show, Smart Board,	Down point data show Matlah Software
software, etc.)	Power point, data snow, Matiao Software
Other Resources	
(Specify, e.g. if specific laboratory	
equipment is required, list	rU
requirements or attach a list)	

G. Course Quality Evaluation

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

H. Specification Approval Data

Council / Committee	Computer Engineering Council		
Date	15/10/2021		
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Privée de Gafsa



3rd year ILSI SEMESTER 5 Ecole Supérieure d'Ingénieurs Privée de Gafsa



Course Title:	Service oriented engineering	
Course Code:	CSE521/1	
Program:	Master Degree In Computer Engineering	
Department:	Computer Engineering	
Course coordinator:	Dr. Hayet TLIJANI	
Institution:	Private Higher School of Engineers of Gafsa (ESIP)	



A. Course Identification

1.	Credit hours: 3 (1.5-0.5-0)		
2. (Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4. Pre-requisites for this course (if any):			
5.	5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	_	_
2	Blended	30	100
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	22.5
2	Laboratory/Studio	7.5
3	Tutorial	-
4	Others (specify)	-
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

This course aims to enable students to understand:

- The urbanization of information systems;
- Service-oriented architectures;
- the different components of service-oriented architecture;
- Web services;
- Modeling and execution of business processes;
- The technologies necessary for the implementation of a service-oriented application

<u>2. Course Main Objective</u>

- 1. Understand the usefulness of the urbanization of information systems
- 2. Compare between the traditional conception of information systems and that based on the notion of services
- 3. Know the different layers of SOA architecture
- 4. -Discover the different concepts of extended web services



3. Course Learning Outcomes

	CLOs		
1	Knowledge and Understanding		
1.1	Know the basics, principles and architectures related to	K.2	
2	Service oriented engineering		
2	Skills		
2.1	Apply the Service oriented engineering formulate, and solve complex Computer science engineering	S.2	
2.2	Evaluate and analyze the performance and sustainability of Service oriented engineering	S.4	
3	Values		
3.1	Customize the use of Service oriented engineering in Computer science engineering practices	V.2	
3.2	Persuade, present, communicate, supervise and lead effectively topics in Computer science engineering and other related disciplines	V.4	

C. Course Content

No	No List of Topics	
1	Chapter1: Introduction to Service Oriented Engineering	3
2	Chapter2: Service Oriented Architecture (SOA)	5
3	Chapter3: Extended Web Services	5
4	Chapter4: Business Process	6
5	Chapter5: Web Services Orchestration	6
6	Chapter6: The REST Architectural Style	5
Total		

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	Know the basics, principles and architectures related to Service oriented engineering	Lecturing	Assignments, Quizzes, Exams,
2.0	Skills		
S.2	Apply the Service oriented engineering formulate, and solve complex Computer science engineering	Lecturing	Assignments, Quizzes, Exams,



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
S.4	Evaluate and analyze the performance and sustainability of Service oriented engineering		Assignments, Report, Quizzes, Exams,
3.0	Values		
V.2	Customize the use of Service oriented engineering in Computer science engineering practices	- Lectures	Assignments, Report, Quizzes, Exams
V.4	Persuade, present, communicate, supervise and lead effectively topics in Computer science engineering and other related disciplines	- 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	15%
2	Quizzes, Homework assignments	Random	10%
3	Final Exam	10	75%

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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Ecole St	1-SOA Principles of Service Design 1st Edition, by Thomas Erl		
Required Textbooks	2-SOA governance in action: KES1 and WS architectures, by Jos		
Required Textbooks	3-Understanding SOA with Web Services, by Eric Newcomer and Greg		
	Lomow		
	1. LAN Switching and Wireless, CCNA Exploration Labs and		
Essential References	Study Guide		
Materials	2. LAN Networks and Cabling Systems, 5th Edition		
	3. Computer Networking for LANS to WANS		
	• Lecture material in PPT		
Flectronic Materials	• PC		
Electronic Materials	• Switch		
	• Router		



	 Any Related material including the YouTube videos relating to LAN Blackboard
Other Learning Materials	NA

2. Facilities Required

Item	Resources	
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.	
Technology Resources		
(AV, data show, Smart Board,	Power point data show	
software, etc.)		
Other Resources		
(Specify, e.g. if specific laboratory	PC Switch Softwara	
equipment is required, list	rC, Switch. Software	
requirements or attach a list)		

G. Course Quality Evaluation

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

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Council / Committee	Computer Engineering Council	
Date	15/10/2021	



Course Title:	Model driven engineering
Course Code:	CSE522/1
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Hayet TLIJANI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)



A. Course Identification

1.	Credit hours: 3 (1.5-0.5-0)		
2. 0	2. Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4. Pre-requisites for this course (if any):			
5. Co-requisites for this course (if any):			

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	22.5
2	Laboratory/Studio	
3	Tutorial	7.5
4	Others (specify)	-
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

This course aims to introduce model-driven engineering (MDE) It will allow the student to:

- Know the basic concepts of model engineering
- Learn the techniques of MDE:
- meta-modeling;
- model transformations;
- creation of concrete syntax;
- the OCL constraint language.

2. Course Main Objective

- 1. Know the basic concepts of model engineering
- 2. Learn the techniques of MDE


3. Course Learning Outcomes

	CLOs		
1	Knowledge and Understanding		
1.1	Demonstrate the basic concepts of model engineering	K.1	
2	Skills		
2.1	Apply MDE principles to identify, formulate and solve complex	S 1	
	computer engineering problems	5.1	
3	Values		
3.1	Persuade, present, communicate, supervise and lead effectively topics	V A	
	in Computer science engineering and other related disciplines	v.4	

C. Course Content

No	List of Topics	Contact Hours
1	- Introduction to Model Engineering and General Definitions	3
2	- Meta-modeling	6
3	- The OCL Constraint Language	6
4	- The transformation of models	5
5	- Model execution	5
6	- Manipulation: meta-modeling and transformation of models	5
Total		

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	Demonstrate the basic concepts of model engineering	Lecturing	Assignments, Quizzes, Exams,
2.0	Skills		
Rs.1C	Apply MDE principles to identify, formulate and solve complex computer engineering problems	Lecturing	Assignments, Quizzes, Exams, Assignments, Quizzes, Exams,
3.0	Values		
V.4	Persuade, present, communicate, supervise and lead effectively topics in Computer science engineering and other related disciplines	 Lectures Class discussions Assignments 	Assignments, Quizzes, Exams Assignments, Quizzes, Exams



2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	15%
2	Quizzes, Homework assignments	Random	10%
3	First mid Term	-	00%
5	Final Exam	11	75%

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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	 Kleppe, J. Warmer, and W. Bast, MDA Explained. The Model Driven Architecture : Practice and Promise, 2003. Jean-Marc Jézéquel, Benoit Combemale, Didier Vojtisek. Ingénierie Dirigée par les Modèles : des concepts à la pratique Ellipses. Ellipses, pp.144, 2012, Références sciences, 9782729871963. ffhal00648489
Essential References Materials	
Electronic Materials	
Other Learning	NA
Materials	

2. Facilities Required		
Item	Resources	
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.	
Technology Resources		
(AV, data show, Smart Board, software, etc.)	Power point data show	
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	PC, Switch. Software	



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	12/10/2021



Course Title:	Framework & Big data technologies
Course Code:	CSE523/1
Program:	Master Degree In Computer 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 (1.5-0.5-0)		
2. 0	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	Level/year at which this course is offered: 5/3		
4.	4. Pre-requisites for this course (if any):		
5.	5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
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	7.5
3	Tutorial	-
4	Others (specify)	-
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

The objective of this course is to master the fundamental concepts of spark and to develop applications with spark. At the end of this course, students must master parallel programming with spark on a cluster and exploit data with spark SQL. They must be able to model a first approach to machine learning.

2. Course Main Objective

- 1. Acquire the fundamental concepts of spark.
- 2. Develop applications with spark.
- 3. Handling of Datasets via SQL queries.
- 4. Setting up a Spark cluster.
- 5. Consumption of logs with Spark Streaming.
- 6. Handling the GraphX API through different examples.



3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge and Understanding	
1.1	State and relate basics, principles, and theories related to spark.	K.2
1.2	Master parallel programming with spark on a cluster and exploit data with spark SQL	K.3
2	Skills	
2.1	Deploy applications with Spark-submit.	S.2
2.2	Develop applications with spark.	S.4
3	Values	
3.1	Ability to use big data facilities to resolve problems	V.1
3.2	Mange the design problems related to Apache Spark	V.3

C. Course Content

No	List of Topics	Contact Hours
1	Presentation of Apache Spark, History of the Framework, the different versions of Spark (Scala, Python and Java), the different modules of Spark.	3
2	Comparison with the Apache Hadoop environment,	2
3	Programming with Resilient Distributed Dataset (RDD), Presentation of RDDs Create, manipulate and reuse RDDs Accumulators and broadcastees variables	3
4	Manipulate structured data with Spark SQL: SQL, DataFrames and Datasets. The different types of data sources.	2
5	Interoperability with RDDs. Performance of Spark SQL.	3
6	Spark on a cluster: The different types of architecture: Standalone, Apache Mesos or Hadoop YARN.	2
7	Configure a cluster in Standalone mode. Package an application with its dependencies.	2
8	Deploy applications with Spark-submit. Size a cluster	3
9	9 Analyze in real time with Spark Streaming: Principle of operation, Presentation of Discretized Streams (DStreams)	
10	10 The different types of sources, API manipulation, Comparison with Apache Storm.	
Handling graphs with GraphX: Presentation of GraphX, The different operations, Create graphs, Vertex and Edge RDD, Presentation of different algorithms.		3
12	 Introduction to Machine Learning, The different classes of algorithms, Presentation of SparkML and MLlib, Implementations of the different algorithms in MLlib. 	
Total		



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	State and relate basics, principles, and theories related to Apache Spark		Assignments
K.3	Master parallel programming with spark on a cluster and exploit data with spark SQL	Lecturing	Quizzes, Exams,
2.0	Skills		
S.2	Deploy applications with Spark-submit.	Lecturing	Assignments, Quizzes, Exams,
S.4	Develop applications with spark.		Assignments, Report, Quizzes, Exams,
3.0	Values		
V.1	Ability to use big data facilities to resolve problems	- Lectures - Class discussions	Assignments, Report, Quizzes, Exams
V.3	Mange the design problems and ethics related to Apache Spark.	- Assignments - projects	Assignments, Report, Quizzes, Exams

2. Assessment Tasks for Students

#	Assessment task*	We	ek Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	W	/eekly	25%
2	Quizzes, Homework assignments	Ra	andom	10%
3	First mid Term		-	00%
4	Final Exam		11	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
- 3- Academic advisor
- 4- Bibliotic



F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1. https://www.computersciencedegreehub.com/big-data-books/			
Essential References Materials	 A Conceptual Framework for Big Data Analysis Fernando Almeida University of Porto, Portugal) and Mário Santos (University of Aveiro, Portugal) Source Title: <u>Organizational, Legal, and Technological</u> <u>Dimensions of Information System Administration</u> Data Science and Big Data Computing Frameworks and Methodologies Big Data: Concepts, Methodologies, Tools, and Applications (4 Volumes) <u>Information Resources Management</u> <u>Association</u> (USA) DOI: 10.4018/978-1-4666-9840-6 			
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.

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	13/11/2021



Course Title:	IT system security
Course Code:	CSE531/1
Program:	Master Degree In Computer 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 (3-0-0)		
2. 0	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4.	4. Pre-requisites for this course (if any):		
5.	5. Co-requisites for this course (if any):		

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

This course aims to master the basic information system security concepts: Awareness of the role of the engineer in the security of the information systems as a developer, architect, administrator, user, etc.

2. Course Main Objective

- Acquire prior knowledge of Information System security.
- Conclude effectively the basics, principles, and theories related to Information Systems security with other disciplines



3. Course Learning Outcomes

	Aligned PLOs	
1	Knowledge and Understanding	
1.1	State and relate basics, principles, and theories related to Information Systems security.	K.2
1.2	Understand the security domains and its criteria.	K.3
2	Skills	
2.1	Apply the knowledge of Information Systems security principles and concepts to produce solutions against attacks.	S.2
2.2	Master the analysis and management of risks	S.4
3	Values	
3.1	Customize the use of technical and scientific Information Systems security tools.	V.2
3.2	Mange the design problems and ethics related to Information Systems security.	V.3
3.3	Conclude effectively the basics, principles, and theories related to Information Systems security with other disciplines	V.4

C. Course Content

No	No List of Topics	
1	Introduction and terminology	1
2	Security Policy	1
3	Security domains, Security criteria	2
4	Security Services, Security Breaches	2
5	Security Attacks, hacker methodology	2
6	Application Security	2
8	Protection mechanisms, Projects OWASP: OWASP TOP 10	2
9	Analysis and management of risks	2
10	Practical examples	1
Total		
Ecole Supérieure d'Ingénieurs		

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	State and relate basics, principles, and theories related to Information Systems security.	Lecturing	Assignments,
K.3	Understand the security domains and its criteria.		Quizzes, Exams,



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	Skills		
S.2	Apply the knowledge of Information Systems security principles and concepts to produce solutions against attacks.	Lecturing	Assignments, Quizzes, Exams,
S.4	Master the analysis and management of risks		Assignments, Report, Quizzes, Exams,
3.0	Values		
V.2	Customize the use of technical and scientific Information Systems security tools.	-	
V.3	Mange the design problems and ethics related to Information Systems security.	- Lectures - Class discussions	Assignments, Report,
V.4	Conclude effectively the basics, principles, and theories related to Information Systems security with other disciplines	- projects	Quizzes, Exams

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	15%
2	Quizzes, Homework assignments	Random	5%
3	First mid Term	9	30%
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
- 3- Academic advisor
- 4- Bibliotic



F. Learning Resources and Facilities

1.Learning Resources

Required	- https://www.oreilly.com/library/view/fundamentals-of-
Textbooks	information/9781284116465/
Essential References Materials	 <u>https://www.tandfonline.com/doi/abs/10.1201/1086/43298.9.6.200</u> <u>10102/30985.4</u> <u>https://www.tandfonline.com/doi/abs/10.1080/15536548.2006.108</u> <u>55789</u> <u>https://www.sciencedirect.com/science/article/abs/pii/S095183201</u> 100278X
Electronic	 Lecture material in PPT Any Related material including the YouTube videos relating to
Materials	engineering measurement Blackboard
Other Learning Materials	NA

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is	Traditional Machine shop, Metrology Lab.
required, list requirements or attach a list)	

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	14/10/2021



Course Title:	Software architecture project	
Course Code:	CSE533/1	
Program:	Master Degree In Computer Engineering	
Department:	Computer Engineering	
Course coordinator:	Mr. Ahmed KLIFI	
Institution:	Private Higher School of Engineers of Gafsa (ESIP)	



A. Course Identification

1. (Credit hours: 3 (0-0-5)		
2. 0	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3. 1	3. Level/year at which this course is offered: 5/3		
4. Pre-requisites for this course (if any): CSE452/1, CSE451/1			
5. (5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	_
2	Blended	15	100
3	E-learning		
4	Distance learning		
5	Other		

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

The first part of the course provides fundamental knowledge in requirements engineering, software and hardware architecture.

This course introduces students to advanced software design methods and architecture choices. The notions to be covered include multi-level, client-server, extensible and dynamic software architectures, concepts and advanced implementations of libraries and the loading of dynamic components.

The second part of the course is devoted to presenting advanced design patterns for distributed systems: service access and configuration, event processing, synchronization and concurrent access.

The last part of this course describes emerging approaches to design and architecture: aspectoriented design, service-oriented architecture, and others.



2. Course Main Objective

- Learning more and understand the different software architectures.
- Learning more and discover the architectural styles.
- Learning out more and Master the software quality criteria.
- Learning out more and learn about available components and technologies.
- Learning more and Service Oriented Architecture (SOA), REST.
- Learning more and Design and Evaluate an Architecture.

3. Course Learning Outcomes

	Aligned PLOs	
1	Knowledge and Understanding	
1.2	Understanding of all system structures and abstractions and know the field of software development.	K.2
1.3	Proficiency with architectures design patterns	K.3
2	Skills	
2.3	Setting up the project, getting necessary credentials and API keys, setting development server, testing environment, code standards, aligning expectations.	S.3
2.4	choosing proper management and code versioning tools and choosing a proper project methodology (Waterfall, V-Model, Agile methodologies).	S.4
3	Values	
3.2	Justify the standards and codes in practice of software development and project management.	V.2
3.4	Persuade, present, communicate, supervise and lead effectively topics in Software Architect and other related disciplines.	V.4

C. Course Content

No	List of Topics	Contact Hours
1	Software architecture: definition, representations (components, relationships, interactions), Project stakeholders.	1.5
2	Application architecture in the life cycle of a project and software architecture in an Agile context	1.5
3	Panorama of architectural styles:	2
4	Software quality criteria	2
5	Concept of architectural tactics	2
6	Available components and technologies	2
7	Service Oriented Architecture (SOA), REST	2
8	Design and evaluate an architecture	2
Total		



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 K.3	Understanding of all system structures and abstractions and know the field of software development. Proficiency with architectures design patterns	Lecturing	Assignments, Quizzes, homework
2.0	Skills		
S.3	Setting up the project, getting necessary credentials and API keys, setting development server, testing environment, code standards, aligning expectations.	Course project	Assignments, Report, Quizzes, Exams,
S.4	choosing proper management and code versioning tools and choosing a proper project methodology (Waterfall, V-Model, Agile methodologies).	Assignment work	Assignments, Report, Quizzes, Exams,
3.0	Values		
V.2	Justify the standards and codes in practice of software development and project management.	- Lectures - Class discussions	Assignments, Report, Quizzes, Exams
V.4	Persuade, present, communicate, supervise and lead effectively topics in Software Architect and other related disciplines.	- 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	75%
2	Quizzes, Homework assignments	Random O	25%
3	First mid Term		00%
5	Final Exam	6	00%
		ut gaisa	

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
- 3- Academic advisor
- 4- Bibliotic



F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- L. Bass, P. Clements, and R. Kazman, Software Architecture in Practice, 2nd edition, Addison Wesley	
Essential References Materials	 P. Clements, R. Kazman, M. Klein, D. Devesh, S. Reddy, P. Verma, "The Duties, Skills, and Knowledge of Software Architects", Proceedings of WICSA 2007. N.R. Tague, The Quality Toolbox, 2nd Ed. Milwaukee, WI: ASQ Quality Press, 2004. 	
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

Resources	Item	
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching classroom with board and internet access. Computer Lab.	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	
	Technology Resources	
etc.) Power point data show	(AV, data show, Smart Board, software, etc.)	
nent Traditional Machine shop, Metrology Lab.	Other Resources (Specify, e.g. if specific laboratory equipment is required list requirements or attach a list)	
on teaching classroom with board and inteacess. Computer Lab. etc.) Power point data show ment Traditional Machine shop, Metrology	(Classrooms, laboratories, demonstration rooms/labs, etc.) Technology Resources (AV, data show, Smart Board, software, etc.) Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

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	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	14/10/2021



Course Title:	Interactive decision support systems
Course Code:	CSE541/1
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 (2.25-0.75-0)		
2. 0	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4.	4. Pre-requisites for this course (if any):		
5.	5. Co-requisites for this course (if any):		

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

This course will allow students to analyze a given problem and define the role of interactive decision support systems in strategic decision making. The concept of decision is therefore at the heart of the problematic of the course and is understood through the use of interactive digital tools capable of supporting strategic decisions made in the organization.

<u>2. Course Main Objective</u>

- Acquire prior knowledge of decision theory.
- Master the decision making process.
- Understand and modeling decision-making processes: the IDC model.
- Master the concept of Interactive decision support systems (IDSS)
- Study the IDSS and Computer science Decisional (ID).
- Manipulate the IDSS of group
- Mange the design problems and ethics related to interactive decision support systems
- Conclude effectively the basics, principles, and theories related to IDSS with other disciplines



3. Course Learning Outcomes

	CLOs	
1	Knowledge and Understanding	
1.1	Acquire prior knowledge of decision theory.	K.2
1.2	Study the IDSS and Computer science Decisional (ID).	K.3
2	Skills	
2.1	Master the decision making process.	S.2
2.2	Manipulate the IDSS of group	S.4
3	Values	
3.1	Customize the use of technical and scientific engineering tools in interactive decision support systems	V.2
3.2	Conclude effectively the basics, principles, and theories related to IDSS with other disciplines	V.4

C. Course Content

No List of Topics		Contact Hours
1	Introduction to Decision Theory	3
2	Typology of decisions in the company	3
3	Modeling of the decision-making process	3
4	Representation of decision	3
5	Formalization of a single and multi-criteria decision problem	3
5	Types of decision models	3
6	Modèle de simulation monté-carlo	3
7	IDSS of group	3
9	Decision making in the face of risk and uncertainty	3
10	Decision tree	3
11	Exam	2
Total		

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	Acquire prior knowledge of decision theory.	e Gaisa	Assignments
K.3	Study the IDSS and Computer science Decisional (ID).	Lecturing	Quizzes, Exams,
2.0	Skills		
S.2	Master the decision-making process.	Lasturing	Assignments, Quizzes, Exams,
S.4	Manipulate the IDSS of group	Lecturning	Assignments, Report, Quizzes, Exams,



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.0	Values		
V.3	Mange the design problems and ethics related to interactive decision support systems	 Lectures Class discussions 	Assignments, Report, Quizzes, Exams
V.4	Conclude effectively the basics, principles, and theories related to IDSS with other disciplines	Assignmentsprojects	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	15%
2	Quizzes, Homework assignments	Random	10%
3	Final Exam	11	75%

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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- www.ingenieurs.com/documents/cours/systeme-interactif-aide-a-la- decision
Essential References Materials	 Bernard ESPINASSE, Introduction to Interactive Decision Support Systems (SIAD). Arnaud Zinflou, Interactive decision support system based on genetic algorithms for multi-objective optimization Michel Volle, the computer decision support system
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources	
(AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.

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	21/10/2021



Course Title:	Multimedia techniques
Course Code:	CSE543/1
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Mrs. Khawla BEN SALAH
Institution:	Private Higher School of Engineers of Gafsa (ESIP)



A. Course Identification

1.	Credit hours: 3 (1.5-0-1.5)		
2. (Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	Level/year at which this course is offered: 5/3		
4.	4. Pre-requisites for this course (if any): CSE132, CSE231		
5.	5. Co-requisites for this course (if any):		

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	15	100
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	7.5
2	Laboratory/Studio	7.5
3	Tutorial	-
4	Others (specify)	-
	Total	15

B. Course Objectives and Learning Outcomes

1. Course Description

This course aims to draw a global illustration of the field of multimedia as much with regard to the uses of multimedia as an introduction to the different fields of application of multimedia through a basic knowledge of various manipulations of Multimedia supports.

2. Course Main Objective

- The objective of this module is to familiarize students with multimedia objects: Text, sound, image, and video, as well as to give them the theoretical elements necessary for the analysis of signals, and to understand the elementary processing allowing them to extract the information contained in the signal.
- Employing Python as a programming language for image and signal processing purposes
- Manipulating images requires understanding the basic algebra elements (vectors, matrix, tensors)
- Understand the characteristics of each multimedia data.
- Differentiate between analog and digital signals.



- Know the different stages of digitization and their characteristics, namely sampling, quantification, and coding.
- Apply compression methods.
- 8. Know and apply data coding method

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.2	General knowledge of IT tools and methods for multimedia objects processing.	K.2
1.3	Understand the basics of digitizing multimedia objects while preserving the rules for their restitutions	К.3
2	Skills	
2.2	Apply concepts and basics of mathematics, image and signal processing to resolve or extract different elements related to multimedia data	S.2
3	Values	

C. Course Content

No	No List of Topics	
1	General and Definitions: Multimedia, Interactive Multimedia and Components of Multimedia.	2
2	Multimedia applications	2
3	Introduction to the Digitization of Multimedia Objects (Sampling, Quantification, Coding)	2
4 Image and video compression		3
5	Google Collab: Explore environment (execution mode (GPU or CPU)) and installing dependencies	eur
6 Google Collab: Explore and import image libraries (OpenCV; sklearn etc) for image processing		1
7 Google Collab: Graphic Representation: 2D plots, Multiple Plots		1
8 Numerical solution for signal and image processing equations		3
	Total	15



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	General knowledge of IT tools and methods for multimedia objects processing. Understand the basics of digitizing multimedia objects while preserving the rules for their restitutions	Lecturing	Assignments, Quizzes, Exams,
2.0	Skills		
S.2	Apply concepts and basics of mathematics, image and signal processing to resolve or extract different elements related to multimedia data	Lecturing, projects	Assignments, Quizzes, Exams,
3.0	Values	•	

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	35%
2	Quizzes, Homework assignments	Random	15%
3	First mid Term	-	00%
4	Second mid Term	_	00%
5	Final Exam		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
- 3- Academic advisor
- 4- Bibliotic



F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	 Multimedia: Computing Communications & Applications Steinmetz, R. Multimedia : The Fundamentals: Introduction to Numerical Representation Roxin, I,Mercier, D ,Jolion, J.M.
Essential References Materials	An Introduction to Digital Multimedia De Terry Michael Savage, K. E. Vogel
Electronic Materials	 Lecture material in PPT/PC Any Related material including the YouTube videos relating to image and signal processing Blackboard Collaboratory Software
Other Learning Materials	NA

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Teaching classroom with board and internet access.
Technology Resources	Power point, data show, Collaboratory
(AV, data show, Smart Board, software, etc.)	Software
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	РС

G. Course Quality Evaluation

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

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	12/12/2021



Course Title:	Urbanization of Information Systems
Course Code:	CSE551/1
Program:	Master Degree In Computer 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 (2.25-0.75-0)	
2. (Course type	
a.	College Department Others	
b.	Fundamental Transversal Optional	
3.	Level/year at which this course is offered: 5/3	
4.	4. Pre-requisites for this course (if any):	
5.	5. Co-requisites for this course (if any):	

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
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	7.5
4	Others (specify)	-
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

This course aims to master the fundamental concepts of urbanization: Information Systems architects, project directors, project managers, analysts, designers, business architecture, urban planning and architecture of Information Systems.

2. Course Main Objective

- Acquire prior knowledge of Information System urbanization.
- Map the existing Information System
- Build the Information System target
- Modeling of strategic needs
- Align the Information System on the target
- Design, conduct, analyze, and evaluate practices, projects, and experiments related to Information Systems urbanization issues.
- Conclude effectively the basics, principles, and theories related to Information Systems urbanization with other disciplines



3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge and Understanding	
1.1	State and relate basics, principles, and theories related to Information Systems urbanization.	K.2
2	Skills	
2.1	Able to map the existing Information System and to build the Information System target	S.2
2.2	Design, conduct, analyze, and evaluate practices, projects, and experiments related to Information Systems urbanization issues.	S.3
2.3	Master the modeling of strategic needs and the alignment of Information System on the target	S.4
3	Values	
3.1	Customize the use of technical and scientific urbanization tools	V.2
3.2	Conclude effectively the basics, principles, and theories related to Information Systems urbanization with other disciplines	V.4

C. Course Content

No	List of Topics	Contact Hours
1	The context and the issue	2
2	Top-down and bottom-up approaches	2
3	How to map the existing Information System(IS)? How to build the IS target?	2
4	The convergence plan of the existing IS towards the IS target IS actors and their missions	2
5	Management approaches: COBIT, ITIL, CMMI, agile methods, UnifiedProcess,TOGAF; MDA	2
6	Modeling of strategic needs	2
7	Expressing needs and monitoring requirements	2
8	Business architecture, tools and best practices	2
9	Identification and analysis of business processes	_2
	The business process model	euri
10	Business architecture: best practices	2
	Standards: BPA, BPM, BPMN, BPEL, MDM, BRM, BAM, PPM	
11	Functional tools for the Information Systems	2
12	How to align the SI on the target?	1
13	The different modes of communication SOA (Service Oriented Architecture) WOA (Web Oriented Architecture)	1
14	Technical tools for the Information Systems and the technical target of the urban plan	
15	Communication tools: XML and its derivatives Communication tools: MOM, MOT, ETL, EAI, ESB The tools for: performance, service reliability, safety	2



16	How to build the target technical urban plan which must ensure the technical base of the target IS	2
	Total	30

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	State and relate basics, principles, and theories related to Information Systems urbanization.	Lecturing	Assignments, Quizzes, Exams,
2.0	Skills		
S.2	Able to map the existing Information System and to build the Information System target		Assignments, Quizzes, Exams,
S.3	Design, conduct, analyze, and evaluate practices, projects, and experiments related to Information Systems urbanization issues.	Lecturing	
S.4	Master the modeling of strategic needs and the alignment of Information System on the target		Assignments, Report, Quizzes, Exams,
3.0	Values		
V.2	Customize the use of technical and scientific urbanization tools	- Lectures	Assignments, Report, Quizzes, Exams
V.4	Conclude effectively the basics, principles, and theories related to Information Systems urbanization with other disciplines	- 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	25%
2	Quizzes, Homework assignments	Random	10%
3	First mid Term	9	00%
5	Final Exam	11	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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- Sparse data inspired depth of urbanization in Zhejiang based on geographic information system and visual system Jie Li,Bin Hu 2020
Essential References Materials	 Urbanization of information systems : an outdated method? Emmanuel Bertin, Noel Crespi <u>http://www.greenit-monaco.com/en/urbanization.html</u> Urbanization of Information Systems with a Service Oriented Architecture according to the PRAXEME Approach January 6, 2017 Author: Janel Black
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	Accommodation (Classrooms, laboratories,
(Classrooms, laboratories,	demonstration rooms/labs, etc.)
demonstration rooms/labs_etc)	teaching class room with board and internet access.
	Computer Lab.
Technology Resources	ieure d'Ingénieur
(AV, data show, Smart Board,	Power point data show
software, etc.)	
Other Resources	e de Catea
(Specify, e.g. if specific laboratory	Traditional Machine shop. Matralagy Lah
equipment is required, list	Traditional Machine shop, Metrology Lab.
requirements or attach a list)	



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	14/09/2021



Course Title:	Verification of Complex Systems
Course Code:	CSE552/1
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Wajdi SAADAOUI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)


A. Course Identification

1. (Credit hours: 3 (2.25-0.75-0)		
2. 0	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.]	3. Level/year at which this course is offered: 5/3		
4. Pre-requisites for this course (if any): CSE132			
5. (5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	_
2	Blended	30	100
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	7.5
4	Others (specify)	-
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

The objective of this course is to introduce students to some basic theoretical notions, while explaining the methods and issues of testing in a context of complex systems. It is for this reason that an important part of the course is devoted to the modeling of a global plan for IVTV (Integration Verification Transition Validation) including the construction and optimization of a system test strategy

2. Course Main Objective

- Know how to take into account the problem of testing in a context of complex systems
- Be able to build a global IVTV (Integration Verification Transition Validation) plan including the construction and optimization of a systems test strategy
- Have practical elements for implementing and monitoring an IVTV plan



3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge and Understanding	
1.1	State and relate the basics, principles and theories related to testing in a complex systems context.	K.2
2	Skills	
2.1	Positioning in the phases of the life cycle	S.2
2.2	Component, integration and validation testing / Limit testing / Performance testing	S.4
3	Values	
3.1	Ability to use Model-Based Testing to resolve problems	V.1
3.2	Customize to build a global IVTV (Integration Verification Transition Validation) plan including the construction and optimization of a systems test strategy	V.2
3.3	able to calculate the remaining test time to achieve a set reliability target	V.4

C. Course Content

No	List of Topics		Contact Hours	
1	Chapter 1: General introduction and tour de table with a reminder of the auditors' objectives	 1-The challenges and issues of testing complex systems 2-Relations with the engineering of complex systems 3-Positioning in the phases of the life cycle IVTV process (Integration Verification 4- Transition Validation) 5-Model-Based Testing 	8	
2 R	Chapter 2: IVTV typologies and techniques of complex systems	 1-Component, integration and validation testing 2-IVTV activities other than testing 3-Coverage objective test 3-Random test 4-Limit test 5 Parformance Test 	⁸ eurs	
3	Chapter 3: Implementing an IVTV strategy	 1-Interest of the approach 2-Methodology for building a strategy 3-Optimization criteria 4-Test stopping criteria 5-Examples of test optimization by reliability 	8	
4	Chapter 4: Test management	Management objectives Test documentation Test tools Test follow-up The testing environment	6	
	Total 30			



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	State and relate the basics, principles and theories related to testing in a complex systems context	Lecturing	Assignments, Quizzes, Exams,
2.0	Skills		
S.2	Positioning in the phases of the life cycle		Assignments, Quizzes, Exams,
S.4	Component, integration and validation testing / Limit testing / Performance testing	Lecturing	Assignments, Report, Quizzes, Exams,
3.0	Values		
V.1	Ability to use Model-Based Testing to resolve problems		Assignments, Report, Quizzes, Exams
V.2	Customize to build a global IVTV (Integration Verification Transition Validation) plan including the construction and optimization of a systems test strategy	 Lectures Class discussions Assignments projects 	Assignments, Report, Quizzes, Exams
V.4	able to calculate the remaining test time to achieve a set reliability target		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	15%
2	Quizzes, Homework assignments	Random	10%
3	Final Exam	ire ni ing	75%

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
- 3- Academic advisor
- 4- Bibliotic



F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1. https://www.computersciencedegreehub.com/big-data-books/
Essential References Materials	
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources	
(AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources	
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.

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	13/10/2021



Course Title:	Operational safety and fault tolerance
Course Code:	CSE553/1
Program:	Master Degree In Computer 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 (3-0-0)		
2. 0	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4.	4. Pre-requisites for this course (if any):		
5.	5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	_
2	Blended	15	100
3	E-learning		
4	Distance learning		
5	Other		

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

This course aims to master the basic operational safety and fault tolerance concepts as well as the analysis methods of operational safety.

2. Course Main Objective

- Acquire prior knowledge of basic operational safety and fault tolerance.
- Understand the operational safety attributes.
- Apply the analysis method of operational safety.
- Manipulate the Reliability Diagram.
- Manipulate the Fault tree.
- Conclude effectively the basics, principles, and theories related to operational safety and fault tolerance with other disciplines



3. Course Learning Outcomes

	Aligned PLOs	
1	Knowledge and Understanding	
1 1	State and relate basics, principles, and theories related to the	КЭ
1.1	operational safety and fault tolerance.	N .2
2	Skills	
2.1	Apply the analysis method of operational safety	S.2
2.2	Manipulate the Fault tree	S.3
2.3	Master the Concepts of operational safety	S.4
3	Values	
2 1	Ability to use operational safety and fault tolerance facilities to resolve	V 1
5.1	problems	٧.1
3.2	Customize the use of technical and scientific operational safety tools.	V.2
22	Conclude effectively the basics, principles, and theories related to	V A
3.3	operational safety and fault tolerance with other disciplines	v.4

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to the operational safety and fault tolerance	2
2	Operational safety attributes	1
4	Concepts of operational safety	2
5	Reliability by Structure (architecture)	2
6	Analysis methods of operational safety	2
8	Reliability Diagram	2
9	Fault tree	2
10	Fault tolerance, Fault classification	2
	Total	15

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	State and relate basics, principles, and theories related to the operational safety and fault tolerance.	Lecturing	Assignments, Quizzes, Exams,
2.0	Skills		
S.2	Apply the analysis method of operational safety		Assignments, Quizzes, Exams,
S.3	Manipulate the Fault tree.	Lecturing	
S.4	Master the Concepts of operational safety		Assignments, Report, Quizzes, Exams,
3.0	Values		



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
V 1	Ability to use operational safety and fault		
V.1	tolerance facilities to resolve problems	- Lectures	
V.2	Customize the use of technical and scientific	- Class	Assignments Deport
	operational safety tools.	discussions	Assignments, Report, Ouizzes, Exame
	Conclude effectively the basics, principles,	- Assignments	Quizzes, Exains
V.4	and theories related to operational safety and	- projects	
	fault tolerance with other disciplines		

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	10%
3	First mid Term		00%
4	Final Exam	6	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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- https://dl.acm.org/doi/book/10.5555/167698
Essential References Materials	 <u>https://www.zvei.org/fileadmin/user_upload/Presse_und_Medie</u> n/Publikationen/2019/Juli/Fehlertoleranz_in_der_Maschinensic herheit/ZVEI_WP_Fehlertoleranz_EN_Online.pdf https://www.researchgate.net/profile/Cyrille- Artho/publication/322035384_Formal_Techniques_for_Safety- Critical_Systems_FTSCS_2015/links/5bbdc52e45851572315b dcdf/Formal-Techniques-for-Safety-Critical-Systems-FTSCS- 2015.pdf#page=132
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources	
(AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources	
(Specify, e.g. if specific laboratory	Traditional Machine shop. Metrology Lab
equipment is required, list	Traditional Machine shop, Metrology Lab.
requirements or attach a list)	

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 / Computer Engineering Council	
Committee	
Date	14/12/2021



Course Title:	Game design
Course Code:	CSE561/1
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. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	15	100
3	E-learning		
4	Distance learning		
5	Other		

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

This module allows engineering students to acquire the fundamental Game theory and Game design. This course will be taught with an emphasis on the following points: Software architecture of a video game (gameloop, tokens, states, engines, etc.), Development process in the video game industry and management of a game project

2. Course Main Objective

- Understand the theoretical knowledge acquired Game theory and Game design.
- Gain practical experience in implementing a video game.
- Realization and documentation of an information system project.
- Master the Software architecture of a video game.
- Mange the design problems and ethics related to game design.
- Conclude effectively the basics, principles, and theories related to the development of game design with other disciplines



3. Course Learning Outcomes

	CLOs		
1	Knowledge and Understanding		
1.1	Aware with basics, principles, and theories related to Computer science	K.2	
	engineering science		
	Understand the theoretical knowledge acquired Game theory and Game		
1.2	design.	K.3	
2	Skills		
2.1	Apply the knowledge of Computer science engineering principles and		
2.1	concepts to produce solutions and designs that meet specified needs	S 2	
	with consideration of safety, and welfare, as well as global, cultural,	5.2	
	social, environmental, and economic factors		
2.2	Gain practical experience in implementing a video game.	S.3	
2.2	Martan (La Caftanana and ita dana af a si la sana	C 4	
2.2	Master the Software architecture of a video game.	5.4	
3	Values		
31	Customize the use of technical and scientific engineering tools in	V 2	
5.1	Computer science engineering practices related to Game design	V.2	
20	Conclude effectively the basics, principles, and theories related to the	V A	
3.2	Game design with other disciplines	V.4	

C. Course Content

No	No List of Topics	
1	knowledge acquired Game theory and Game design	4
2	2 Software architecture of a video game	
3	Demonstration and implementation of video game	
Total		

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	Aware with basics, principles, and theories related to Computer science engineering science	- Class discussions	Assignments,
K.3	Understand the theoretical knowledge acquired Game theory and Game design.	- Assignments - Projects	Quizzes, Report,
2.0	Skills		
S.2	Apply the knowledge of Computer science engineering principles and concepts to produce solutions and designs that meet specified needs with	 Class discussions Assignments Projects 	Assignments, Quizzes, presentation, Assignments, Report, Quizzes, presentation,



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	consideration of safety, and welfare, as well as global, cultural, social, environmental, and economic factors		
S.3	Gain practical experience in implementing a video game.		
S .4	Master the Software architecture of a video game.		
3.0	Values		
V.2	Customize the use of technical and scientific engineering tools in Computer science engineering practices related to Game design	- Class discussions	Assignments, Report, Quizzes, presentation
V.4	Conclude effectively the basics, principles, and theories related to the Game design with other disciplines	- Projects	Assignments, Report, Quizzes, presentation

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	10%
3	First mid Term	-	00%
4	Final Exam	6	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
- 3- Academic advisor Dellette C 2000
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- M. Buro. ORTS : A hack-free RTS game environment. In Computers and Games, pages 280–291, 2002.
Essential References Materials	 S. Leutenegger and J. Edgington. A games first approach to teaching introductory programming. SIGCSE '07 : Proceedings of the 38th SIGCSE technical symposium on Computer science education, 39(1) :115–118, mar 2007



	 P. Gestwicki and FS. Sun. Teaching design patterns through computer game development. D. Ginat. On novice loop boundaries and range conceptions. Computer Science Education, 14(3):165–181, 2004. 	
 Electronic Materials Lecture material in PPT Any Related material including the YouTube videos relatin engineering measurement Blackboard 		
Other Learning Materials	NA	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.

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	09/01/2022



Course Title:	Development models (JEE /.NET)	
Course Code:	CSE562/1	
Program:	Master Degree In Computer Engineering	
Department:	Computer Engineering	
Course coordinator:	Dr. Hayet TLIJANI	
Institution:	Private Higher School of Engineers of Gafsa (ESIP)	



A. Course Identification



1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
3	E-learning		
4	Distance learning		
5	Other		

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

Java and .Net are the two main platforms for developing applications of different types (standalone, client/server, web applications and mobile applications).

This course allows students to discover the main characteristics of these Platforms and acquire robust Web application development skills.

<u>2. Course Main Objective</u>

- Understand the techniques and concepts related to web application development
- Understand the different components of distributed architecture as well as its typology
- Learn the different APIs necessary for this type of development: AJAX, JPA, JSON, JAXB, JDBC, Hibernate...
- Learn to handle a framework for dotnet development: .Net core on Visual Studio 2019
- Handle the different layers of the JEE architecture:



3. Course Learning Outcomes

	Aligned PLOs	
1	Knowledge and Understanding	
1.1	Know the basics, principles and architectures related to JEE /.net	K.2
1.2	Explore the constraints of contemporary JEE issues. /NET to judge and reach the optimal solutions.	K.3
2	Skills	
2.1	Apply the JEE/.NET formulate, and solve complex Computer science engineering	S.2
2.2	Analyze, and evaluate practices, projects, and experiments related to Computer science engineering issues.	S.3
2.3	Evaluate and analyze the performance and sustainability of Development models (JEE /.NET)	S.4
3	Values	
3.1	Customize the use of Development models (JEE /.NET) in Computer science engineering practices	V.2
3.2	Persuade, present, communicate, supervise and lead effectively topics in Computer science engineering and other related disciplines	V.4

C. Course Content

No	List of Topics	Contact Hours
1	Chapter1: Introduction	3
2	Chapter2: Distributed architecture and MVC design pattern	6
3	Chapter3: Presentation of the JEE architecture	7
4	Chapter4: Introduction to dotNet technology	7
5 Chapter5: Implementation of a JEE application		7
	Total	30

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	Know the basics, principles and architectures related to JEE /.net		Assignments
K.3	Explore the constraints of contemporary JEE issues. /NET to judge and reach the optimal solutions.	Lecturing	Quizzes, Exams,
2.0	Skills		
S.2	Apply the JEE/.NET formulate, and solve complex Computer science engineering	Lecturing	Assignments, Quizzes, Exams,

3



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
S.3 S.4	Analyze, and evaluate practices, projects, and experiments related to Computer science engineering issues. Evaluate and analyze the performance and sustainability of Development models (JEE /.NET)		Assignments, Report, Quizzes, Exams,
3.0	Values		
V.2	Customize the use of Development models (JEE /.NET) in Computer science engineering practices	- Lectures	Assignments, Report, Quizzes, Exams
V.4	Persuade, present, communicate, supervise and lead effectively topics in Computer science engineering and other related disciplines	- 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	15%
2	Quizzes, Homework assignments	Random	10%
3	Final Exam	11	75%

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	 Leonardo AMODIO "NFE107 Urbanisation & Architecture des Systèmes d'Information" 2008-2009
Essential References Materials	
Electronic Materials	 Lecture material in PPT PC Any Related material including the YouTube videos relating to JEE /.NET Blackboard



Other Learning Materials NA

2. Facilities Required

Item	Resources	
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.	
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show	
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	PC, Switch. Software	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods	
Effectiveness of teaching and	Students survey, Program	Direct	
assessment.	Leaders, Quality manager,	Direct	
Extent of achievement of	Faculty, Students survey,		
Extent of achievement of	Program Leaders, Quality	Direct	
course learning outcomes.	manager, Peer Reviewer		
Quality of Learning resources	Faculty, Program Leaders,	Verification	
Teaching and learning quality	Students survey, Program	Fellow	
and effectiveness.	Leaders, Quality manager	ronow-up	

H. Specification Approval Data

Council / Committee	Computer Engineering Council	
Date	15/10/2021	
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Privée de Gafsa



Course Title:	Development of advanced web applications	
Course Code:	CSE563/1	
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 (15-0-15)		
2.	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4.	4. Pre-requisites for this course (if any): CSE132 CSE231		
5.	5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
3	E-learning		
4	Distance learning		
5	Other		

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

This course will allow students to develop high-performance web applications of better quality, be able to develop secure, extensible and high performance transactional applications with Java EE (JSF2, JPA, EJB3, and AJAX) and Spring frameworks (Boot, Data, MVC, Security), be able to develop Angular web applications, efficient with JavaScript, TypeScript, and react JS, and master the advanced concepts of Node.js, both from an advanced object point of view, JavaScript, functional programming, asynchronous paradigm, and performance and quality of Node.js applications.



2. Course Main Objective

- Acquire prior knowledge of web components
- Study the architecture of a web application.
- Understand and modeling frameworks Spring.
- Master the concept of frameworks web MVC
- Manipulate Node JS
- Manipulate Angular JS and React JS
- Mange the design problems and ethics related to web development
- Conclude effectively the basics, principles, and theories related to web development with other disciplines

3. Course Learning Outcomes

	Aligned PLOs	
1	Knowledge and Understanding	
1.1	Acquire prior knowledge of web components.	K.2
1.2	Study the architecture of a web application.	K.3
2	Skills	
2.1	Master the concept of frameworks web MVC	S.2
2.2	Design, conduct, analyze, and evaluate practices, projects, and experiments related to web development issues.	S.3
2.3	Manipulate Angular JS and React JS, Node JS	S.4
3	Values	
3.1	Customize the use of technical and scientific engineering tools in web development practices	V.2
3.2	Conclude effectively the basics, principles, and theories related to web development with other disciplines	V.4

C. Course Content

No List of Topics		Contact Hours
1	Introduction to web development	3
2	Acquire the architecture of a web application	_6
3	Modeling of the frameworks Spring	
4	Master the concept of frameworks web MVC	3
5 Manipulate Node JS		6
5	Manipulate Angular JS and React JS	3
6 Apply the concepts of Services web		3
11 MidTerm		2
Total		30

D. Teaching and Assessment

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

Tunisian Republic Private Higher School of Engineers of Gafsa Private Higher Education Institution, State-approved under N° 05-2013



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
K.2	Acquire prior knowledge of web components		Assignments
K.3	Study the architecture of a web application	Lecturing	Quizzes, Exams,
2.0	Skills		
S.2	Master the concept of frameworks web MVC		Assignments, Quizzes, Exams,
S.3	Design, conduct, analyze, and evaluate practices, projects, and experiments related to web development issues	Lecturing	
S.4	Manipulate Angular JS and React JS, Node JS		Assignments, Report, Quizzes, Exams,
3.0	Values		
V.3	Customize the use of technical and scientific engineering tools in web development practices		Assignments, Report, Quizzes, Exams
V.4	Conclude effectively the basics, principles, and theories related to web development with other disciplines		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	25%
2	Quizzes, Homework assignments	Random	10%
5	Final Exam	11	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	- https://web.developpez.com/cours/	
Essential References Materials	 CoursPDF.net, Web avancé, NET et J2EE Yacine Bouzidi, Advanced Web Programming, IG2I, Centrale Lille Thierry Hamon, Advanced Web Programming 	
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.	
Technology Resources		
(AV, data show, Smart Board,	Power point data show	
software, etc.)		
Other Resources		
(Specify, e.g. if specific laboratory	Traditional Machina shop Matrology Lab	
equipment is required, list	Traditional Machine shop, Metrology Lab.	
requirements or attach a list)		

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students survey, Program Leaders, Quality manager,	IngDirectleur
Extent of achievement of course learning outcomes.	Faculty, Students survey, Program Leaders, Quality manager, Peer Reviewer	Direct
Quality of Learning resources	Faculty, Program Leaders,	Verification
Teaching and learning quality and effectiveness.	Students survey, Program Leaders, Quality manager	Follow-up

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date.	22/09/2021



Course Title:	Mobile Programming
Course Code:	CSE571/1
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Mr. Ahmed KHLIFI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)



A. Course Identification

1.	Credit hours: 3 (0-0-3)		
2. 0	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	Level/year at which this course is offered: 5/3		
4. Pre-requisites for this course (if any):			
5.	5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	_	_
2	Blended	15	100
3	E-learning		
4	Distance learning		
5	Other		

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

The first part of the course provides the fundamental knowledge of how to develop Android applications using Java programming language. This course introduces students to the four different types of Android components, namely: (1) Activities, (2) Services, (3) Streaming Receivers, and (4) Content Providers.

Notions to be covered include: Discovering and mastering the different technologies used to build a mobile application and mastering the design of user interfaces (UI) using layouts, resources and a set of interface controls Android user (e.g. TextView, EditText, Button, Checkbox, Progressbar, among others).

The second part of the course is dedicated to showing event handling, persistent data storage, media processing and communication via communication interfaces available on mobile devices.

The last part of this course describes the development techniques for testing and validating the functionalities of a mobile application and allows you to acquire a global vision of the Android platform: virtual machine, development tools, Java packages, emulators, services.



2. Course Main Objective

- Learning about mobile devices types
- Learning about modern mobile operating systems
- Learning about data transmission standards
- Learning about systems for mobile application distribution
- Preparing for mobile application development

3. Course Learning Outcomes

	Aligned PLOs	
1	Knowledge and Understanding	
1.1	know mobile devices, mobile platforms and have knowledge about mobile operating systems, their architectures and know the field of mobile application development.	K.1
2	Skills	
2.1	Able to setup programming tools for a mobile application developer (for selected modern mobile platforms)	S.1
3 Values		
3.4	Justify the standards and codes in practice of design and analysis of Computer science engineering problems and ethics	V.4

C. Course Content

No	List of Topics	
1	Introduction to Android platform: virtual machine, development tools, Java packages, emulators, services.	1.5
2	Structure and lifecycle of an application for Android system	1.5
3	Graphical User Interface: preparing containers and components, management of component layout, event handling	2
4	Processing of application resources, content providers, filesystem	
5	5 Data persistance: backups, databases	
6 Application security and permissions: security architecture, application signing, user identification, file access, declaration and verification of permissions.		eur
7	7 Network communication and internet applications.	
8	8 Simple application programming.	
Total		



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	know mobile devices, mobile platforms and have knowledge about mobile operating systems, their architectures and know the field of mobile application development.	Lecturing	Assignments, Quizzes, homework
2.0	Skills		
S.1	Able to setup programming tools for a mobile application developer (for selected modern mobile platforms)	Course project Assignment work	Assignments, Report, Quizzes, Exams,
3.0	Values		
V.4	Justify the standards and codes in practice of design and analysis of Computer science engineering problems and ethics		Assignments, Report, Quizzes, Exams

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (project defense)	Weekly	75%
2	Quizzes, Homework assignments	Random	25%
5	Final Exam	-	00%

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	 Mobile Computing: Technology, Applications, and Service Creation – Asoke K. Talukder, Roopa R. Yavagal - McGraw-Hill Communications Engineering 2007
Essential References Materials	 Android in Practice - Charlie Collins, Michale Galpin, Matthias Kaeppler – Manning Publications 2012 Beginning Windows Phone 7 Development - Henry Lee, Eugene Chuvyrov – Apress 2010 The iOS 5 Developer's Cookbook - Erica Sadun – Addison- Wesley 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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching classroom with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.

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	14/12/2021



3rd year RSR SEMESTER 5



Course Title:	Architecture P2P
Course Code:	CSE551/2
Program:	Master degree In Computer Engineering
Department:	Computer Engineering
College:	ESIP
Institution:	

Course Title:	P2P architecture and application		
Course Code:	CSE521/2		
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 (1.5-1.5-0)			
2. C	Course type			
a.	College Department Others			
b.	Fundamental Transversal Optional			
3. I	3. Level/year at which this course is offered: 5/3			
4. Pre-requisites for this course (if any): CSE540/2				
5. (5. Co-requisites for this course (if any):			

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom		-
2	Blended	15	100
3	E-learning		
4	Distance learning		
5	Other		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	7.5
2	Laboratory/Studio	-
3	Tutorial	7.5
4	Others (specify)	-
	Total	15

B. Course Objectives and Learning Outcomes

1. Course Description

Peer-to-peer (P2P) programs are file-sharing programs designed for the easy transfer of information between individuals over the Internet. P2P file sharing applications allow individuals to set up a computer so that other people can access whatever files are made available to them. In turn, all resources available on other peers become available to the individual. Examples of P2P programs are, Morpheus, Bittorrent, Limeware, Kazaa, eMule, Piolet, and Gnutella.



<u>2. Course Main Objective</u>

- 1. Introduction
- "New" technologies on the Internet. How do they work? Are they overcoming any problems in the existing architecture? Do they invalidate any of our assumptions? Do they provide opportunities?

Today: File-sharing, VoIP, and video-streaming.

Commonalities: All deal with P2P networks, or related constructs (CDNs).

2. File-Sharing: Getting a File from One Person (Machine) to Another Can use client/server:

Client requests file, server responds with the data.

HTTP, FTP work this way.

Downsides: Single point of failure, expensive, doesn't scale. Could use CDNs:

Buy multiple servers, put them near clients to decrease latency.

No single point of failure, scales better.

See the next recitation for more discussion.

 Peer-To-Peer (P2P) Networks for File-Sharing Distribute the architecture to the extreme.
 Once a client downloads (part of) the file from the server, that client can upload (part of)

the file to others. Put clients to work!

In theory: Infinitely scalable.

P2P networks create overlays on top of the underlying Internet (so do CDNs).

Problem: What if users aren't willing to upload?

	Aligned PLOs	
1	Knowledge and Understanding	
1.1	Understand peer-to-peer networks and systems	K.1
1.2	Able to analyze the current state in P2P systems, both in "real world" and in research work	K.2
1.3	Know Why does P2P work?	K.3
2	Skills	
2.1	This lets students create applications that use the decentralized power of the peer to peer network to great effect.	S.1
2.2	A peer to peer network can be either wireless or wired.	S.2
2.3	Every computer in the network can share resources or information directly with the other computers in the network. Also, every computer in the network is given equal responsibility when it comes to communication.	S.3
2.4	A major benefit of peer-to-peer network is that the lack of a centralized server reduces bottlenecks	S.4
3	Values	
3.1	Peer-to-peer principle of self-organization and resource sharing	V.1
3.2	P2P systems exhibit the following characteristics: Autonomy from central servers Use of edge resources Intermittent connectivity	V.2

3. Course Learning Outcomes

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	CLOs	Aligned PLOs
	Clearly define the limits of P2P Compared with distributed systems and	
3.3	grid computing.	V.3
	Different people working in different areas have different definitions	
3.4	Gnutella does not treat all its peers equally.	V.4

C. Course Content

No	List of Topics	Contact Hours
1	Chapter 1. Course Introduction	3
2	Chapter 2. File-Sharing	6
3	Chapter 3. Peer-To-Peer (P2P) Networks for File-Sharing	6
Total		

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	Aware with basics, principles, and theories related to Computer science engineering science	- Lectures - Class discussions - Assignments	Assignments, Quizzes, Exams,
2.0	Skills		
S.2	Apply the knowledge of Computer science engineering principles and concepts to produce solutions and designs that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors Evaluate and analyze the performance and sustainability of designed and/or existing	- Lectures - Class discussions - Assignments	Assignments, Quizzes, Exams,
	Computer science systems.	d ?Ing	óniour
3.0	Values		
V.2	Customize the use of technical and scientific engineering tools in Computer science engineering practices	- Lectures - Class	Assignments, Quizzes Exams
V.4	Persuade, present, communicate, supervise and lead effectively topics in Computer science engineering and other related disciplines	discussions - Assignments	Quilles, Lixuits,



2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	15%
2	Quizzes, Homework assignments	Random	10%
3	Final Exam	1	75%

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

0			
Required Textbooks	Majoras D. B., « Peer-to-peer file-sharing technology consumer protection and competition issues », Federal Trade Commissions, 2005.		
Essential References Materials	Stephanos Androutsellis-Theotokis et Diomidis Spinellis, A Survey of Peer-to-Peer Content Distribution Technologies, 2004. Krishnan R. Smith, « the impact or free-riding on peer-to-peer networks. », system sciences, janvier 2004		
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 Dérieure d'Ingénieurs

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources	Traditional Machine shop, Metrology Lab.



Item	Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and	Students survey, Program	Direct
assessment.	Leaders, Quality manager,	Dilect
Extent of achievement of course learning outcomes.	Faculty, Students survey,	
	Program Leaders, Quality	Direct
	manager, Peer Reviewer	
Quality of Learning resources	Faculty, Program Leaders,	Verification
Teaching and learning quality	Students survey, Program	Eallow we
and effectiveness.	Leaders, Quality manager	Follow-up

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	21/01/2022


Course Title:	Distributed algorithmic
Course Code:	LAC513
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Dr. Brahim ISSAOUI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)



1.	Credit hours: 3 (2.25-0.75-0)		
2. (Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	Level/year at which this course is offered: 5/3		
4.]	4. Pre-requisites for this course (if any): CSE321, CSE212, CSE241		
5.	5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
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	7.5
4	Others (specify)	-
	Total	45

B. Course Objectives and Learning Outcomes

1. Course Description

Distributed algorithms have as main objective to solve these problems related to space and time.

Parallel algorithmics focuses rather on performance problems, in particular the speed-up factor that can be expected from the execution of a computation on several processors, compared to processors, compared to the execution of the same calculation on a single processor.



2. Course Main Objective

- Basic knowledge of algorithms and concurrent programming.
- Basic knowledge of operating systems.
- Know the parallel computing models: PRAM Sorting network Ring and Grid of processors.
- Know the design patterns: Map, Gather, Scatter, Reduce, Scan, Prefix-Scan, Sort ...
- Know the programming on GPU: threads, groups, memories (private, shared, global, transfer), advanced programming, DMA, library (cuBLAS, CUB, ...).
- These techniques will be useful for the student to be able to design algorithms for parallel and distributed environments, with a particular emphasis on programming on GPU.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1 1	Basic knowledge of algorithms and concurrent programming and Basic	V 1
1.1	knowledge of operating systems.	K .1
2	Skills	
	Know the parallel computing models: PRAM - Sorting network - Ring	
	and Grid of processors.	
	-Know the design patterns: Map, Gather, Scatter, Reduce, Scan, Prefix-	
2.1	Scan, Sort	S .1
	-Know the programming on GPU: threads, groups, memories (private,	
	shared, global, transfer), advanced programming, DMA, library	
	(cuBLAS, CUB,).	
3	Values	
	These techniques will be useful for the student to be able to design	
3.1	algorithms for parallel and distributed environments, with a particular	V.4
	emphasis on programming on GPU.	

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to distributed systems and applications	
2	Local synchronous distributed computing	6
3	Managing congestion in the synchronous model	5
5	Distributed data structures	5
6	Asynchronous distributed computing	4
7	Parallel algorithms	6
8	Exam	2
	Total	30



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	Basic knowledge of algorithms and concurrent programming.	Lecturing	Assignments, Quizzes, Exams
K.3	Basic knowledge of operating systems.	Lecturing	Assignments, Quizzes, Exams
2.0	Skills		•
S.1 S.2 S.4	Know the parallel computing models: PRAM - Sorting network - Ring and Grid of processors. Know the design patterns: Map, Gather, Scatter, Reduce, Scan, Prefix-Scan, Sort Know the programming on GPU: threads, groups, memories (private, shared, global, transfer), advanced programming, DMA, library (cuBLAS, CUB,).	Lecturing	Assignments, Quizzes, Exams
3.0	Values		
V.4	These techniques will be useful for the student to be able to design algorithms for parallel and distributed environments, with a particular emphasis on programming on GPU.	 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	25%
2	Quizzes, Homework assignments	Random	10%
3	First mid Term		00%
4	Second mid Term		00%
5	Final Exam		65%
		ut Uaisa	

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
- 3- Academic advisor
- 4- Bibliotic



F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- Pierre Fraigniaud, Algorithmique parallèle et distribuée, 2018.	
Essential References Materials	 Arnaud Labourel, Programmation parallèle et distribuée, 2012. Lélia Blin, Algorithmique répartie, 2017. Denis Conan, Initiation à l'algorithmique répartie, 2020. The Grid. Blueprint for a new Computing Infrastructure. Ed Foster & Kesselman. Morgan Kaufmann. 1999. ISBN 1-55860-475-8 Initiation au Parallélisme Concepts, Architectures et Algorithmes. Marc Gengler, Stéphane Ubéda, Frédéric Desprez. Manuels Informatiques MASSON, ISBN 2-225-85014-3 	
 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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.

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,	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	03/10/2021



Course Title:	Network Engineering
Course Code:	CSE523/2
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Mr. Mounir TELLI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)



1.	Credit hours: 3 (2.25-0.75-0)	
2.	Course type	
a.	College Department Others	
b.	Fundamental Transversal Optional	
3.	Level/year at which this course is offered: 5/3	
4.	Pre-requisites for this course (if any):	
5.	5. Co-requisites for this course (if any):	

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
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	0
3	Tutorial	7.5
4	Others (specify)	-
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

This lecture and laboratory course introduces the fundamental properties of data transmission and computer networks. Topics include: data transfer, the OSI and TCP/IP models, protocols, WAN and LAN topologies, devices and media, security and troubleshooting. This course provides basic background for other networking courses and industry certifications.



2. Course Main Objective

- 1. Explain the OSI (Open Standards Interface) and TCP/IP (Transmission Control Protocol/Internet Protocol) models and how they define data transmission;
- **2.** Describe and configure important network protocols and implement logical addressing schemes;
- **3.** Configure, maintain, and troubleshoot network connectivity devices and transmission media;
- 4. Implement network architecture with basic network security, including encryption;
- 5. Explain the scientific method of analysis and apply it in a variety of situations to solve networking problems, including data transmissions errors, hardware faults, malware, and configuration errors [Scientific Literacy]; and
- 6. Given a scenario, plan and implement a basic SOHO (small office/home office)

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.2	Addressing, Transmission and Media, Topologies, Routing and Switching	K.2
1.3	Network Design, Implementation and Maintenance	K.3
2	Skills	
2.2	Walk through the essentials of an IP address and then take a deep dive into subnetting IPv4 networks into smaller networks,.	S.2
2.4	Explore architectural concepts, including wired and wireless topologies, network types, Build the foundation of networking technologies, Install, configure network switches and network routers, Plan, implement, secure, maintain, and troubleshoot converged enterprise networks, Implement IP routing and switching, Maintain and troubleshoot IP networks	S.4
3	Values	
	OSI model prescribes the steps needed to transfer data over a network	
3.1	and it is very specific in it, defining which protocol is used at each layer and how. The TCP/IP model is not that specific. It can be said that the OSI model prescribes and TCP/IP model describes	V.1
	Transmission media are necessary to form a computer network as they	IIICUI B
3.3	are the physical paths between a transmitter and a receiver. Network architecture is the complete framework of a computer network Routing & switching is the basis for any hardware & network. It is the process of selecting the best path to share data across network.	V.3

3. Course Learning Outcomes

C. Course Content

No	List of Topics	Contact Hours
1	Chapter I:	
2	1- Introduction to Network Engineering	
3	2- Transmission techniques in the network	4.5



4	Chapter II:	13.5
5	1- Fundamentals of networks	3
6	2- Elements of network engineering	4.5
7	3- Concept and capacity of a network system	3
8	4- Study of the performances in the network	3
9	Chapter III :	9
10	1- Definition and objectives of QoS	3
11	2- Measuring devices for QoS parameters	1.5
12	3- Traffic estimation and prediction (voice and data)	1.5
13	4- Traffic models	1.5
14	5- Parameterization and optimization	1.5
	Total	30

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	Aware with basics, principles, and theories related to Computer science engineering science	- Lectures	Assignments,
K.3	Explore Computer science engineering contemporary issues constraints to judge and reach the optimum solutions.	- Assignments	Quizzes, Exams,
2.0	Skills		
S.2 S.4	Apply the knowledge of Computer science engineering principles and concepts to produce solutions and designs that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors- Lectures - Class discussions - AssignmentsEvaluate and analyze the performance and sustainability of designed and/or existing Computer science systems Mathematical Action - Lectures - Class discussions - Assignments		Assignments, Quizzes, Exams, Assignments, Report, Quizzes, Exams,
3.0	Values	Γ	
V .1	Ability to use computer facilities to resolve Computer science engineering problems	LecturesClass discussions	Assignments, Report, Quizzes, Exams
V.3	Justify the standards and codes in practice of design and analysis of Computer science engineering problems and ethics	 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	25%
2	Quizzes, Homework assignments	Random	25%
3	Final Exam	11	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	SMB University: Selling Cisco SMB Foundation Solutions Networking Fundamentals	
Essential References Materials	" COMPUTER NETWORK", SHRI VISHNU ENGINEERING COLLEGE FOR WOMEN. NETWORK ENGINEERING (w.e.f Session 2018). Edward Deadmon, "Computer Engineering Technology and Cisco Networking".	
Electronic Materials	Lecture material in PPT Any Related material including the YouTube videos relating to engineering measurement Blackboard	
Other Learning Materials	NA	
2 Excilition Dequired	uperieure d'ingemeurs	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources	Traditional Machine shop, Metrology Lab.



Item	Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

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	21/10/2021





Course Title:	Protocoles et sécurité des services IP	
Course Code:	CSE531/2	
Program:	3 ^e année du Cycle Ingénieur - RSR	
Department:	Computer Engineering	
College:	ESIP	
Institution:		

Course Title:	Protocols and security of IP services	
Course Code:	CSE531/2	
Program:	Master Degree In Computer Engineering	
Department:	Computer Engineering	
Course coordinator:	Mr. Ahmed KLIFI	_
Institution:	Private Higher School of Engineers of Gafsa (ESIP)	



1.	Credit hours: 3 (3-0-0)		
2. 0	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4. Pre-requisites for this course (if any):			
5. Co-requisites for this course (if any):			

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	15	100
3	E-learning		
4	Distance learning		
5	Other		

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

The first part of the course is designed to provide a demonstration of QoS. This course allows students to know how to implement and manage QoS. The concepts to be covered include: Discovering and mastering the different models used to ensure the quality of service of a network and knowing the best practices for implementing an effective QoS.

The second part of the course is devoted to showing the basic characteristics and configuration of the operation of the spanning-tree protocol. The course also details the implementation and optimization of the STP mechanism that best suits a network: PVST+, PVST+ RSTP or MSTP. The course also covers the synthesis on the state of the ports.

The last part of this course describes the techniques and to acquire a global vision of the security of IP networks.



2. Course Main Objective

- 1. Understand how to provide service that meets response time and bandwidth requirements.
- 2. Describe recommended best practices and methods used for a comprehensive deployment of QoS in the enterprise.
- 3. Describe the mechanisms used to monitor QoS implementations.
- 4. Use QoS traffic policies and management mechanisms to limit the level of network traffic.
- 5. Use link mechanisms to improve the bandwidth of low-speed WAN links.
- 6. Install a dynamic configuration protocol.
- 7. Install and configure an interconnect element availability solution.
- 8. Explain the role of redundancy in a converged network
- 9. Explain how STP works to eliminate Layer 2 loops in a converged network
- 10. Explain how the STP algorithm uses the three steps to converge in a loop-free topology

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge and Understanding	
1.1	Aware with Aware the basics, principles and theories related to the principle of QoS.	K.2
1.2	Explore the constraints of contemporary QoS problems to judge and reach optimal solutions.	K.3
2	Skills	
2.1	Design, conduct, analyze, and evaluate practices, projects, and experiments related to Computer science engineering issues	S.3
2.2	Evaluate and compare the performance and sustainability of Virtualization and VMware Tools	S.4
3	Values	
3.1	Customize the use of technical and scientific engineering tools in Computer science engineering practices	V.2
3.2	Justify the standards and codes in practice of design and analysis of Computer science engineering problems and ethics	V.3

C. Course Content		
No	List of Topics	Contact Hours
1	Describe the fundamentals of QoS policies.	2
2	Identify and describe the different models used to secure QoS in a network.	2
3	Describe the mechanisms used to monitor QoS implementations.	2
4	Bring converged network and policy to define QoS requirements.	2
5	Spanning-Tree is a formalized IEEE 802.1D L2 protocol.	1.5
6	Problem of switching loops.	2
7	Spanning-Tree: Principle.	2
8	Spanning-Tree algorithm	1.5
	Total	15



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	Aware with Aware the basics, principles and theories related to the principle of QoS.		Assignments
K.3	Explore the constraints of contemporary QoS problems to judge and reach optimal solutions.	Lecturing	Quizzes, homework
2.0	Skills		
S.3	Design, conduct, analyze, and evaluate practices, projects, and experiments related to Computer science engineering issues	Course project	Assignments, Report, Quizzes, Exams,
S.4	Evaluate and compare the performance and sustainability of Virtualization and VMware Tools	Assignment work Assignments, Rep Quizzes, Exams	Assignments, Report, Quizzes, Exams,
3.0	Values		
V.2	Customize the use of technical and scientific engineering tools in Computer science engineering practices	- Lectures - Class discussions	Assignments, Report, Quizzes, Exams
V.3	Justify the standards and codes in practice of design and analysis of Computer science engineering problems and ethics	- Assignments - projects	Assignments, Report, Quizzes, Exams

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Final Exam	10	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
- 3- Academic advisor
- 4- Bibliotic



F. Learning Resources and Facilities

	-
1.Learning	Resources

Required Textbooks	1. Soucek, S. and Sauter, T. (2004). Quality of Service Concerns in IP-Based Control Systems. IEEE Transactions on Industrial Electronics, 51(6), pp.1249–1258.
Essential References Materials	 Radhakrishnan, S. (2020). Ip quality of service: the essential resource in deploying converged, media ready networks. Cisco Press. Stallings, W. (2002). High-speed networks and internets : performance and quality of service. Upper Saddle River, N.J.: Prentice Hall.
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching classroom with board and internet access. Computer Lab.		
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show		
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.		

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	21/01/2022



Course Title:	Distributed application development project		
Course Code:	CSE533/2		
Program:	Master Degree In Computer Engineering		
Department:	Computer Engineering		
Course coordinator:	Dr. Naziha DHIBI		
Institution:	Private Higher School of Engineers of Gafsa (ESIP)		



1. Credit hours: 3 (0-0-3)			
2. Course type			
a. University College Department Others			
b. Required Elective			
3. Level/year at which this course is offered: 5/5			
4. Pre-requisites for this course (if any): Programming workshop, Object oriented programming, Programming project, Design and development projects			
5. Co-requisites for this course (if any):			
None			

1. (Credit hours: 3 (0-0-3)			
2. 0	Course type			
a.	College Department Others			
b.	Fundamental Transversal Optional			
3. 1	3. Level/year at which this course is offered: 5/3			
4. Pre-requisites for this course (if any): CSE132, CSE232, CSE222,				
5. (5. Co-requisites for this course (if any):			

1.Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	15	100
3	E-learning		
4	Distance learning		
5	Other		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
-10	Lecture Supérieure o ⁷ no	oénieur
2	Laboratory/Studio	15
3	Tutorial	-
4	Others (specify)	-
	Total	15

B. Course Objectives and Learning Outcomes

1. Course Description

This module allows engineering students to work in pairs on a theme defined by specifications. Students contact their teachers at the start of the semester in order to set specifications around a topic relating to IT. The project takes place in pairs and is the subject of:



- Source code,
- Demonstration of the final product,
- Written report,
- o Oral presentation of 20 to 30 minutes

2. Course Main Objective

- Understand the theoretical knowledge acquired in analysis and modeling by carrying out large-scale work in groups.
- Gain practical experience in implementing a methodology.
- Realization and documentation of an information system relies distributed application project
- Practice of common software engineering working methods: presentations, revisions, etc.
- Mange the design problems and ethics related to the distributed application development project
- Conclude effectively the basics, principles, and theories related to the distributed application development project with other disciplines

3. Course Learning Outcomes

	Aligned PLOs	
1	Knowledge and Understanding	
1.1	Aware with basics, principles, and theories related distributed application project.	K.2
1.2	Explore distributed application project to judge and reach the optimum solutions	K.3
2	Skills	
2.1	Gain practical experience in implementing a methodology.	S.3
2.2	Realization and documentation of an information system relies distributed application project.	S.4
3	Values	
3.1	Customize the use of technical and scientific engineering tools in Computer science engineering practices related to the development of applications and projects	v.2
3.2	Justify the standards and codes in practice of design and analysis of Computer science engineering problems and ethics	V.3
3.3	Persuade, present, communicate, supervise and lead effectively topics in distributed application project and other related disciplines	V.4



C. Course Content

No	List of Topics	Contact Hours
1	Project design	3
2	Production	6
3	Demonstration of the final product,	3
4	Oral presentation of 20 to 30 minutes	3
Total		

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	Aware with basics, principles, and theories related distributed application project.	- Class discussions	Assignments,	
K.3	Explore distributed application project to judge and reach the optimum solutions	- Projects	Quizzes, Report,	
2.0	Skills			
S .3	Gain practical experience in implementing a methodology.	- Class discussions	Assignments, Quizzes, presentation,	
S.4	Realization and documentation of an information system relies distributed application project.	- Assignments - Projects	Assignments, Report, Quizzes, presentation,	
3.0	Values			
V.2	Customize the use of technical and scientific engineering tools in Computer science engineering practices related to the development of applications and projects	- Class discussions - Assignments	Assignments, Report, Quizzes, presentation	
R _{v.4}	Persuade, present, communicate, supervise and lead effectively topics in distributed application project and other related disciplines	- Projects	Assignments, Report, Quizzes, presentation	

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (project defense)	Weekly	80%
2	Quizzes, Homework assignments	Random	200%



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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.

G. Course Quality Evaluation

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

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	12/01/2022





Course Title:	Discrete event simulations
Course Code:	CSE541/2
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Mr.Ahmed KHLIFI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)





1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
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	7.5
4	Others (specify)	-
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

The first part of the course is designed to provide training in the concepts and techniques of simulation modeling of discrete event systems using Arena simulation software.

This course introduces the student to simulate, test and optimize complex processes and to perform capacity planning and optimize supply chains for manufacturing. Topics to be covered include simulating hybrid systems containing time-based, event-driven, and/or agent-based components. The second part of the course is devoted to the study of simulation techniques: problems, advantages, disadvantages and limits. The course also covers the theories of discrete simulation: random number generators for the study of stochastic phenomena, synchronous and asynchronous clocks, Monte Carlo simulation, queuing theory.

The course approaches the optimal solutions for the analysis of the complex systems after having fixed the objectives and the criteria of optimization.



2. Course Main Objective

- Understand the different types of data, via the usual taxonomic dimensions: a) subjective vs. objective, b) temporal vs. non-temporal, c) quantitative vs. qualitative, d) deterministic vs. probabilists.
- Exploit (characterize, code, detect errors, model in the form of a mathematical, graphic or verbal model) data in order to increase knowledge of a system.
- Understand a simple digital processing chain for communication between systems (transmission chain, reception chain) with characterization and implementation of filters.
- Model stochastic and queuing systems for probabilistic systems.
- Simulate data according to specific distributions (Laplace-Gauss, Weibull, Student, Fisher-Snedecor, equiprobable, exponential, ...) with various applications for the study of systems (Monte Carlo, ...).
- Determine optimal solutions for systems analysis after setting the objectives and optimization criteria.
- Knowing how to use engineering software (Matlab, Arena) to perform digital data processing and system simulation (calculation of statistical and performance indicators, matrix diagonalization, filtering, correlation, modulation, demodulation, ...).

3. Course Learning Outcomes

	Aligned PLOs	
1	Knowledge and Understanding	
1.1	State and relate basics, principles, and theories related to discrete event simulation	K.2
1.2	Understand the different types of data: a) subjective vs. objective, b) temporal vs. non-temporal, c) quantitative vs. qualitative, d) deterministic vs. probabilists	K.3
2	Skills	
2.1	Employ simulation knowledge, principles and concepts to model stochastic and queuing systems of probabilistic systems.	S.2
2.2	Asses and simulates data according to specific distributions (Laplace-Gauss, Weibull, Student, Fisher-Snedecor, equiprobable, exponential,) with various applications for the study of systems (Monte Carlo,).	S.4
3	Values	
3.1	Know how to manage and exploit simulation models and analyze the results.	V.2
3.2	Know how to use engineering software effectively to perform system simulation.	V.4

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to simulation	3
2	Probability as Using in Simulation.	3
3	Queueing Simulation.	3
4	Inventory Simulation.	3



5	Random-Number Generation.	3
6	Input Modeling.	3
7	Discrete random variables.	3
8	Continuous random variables	3
9	Cumulative distribution function.	3
10	Automated Material Handling Systems	3
Total		30

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	State and relate basics, principles, and theories related to discrete event simulation		
K.3	Understand the different types of data: a) subjective vs. objective, b) temporal vs. non- temporal, c) quantitative vs. qualitative, d) deterministic vs. probabilists	Lecturing	Assignments, Quizzes, Exams,
2.0	Skills		
S.2	Employ simulation knowledge, principles and concepts to model stochastic and queuing systems of probabilistic systems		Assignments, Quizzes, Exams,
S.4	Asses and simulates data according to specific distributions (Laplace-Gauss, Weibull, Student, Fisher-Snedecor, equiprobable, exponential,) with various applications for the study of systems (Monte Carlo,).	Lecturing	Assignments, Report, Quizzes, Exams,
3.0	Values		
V.2	Know how to manage and exploit simulation models and analyze the results.	- Lectures - Class	Assignments, Report, Quizzes, Exams
V .4	Know how to use engineering software effectively to perform system simulation.	discussions - Assignments - projects	Assignments, Report, Quizzes, Exams

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Final Exam	11	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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Margaret L. Loper, " Modeling and Simulation in the Systems Engineering Life Cycle", Latest Edition,
Essential References Materials	 Fernando J Barros. Modeling formalisms for dynamic structure systems. ACM Transactions on Modeling and Computer Simulation (TOMACS), 7(4) :501–515, 1997 Youssef Bouanan. "Contribution à une architecture de modélisation et de simulation à événements discrets : application à la propagation d'information dans les réseaux sociaux. PhD thesis, Bordeaux, 2016. Michele Sonnessa. Modelling and simulation of complex systems. PhD thesis, Cultura e impresa, 2004
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.



G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods	
Effectiveness of teaching and	Students survey, Program	Direct	
assessment.	Leaders, Quality manager,	Direct	
Extent of achievement of	Faculty, Students survey,		
Extent of achievement of	Program Leaders, Quality	Direct	
course learning outcomes.	manager, Peer Reviewer		
Quality of Learning resources	Faculty, Program Leaders,	Verification	
Teaching and learning quality	Students survey, Program	Follow up	
and effectiveness.	Leaders, Quality manager	ronow-up	

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	21/09/2021



Course Title:	Modelling and performance evaluation
Course Code:	CSE543/2
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Mr. Mounir TELLI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)



1.	Credit hours: 3 (2.25-0.75-0)		
2.	Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	Level/year at which this course is offered: 5/3		
4.	4. Pre-requisites for this course (if any): CSE540/2		
5.	5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
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	0
3	Tutorial	7.5
4	Others (specify)	-
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

The objective of this module is to make students aware of the problems of modeling and evaluating the performance of real systems such as computer systems, communication networks and production systems. It sets out to answer the following questions:

Why evaluate the performance of a system? In which cases is this necessary?

 How to model a system?
 What type of model to use?
 How to analyze the model?

 2. Course Main Objective
 Image: Course Main Objective
 Image: Course Main Objective

1. The objective of this module is to make students aware of the problems of modeling and evaluation of the performance of real systems such as computer systems, communication networks and production systems.

- 2. It sets out to answer the following questions: Why evaluate the performance of a system? In which cases is this necessary? How to model a system? What type of model to use? How to analyze the model? When to use analytical methods or simulation techniques?
- 3. In this module, we will focus on the methodological aspects, the tools mathematics, simulation techniques and specific applications of performance evaluation.
- 4. The preferred field of application is that of communication networks.



3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge and Understanding	
	Modeling	
	- Simple models based on Markov chains	
	- More complex Queues type models	
12	Areas of application modeled in all parts of the course	КЭ
1.2	- Everyday life	IX. 2
	- Networks	
	- Informatic Systems	
	- Production systems	
	Analysis:	
	- Markov chains	
1.3	- Simple queues	K.3
	- Product-form queuing networks	
	Discrete event simulation	
2	Skills	
2.2	Performance evaluation methods, Skills in the field of performance	
	evaluation of different system architecture and sizing options:	\$ 2
	throughput, response time, quality of service, traffic and congestion	5.2
	control, resource utilization rate, availability, location of bottlenecks,	
3	Values	

C. Course Content

No	List of Topics	Contact Hours
1	Chapter I:	3
2	1- Problems of performance evaluation	3
4	Chapter II:	9
5	Modeling - Simple models based on Markov chains	4.5
6	- More complex Queues type models	4.5
9	Chapter III:	9
K,	Areas of application modeled	enre
10	-Everyday life	9
10	- Networks Informatic Systems	
	- Production systems	
11	Chapter IV:	6
	Analysis:	
12	- Markov chains	6
12	- Simple queues	0
	- Product-form queuing networks	
13	Chapter V :	3
14	Discrete event simulation	3
	Total	30



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	Aware with basics, principles, and theories related to Computer science engineering science	- Lectures	Assignments
K.3	Explore Computer science engineering contemporary issues constraints to judge and reach the optimum solutions.	- Class discussions - Assignments	Quizzes, Exams,
2.0	Skills		
S.2	Apply the knowledge of Computer science engineering principles and concepts to produce solutions and designs that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	 Lectures Class discussions Assignments 	Assignments, Quizzes, Exams, Assignments, Report, Quizzes, Exams,
3.0	Values		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	15%
2	Quizzes, Homework assignments	Random	10%
3	Final Exam	1	75%

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

périeure d 'Ingénieur 3- Academic advisor

4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	B. Baynat, Théorie des files d'attente, Hermes 2000
Essential References MaterialsG. Vidal-Naquet, A. Choquet-Geniet, Réseaux de Petri et Parallèles, Armon Colin 1992 A. Choquet-Geniet, Les Réseau de Petri, un outil de mode Dunod 2006	
Electronic Materials	Lecture material in PPT



Any Related material including the YouTube videos relating t engineering measurement Blackboard	
Other Learning Materials	NA

2. Facilities Required

Item	Resources	
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.	
Technology Resources		
(AV, data show, Smart Board, software, etc.)	Power point data show	
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods	
Effectiveness of teaching and	Students survey, Program	Direct	
assessment.	Leaders, Quality manager,	Direct	
Extent of achievement of	Faculty, Students survey,		
extent of achievement of	Program Leaders, Quality	Direct	
course learning outcomes.	manager, Peer Reviewer		
Quality of Learning resources	Faculty, Program Leaders,	Verification	
Teaching and learning quality	Students survey, Program	Fellow up	
and effectiveness.	Leaders, Quality manager	Follow-up	

H. Specification Approval Data

Council / Committee	Computer Engineering Council	5
Date	21/010/2021	

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Course Title:	Advanced data networks		
Course Code:	CSE551/2		
Program:	Master Degree In Computer Engineering		
Department:	Computer Engineering		
Course coordinator:	Mr. Moncef JDIDI		
Institution:	Private Higher School of Engineers of Gafsa (ESIP)		



1.	Credit hours: 3 (2.25-0.75-0)		
2. (Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4. Pre-requisites for this course (if any): CSE540/2			
5. Co-requisites for this course (if any):			

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	_
2	Blended	30	100
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	0
3	Tutorial	7.5
4	Others (specify)	-
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

Presentations and detailed analysis of computer/data networking technologies. Topics include ISO OSI layers 2 and above networking technologies, such as asynchronous transfer mode (ATM), frame relay, Ethernet networks, multi-protocol label switching (MPLS), and Internet protocol technologies, and their applications. Network architectures, protocol stacks, routing algorithms, quality of service (QoS), flow control and traffic management techniques, router/switch design, and data network applications/services will be studied. Students will use Wireshark to examine the various protocols


2. Course Main Objective

1.	Introductory Concepts
	- network topologies, communication architectures

- 2. Elements of Communication Protocols - packet formats, flow control, error control, protocol analysis
- **3.** Packet Switching - datagram vs. virtual circuit
- 4. Scheduling

- scheduling strategies for best-effort and guaranteed-service connections

- 5. Routing - distance-vector and link-state routing strategies for packet switching
- 6. High Speed Switching Architectures - sampling of switch fabric architectures such as broadcast bus, Batcher-Banyan, and Balanced Gamma networks
- 7. Security (time permitting) - symmetric key and public key encryption, authentication, digital signatures
- 8. Wireless Sensor Networks (time permitting) - an introduction to wireless sensor networking technologies, challenges, and applications

3. Course Learning Outcomes

	Aligned PLOs			
1	Knowledge and Understanding			
	Able to analyze the performance of a network using probability tools and			
1.2	queuing theory and understand networking techniques including	K.2		
	scheduling, routing, and switching			
2	Skills			
$\gamma\gamma$	The ability to evaluate the techniques and systems used in the design and	\$ 2		
2.2	operation of high speed data networks	5.2		
2.3	Students are expected to be able to read protocol specifications.	S.3		
2.4	Students should also be able to compare different data networks and to	S 1		
2.4	perform high level design of data networks.	5.4		
3	Values			
3.1	Design and performance of Wide Area Networks.	V.1		
20	Investigation of the performance implications of the hardware and			
3.2	software aspects of network technology	v .2		
3.4	Introduction to wireless LAN techniques.	V.4		
C	C Course Content Privée de Gafsa			

C. Course Content

No	List of Topics	
1	Chapter 1. Course Introduction	3
2	Chapter 2. Elements of Communication Protocols	3
3	Chapter 3. Packet Switching	4.5
4	Chapter 4. Scheduling and Routing	6
5	Chapter 5. High Speed Switching Architectures	4.5
6	Chapter 6. Security	4.5



7 Chapter 7. Wireless Sensor Networks

Total

D. Teaching and Assessment

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

Code	Course Learning Outcomes	Τe	eaching Strategies	Assessment Methods
1.0	Knowledge and Understanding			
K.2	Aware with basics, principles, and theories related to Computer science engineering science		 Lectures Class discussions Assignments 	Assignments, Quizzes, Exams,
2.0	Skills			
S.2 S.3	Apply the knowledge of Computer science engineering principles and concepts to produce solutions and designs that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors Design, conduct, analyze, and evaluate practices, projects, and experiments related to Computer science engineering issues. Evaluate and analyze the performance and		- Lectures - Class discussions - Assignments	Assignments, Quizzes, Exams,
S.4	sustainability of designed and/or existing Computer science systems.			
3.0	Values			
V .1	Ability to use computer facilities to resolve Computer science engineering problems		Lactures	Assignments,
V.2	Customize the use of technical and scientific engineering tools in Computer science engineering practices	ng	- Class discussions - Assignments - projects	Report, Quizzes, Exams
V.4	Persuade, present, communicate, supervise and lead effectively topics in Computer science engineering and other related disciplines	d	'Ingér	nieur

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	10%
3	Final Exam	11	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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1. W. Stallings, Data and Computer Communications, 8th ed., Prentice-Hall, 2007.		
Essential References Materials	 W. Stallings, High-Speed Network and Internets: Performance and Quality of Service, 2nd ed., Prentice-Hall, 2002. D. Bertsekas and R. Gallager, Data Networks, 2nd ed., Prentice- Hall, 1992. 		
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.



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	21/10/2021



Course Title:	Wireless and cellular networks
Course Code:	CSE552/2
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Mr. Ferhi MALEK
Institution:	Private Higher School of Engineers of Gafsa (ESIP)



A. Course Identification

1.	Credit hours: 3 (2.25-0.75-0)		
2. (Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4.]	4. Pre-requisites for this course (if any):		
5.	5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
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	7.5-
4	Others (specify)	-
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

Description of the general characteristics of networks in wireless data transmission. Cellular telecommunications networks (GSM, GPRS, EDGE, UMTS, HSDPA). Access to Wi-MAX and Wi-Fi-type networks. Cellular networks.

<u>2. Course Main Objective</u>

- Understand the concept of cells
- Evolution of 2G 3G 4 G 5 G cellular networks
- Network mobility and handover
- Dedicated logical channels



3. Course Learning Outcomes

	Aligned PLOs	
1	Knowledge and Understanding	
1.1	Know the basics, principles and different generations of cellular networks	K.2
2	Skills	
2.1	Use knowledge of engineering principles and concepts to produce solutions and designs related to wireless networks and cellular networks	S.2
2.2	Evaluate and analyze systems based on wireless and cellular network architectures	S.4
3	Values	
3.1	Ability to use Wireless and Cellular Network architectures to solve problems related to network systems	V.1
3.2	Customize the use of network techniques in engineering practice	V.2
3.3	Persuade, present, communicate, supervise and lead effectively topics in Computer science engineering and other related disciplines	V.4

C. Course Content

No	List of Topics	Contact Hours
1	INTRODUCTION TO CELLULAR NETWORKS	5
2	2 EVOLUTION OF 2G 3G MOBILE NETWORKS	
3	MOBILITY AND HANDOVER	5
4	4 CHANNELS TCH SDDCH BCCH	
5	LTE	6
Total		30

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	Know the basics, principles and different generations of cellular networks	Lecturing	Assignments, Quizzes, Exams
2.0	Skills		
S.2	Evaluate and analyze systems based on wireless and cellular network architectures	Lasturing	Assignments, Quizzes, Exams,
S.4	Evaluate and analyze systems based on wireless and cellular network architectures	Lecturing	Assignments, Report, Quizzes, Exams,



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.0	Values		
V.2	Ability to use Wireless and Cellular Network architectures to solve problems related to network systems	- Lectures	Assignments, Report, Quizzes, Exams
V.4	Persuade, present, communicate, supervise and lead effectively topics in Computer science engineering and other related disciplines	- 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	25%
2	Quizzes, Homework assignments	Random	10%
3	First mid Term	-	00%
4	Second mid Term	-	00%
5	Final Exam	11	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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Mikell P. Groover, "Automation, Production Systems, and Computer-Integrated Manufacturing", Latest Edition,
Essential References Materials	 Kunwoo, L. "Principles of CAD/CAM/CAE", Prentice Hall, 1Latest Ed. Bedworth D., Henderson M. R. & Wolfe P. M. "Computer Integrated Manufacturing" McGraw – Hall, latest Ed. Metra, A., "Fundamentals of Quality Control and Improvement", 2nd Edition, Prentice Hall, Latest Ed. James V. Valentino and Joseph G., "Introduction to Computer Numerical Control (CNC)", Pentice-Hall, Latest Ed.
Electronic Materials	 Lecture material in PPT Any Related material including the YouTube videos relating to engineering measurement Blackboard



2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources	
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.

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	10/11/2021	
Ecole 20	perieure a ingemeurs	5

Privée de Gafsa



Course Title:	System and Network Programming in Linux
Course Code:	CSE553/2
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 (3-0-0)		
2. (Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.]	3. Level/year at which this course is offered: 5/3		
4. Pre-requisites for this course (if any): CSE520/2, CSE530/2			
5. (5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	15	100
3	E-learning		
4	Distance learning		
5	Other		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	0
2	Laboratory/Studio	15
3	Tutorial	0
4	Others (specify)	-
	Total	15

B. Course Objectives and Learning Outcomes

1. Course Description

In this course, you will learn how to design, deploy and maintain a network running under Linux; how to administer the network services; the skills to create and operate a network in any major Linux distribution; how to securely configure the network interfaces; and how to deploy and configure file, web, email and name servers.

Lab exercises in this course are designed to work either on native hardware, or using a virtual machine (VM), under a hypervisor, such as those in the KVM, VMWare, or Virtual Box families. Detailed instructions to set up your lab environment are provided in the course.



2. Course Main Objective

- Chapter 1. Course Introduction
- Chapter 2. Linux Networking (Concepts and Review)
- Chapter 3. Network Configuration
- Chapter 4. Network Troubleshooting and Monitoring
- Chapter 5. Remote Access
- Chapter 6. Domain Name Service
- Chapter 7. HTTP Servers

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge and Understanding	
1.2	Ability to write Shell Programming using Linux commands	K.2
2	Skills	
2.2	Design of client and server sides of network applications	S.2
2.3	Review of relevant network protocols (IP, TCP, UDP, Ethernet, etc.), Overview of TCP sockets.	S .3
2.4	Operating System support for network protocols; inter-process communication facilities such as pipes, Remote Procedure Call (RPC) and sockets;	
3	Values	
3.1	principles of operating system including File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking Commands, Basic Linux commands, Scripts and filters.	V.1
3.2	To familiarize fundamentals of the Bourne again shell (bash), shell programming, pipes, input and output redirection Control structures, arithmetic in shell interrupt processing, functions, debugging shell scripts.	V.2
3.4	To facilitate students in understanding Inter process communication.	V.4

C. Course Content		
No	List of Topics	Contact Hours
1	Chapter 1. Course Introduction	1.5
2	Chapter 2. Linux Networking (Concepts and Review)	1.5
3	Chapter 3. Network Configuration	3
4	Chapter 4. Network Troubleshooting and Monitoring	3
5	Chapter 5. Remote Access	1.5
6	Chapter 6. Domain Name Service	1.5
7	Chapter 7. HTTP Servers	3
	Total	15



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	Aware with basics, principles, and theories related to Computer science engineering science	 Lectures Class discussions Assignments	Assignments, Quizzes, Exams,
2.0	Skills		
S.2 S.3	Apply the knowledge of Computer science engineering principles and concepts to produce solutions and designs that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors Design, conduct, analyze, and evaluate practices, projects, and experiments related to Computer science engineering issues	- Lectures - Class discussions - Assignments	Assignments, Quizzes, Exams,
S.4	Evaluate and analyze the performance and sustainability of designed and/or existing Computer science systems.		
V.1	Ability to use computer facilities to resolve Computer science engineering problems		
V.2	Customize the use of technical and scientific engineering tools in Computer science engineering practices	 Lectures Class discussions Assignments 	Assignments, Report, Quizzes, Exams
V.4	Persuade, present, communicate, supervise and lead effectively topics in Computer science engineering and other related disciplines	- projects	7 •

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	30%
2	Quizzes, Homework assignments	Random	10%
3	Final Exam	1	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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Linux System Programming, Robert Love, O'Reilly, SPD		
Essential References Materials	UNIX Network Programming, W.R. Stevens, PHI. UNIX for Programmers and Users, 3rd Edition, Graham Glass, King Ables, Pearson Education		
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.

G. Course Quality Evaluation de Gafsa

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



Evaluation Areas/Issues	Evaluators	Evaluation Methods
Teaching and learning quality	Students, Faculty Program	Direct Indirect
and effectiveness.	Leaders, Peer Reviewer	Direct, indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	21/01/2022





Course Title:	Mobility of networks
Course Code:	CSE561/2
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Mr. Malek FERHI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)



A. Course Identification

1. Credit hours: 3 (3-0-0)		
2. Course type		
a. College Department Others		
b. Fundamental Transversal Optional		
3. Level/year at which this course is offered: 5/3		
4. Pre-requisites for this course (if any): CSE460/2		
5. Co-requisites for this course (if any):		

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom		-
2	Blended	15	100
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

The course covers mobile network communication and discusses mobility in a system perspective.

<u>2. Course Main Objective</u>

The course gives an overview of mobility concepts like Mobile IP, SIP as well as mobile network deployment and heterogeneous network access.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge and Understanding	
1.1	network communication and mobility in a system	K.1
2	Skills	
2.1	Ability to provide dynamic networks connectivity fou users ,devices ,services	S.1
3	Values	
3.1	Requirement for wireless networks ,as they ensure uninterruptible service despite diverse neesds	М



C. Course Content

No	List of Topics	Contact Hours
1	Introduction to mobility IP	3
2	Categories of mobility	3
3	Working of mobile IP, registration, autentification, tunneling,	3
4	Triangle routing	3
5	Ipv4 vs ipv6	
	Total	24

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	Mobility of IP based wireless networks	Lecturing	Assignments, Quizzes, Exams,
2.0	Skills		
S .1	Ability to provide dynamic networks connectivity for users, devices, services	Lecturing	Assignments, Quizzes, Exams,
3.0	Values		
М	Requirement for wireless networks, as they ensure uninterruptible service despite diverse needs	 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	25%
2	Quizzes, Homework assignments	Random	10%
3	First mid Term		00%
4	Second mid Term		00%
5	Final Exam		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
- 3- Academic advisor
- 4- Bibliotic



F. Learning Resources and Facilities

1.Lea	rning	Resources
1.100		Rebuildes

Required TextbooksCOMPUTER NETWORKING Atop down approach : JIM KUROSE.KEITH ROSS ADDISON –WESLY	
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.	
Technology Resources		
(AV, data show, Smart Board, software, etc.)	Power point data show	
Other Resources		
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.	

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	08/01/2022



Course Title:	Cloud Virtualization and Datacenter VMware Certification
Course Code:	CSE562/2
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Mr. Ahmed KHLIFI
Institution:	Private Higher School of Engineers of Gafsa (ESIP)



A. Course Identification

1. (Credit hours: 3 (1.5-0-1.5)	
2. C	Course type	
a.	College Department Others	
b.	Fundamental Transversal Optional	
3. I	Level/year at which this course is offered: 5/3	
4. Pre-requisites for this course (if any): CSE461/2, CSE462/2		
5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	_
2	Blended	30	100
3	E-learning		
4	Distance learning		
5	Other		

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

The first part of the course is designed to provide a demonstration of vSphere and Software-Defined Data Center. This course allows students to recognize the user interfaces to access the vCenter Server system and ESXi hosts. Concepts to be covered include: Installation, configuration and implementation of VMware vSphere and its two components VMware ESXi/ESXiTM, and VMware vCenterTM Server.

The second part of the course is devoted to creating and configuring a VM, installing VMware Tools. As well as discerning the virtual devices supported by a VM. The course also details the deployment and configuration of vCenter Server Appliance. The course covers procedures for managing a Data Center, organizational objects and hosts to vCenter Server.

The last part of this course, describes the options for creating a "highly available" vSphere environment.

<u>2. Course Main Objective</u>

- Deploy and Configure ESXi
- Deploy and Configure vCenter Server Components



- Configure and manage the networking and storage aspects of ESXi using vCenter Server
- Deploy, administer and move virtual machines
- Manage user access to the VMware infrastructure
- Monitor Resource Usage Using vCenter Server
- Sizing the Architecture Using vCenter Server
- Use vCenter Update Manager to Apply Patches in ESXi
- Optimize infrastructure availability and manage data protection using vCenter Server.

3. Course Learning Outcomes

	Aligned PLOs	
1	Knowledge and Understanding	
1.1	Aware with basics, principles, and theories related to vSphere and Software-Defined Data Center.	K.2
1.2	Explore Virtualization constraints to judge and reach the optimum solutions.	K.3
2	Skills	
2.1	Practice knowledge, principles and concepts of Cloud Virtualization and Data center VMware in parts design and manufacturing.	S.2
2.2	Evaluate and compare the performance and sustainability of Virtualization and VMware Tools	S.4
3	Values	
3.1	Contract the basics, principles, and theories related to Cloud Virtualization and Data center VMware Certification	V.2
3.2	Persuade, present, communicate, supervise and lead effectively topics in Cloud Virtualization and other related disciplines.	V.4

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to vSphere and Software-Defined Data Center	3
2	Recognize the user interfaces for accessing the vCenter Server system and ESXi hosts.	3
3	Describe the ESXi host architecture	2
4	Create and provision a VM and install VM ware Tools	
5	Discern the virtual devices supported by a VM	2
6	Deploy and configure vCenter Server Appliance	3
7	Add a Data Center, organizational objects, and hosts to vCenter Server	2
8	Configure virtual switch security, load balancing	3
9	Compare vSphere distributed switches and standard switches	2
10	Use templates and cloning to deploy new VMs	3
11 Describe the features and functions of VMware vSphere Replication		2
12 Describe options for creating a highly available vSphere environment		2
	Total	30



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	Aware with basics, principles, and theories related to vSphere and		
K.3	Software-Defined Data Center. Explore Virtualization constraints to judge and reach the optimum solutions.	Lecturing	Assignments, Quizzes, homework
2.0	Skills		
S.2	Practice knowledge, principles and concepts of Cloud Virtualization and Data center VMware in parts design and manufacturing.	Course project	Assignments, Report, Quizzes, Exams,
S.4	Evaluate and compare the performance and sustainability of Virtualization and VMware Tools	Assignment work	Assignments, Report, Quizzes, Exams,
3.0	Values		
V.2	Contract the basics, principles, and theories related to Cloud Virtualization and Data center VMware Certification	- Lectures	Assignments, Report, Quizzes, Exams
V.4	Persuade, present, communicate, supervise and lead effectively topics in Cloud Virtualization and other related disciplines.	- 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	25%
2	Quizzes, Homework assignments	Random	10%
3	First mid Term		00%
4	Second mid Term		00%
5	Final Exam		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
- 3- Academic advisor
- 4- Bibliotic



F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1. A Mauro, P Valsecchi, K Novak, "Mastering VMware vSphere 6.5: Leverage the power of vSphere for effective virtualization, administration, management and monitoring of data centers".
Essential References Materials	 "VMware vSphere Design", De Forbes Guthrie, Scott Lowe, Kendrick "Introducing virtualization management concepts using open source cloud infrastructure managers",
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching classroom with board and internet access. Computer Lab.
Technology Resources	
(AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources	
(Specify, e.g. if specific laboratory equipment	Traditional Machine shop, Metrology Lab.
is required, list requirements or attach a list)	

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	25/09/2021



Course Title:	Networks and Service Oriented Architectures	
Course Code:	CSE563/2	
Program:	Master Degree In Computer Engineering	
Department:	Computer Engineering	
Course coordinator:	Mr. Moncef JDIDI	
Institution:	Private Higher School of Engineers of Gafsa (ESIP)	



A. Course Identification

1.	Credit hours: 3 (2.25-0-0.75)		
2. (Course type		
a.	College Department Others		
b.	Fundamental Transversal Optional		
3.	3. Level/year at which this course is offered: 5/3		
4. Pre-requisites for this course (if any): CSE560/2			
5. (5. Co-requisites for this course (if any):		

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	30	100
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	7.5
3	Tutorial	-
4	Others (specify)	-
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

In-depth knowledge for SOA and the practical experience in designing and implementing large-scale and composite business web applications. This course covers a wide range of SOA-related technologies, including .Net, web service, composition techniques, and related technologies such as workflow, semantic web, ontology.

<u>2. Course Main Objective</u>

- 1. To provide an overview of XML Technology and modeling databases in XML
- 2. To provide an overview of Service Oriented Architecture and Web services and their importance
- **3.** To introduce Security solutions in XML and Web Services and to introduce Security standards for Web Services



3. Course Learning Outcomes

	Aligned PLOs	
1	Knowledge and Understanding	
1.2	The students will learn the concepts of SOA and Web services, some of the prevailing standards and technologies of Web Services	K.2
1.3	The students will also learn the approaches for providing security for XML documents as well as messages exchanged among Web Services	K.3
2	Skills	
2.2	Understand the interest of SOA architecture	S.2
2.3	Understand the web service concept and learn to use or interpret the standards of the services website S.3	
2.4	Master the development of web services by using the JAX-WS API S.	
3	Values	
3.2	Lifecycle – Capturing Business IT Issues – Determining Non-Functional Requirements – Enterprise Solution Assets	V.2
3.4	Cloud Computing (NIST Model) Properties – Service Models (XaaS), The Google File System – Virtualization Techniques in Cloud – Parallelization in Cloud	V.4

C. Course Content

No	List of Topics	
1	Chapter I: The service concept	5
2	2 Chapter II: The SOA architecture	
3	3 Chapter III: The Web Service concept	
4	4 Chapter IV: Web services standards	
5	5 Chapter V : The JAX-Web API	
Total		30

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	Aware with basics, principles, and theories related to Computer science engineering science	- Lectures	Assignments,
K.3 Explore Computer science engineering contemporary issues constraints to judge and reach the optimum solutions.		Quizzes, Exams,	
2.0	Skills		
S.2	Apply the knowledge of Computer science engineering principles and concepts to produce solutions and designs that meet	 Lectures Class discussions Assignments 	Assignments, Quizzes, Exams,



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and		Assignments, Report, Quizzes, Exams,
	economic factors		Course project
S.3	Design, conduct, analyze, and evaluate practices, projects, and experiments related to Computer science engineering issues.	Course project Lectures Assignment work	report & presentation Written exams homework
S.4 Evaluate and analyze the performance and sustainability of designed and/or existing Computer science systems.			
3.0	Values		
V.2	Customize the use of technical and scientific engineering tools in Computer science engineering practices	Debate, whole group and small group work, discussion and	Course project report & presentation
V.4	Persuade, present, communicate, supervise and lead effectively topics in Computer science engineering and other related disciplines	lab demonstrations, projects, roleplaying, individuel	Written exams homework Lab work

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	15%
2	Quizzes, Homework assignments	Random	10%
3	Final Exam	11	75%

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
- 3- Academic advisor
- 4- Bibliotic



F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks James McGovern, Sameer Tyagi, Michael E Stevens, Sunil Ma "Java Web Services Architecture", Elsevier, 2011.	
Essential References MaterialsSandeep Chatterjee and James Webber, "Developing Enterprise Services: An Architect's Guide", Prentice Hall, 2004	
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.

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	21/09/2021





Course Title:	Scheduling techniques
Course Code:	CSE571/2
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. Cre	1. Credit hours: 3 (3-0-0)		
2. Cou	irse type		
a.	College Department	Others	
b.	b. Fundamental Transversal Optional		
3. Lev	3. Level/year at which this course is offered: 5/3		
4. Pre	4. Pre-requisites for this course (if any): CSE311, CSE242		
5. Co-	5. Co-requisites for this course (if any):		
1	1. Mode of Instruction (mark all that apply)		
No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-

140	Mode of fish detion	Contact Hours	rerentage
1	Traditional classroom	-	-
2 Blended		15	100%
3	E-learning	-	-
4 Distance learning		-	-
5	Other	-	-

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

In this course, the student will be introduced to operating systems in which the scheduler is a component of the operating system kernel that chooses the order of operations on computer processors.

2. Course Main Objective

- The course objectives are:
- 1. know the scheduling policy
- 2. master real-time scheduling algorithms



3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge and Understanding	
1.1	understand the types and main tasks of scheduling	K.1
2	Skills	
2.1	The ability to choose, among all the eligible scheduling processes, which	S.2
	one will become elected \rightarrow scheduling policy	
3	Values	
	The ability to distinguish scheduling algorithms capable of learning	
3.2	from easily interpretable, consistent and good quality scheduling	V.4
	functions.	

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to operating systems (Linux/UNIX)	3
2	Scheduling principle	2
3	Scheduling algorithms Non-preemptive algorithm: FIFO Non-preemptive algorithm: SJF Preemptive algorithm: STR Preemptive Algorithm: Priority Based Algorithm	10
	Total	15

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		
K.1	understand the types and main tasks of scheduling	-Lecturing - Class discussions	Assignments, Quizzes, Exams,
2.0	Skills		
S.2	The ability to choose, among all the eligible scheduling processes, which one will become elected \rightarrow scheduling policy	-Lecturing - Class discussions	Assignments, Quizzes, Exams, Assignments, Report, Quizzes, Exams,
3.0	Values		



Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
V.1	The ability to distinguish scheduling algorithms capable of learning from easily interpretable, consistent and good quality scheduling functions.	 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	15%
2	Quizzes, Homework assignments	Random	20%
3	First mid Term	-	00%
5	Final Exam	5	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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

0	
Required Textbooks	 J. Stankovic et al., Deadline Scheduling for Real-Time Systems, Kluwer Aacademic, Boston, 1998 Andrew Tanenbaum, Systèmes d'exploitation, 3e édition, Pearson Education, 2008
Essential References Materials	
Electronic Materials	 Lecture material in PPT PC Switch Router Any Related material including the YouTube videos relating to LAN Blackboard
Other Learning Materials	NA



2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources	
(AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	PC, Switch. Software

G. Course Quality Evaluation

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

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	30/12/2021



Course Title:	Network administration
Course Code:	CSE572/2
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. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	-	-
2	Blended	15	100
3	E-learning		
4	Distance learning		
5	Other		

2. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

This current topics course will focus on the design, installation, configuration, and operation of local area networks. This course provides students with the knowledge and skills necessary to install and configure a stand-alone and client computers that are part of a workgroup or domain.

We will also discuss alternate local area network methodologies including Microsoft Windows 2000, Novell NetWare, UNIX, Windows NT, and Windows 98.



2. Course Main Objective

- **1.** To expose students to introductory networking concepts in the information technology industry.
- 2. To expose students to the impact of network technology on a business operation.
- **3.** To give students hands-on experience installing, configuring and operating computer hardware and software in a network environment.
- 4. To allow students to implement information systems theories and practices in a lab environment that simulates real business scenarios.
- 5. To enable students to develop network plans and implement and manage those plans in a laboratory setting.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
11	Ability to manipulate system operations at admin level and a prerequisite	K 1
1.1	to pursue job as a Network administrator	K .1
	Install or upgrade a network operating system and gain	
1.2	practical experience in installing the Windows Server 200x	K.2
	operating System	
2	Skills	
2.1	Manage and implement disaster recovery	S.1
2.2	Design of client and server sides of network applications S.2	
3	Values	
3.1	Evaluate troubleshooting alternatives.	V.1

C. Course Content

No	o List of Topics	
1	Chapter 1. Introduction to Server Hardware	2
2	Chapter 2. Introduction to Network Concepts	2
3	Chapter 3. Discuss alternative network options such as peer to peer and server- based networks	2
4	Chapter 4. Design and configure a domain environment.	_2
5	Chapter 5. Connect clients to a network	
6 Chapter 6. Introduce the concepts involved with accessing and administrating data		2
7	Chapter 7. Introduction to network security concepts	2
	Total	15



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	Aware with basics, principles, and theories related to Computer science engineering science	 Lectures Class discussions Assignments 	Assignments, Quizzes, Exams,
2.0	Skills		
S.2 S.3	Apply the knowledge of Computer science engineering principles and concepts to produce solutions and designs that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors Design, conduct, analyze, and evaluate practices, projects, and experiments related to Computer science engineering issues.	- Lectures - Class discussions - Assignments	Assignments, Quizzes, Exams,
S.4	Evaluate and analyze the performance and sustainability of designed and/or existing Computer science systems.		
3.0	Values		
V .1	Ability to use computer facilities to resolve Computer science engineering problems		
V.2	Customize the use of technical and scientific engineering tools in Computer science engineering practices	 Lectures Class discussions Assignments 	Assignments, Report, Quizzes, Exams
V.4	Persuade, present, communicate, supervise and lead effectively topics in Computer science engineering and other related disciplines		énieur

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	80%
2	Quizzes, Homework assignments	Random	20%
3	Final Exam	-	00%



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
- 3- Academic advisor
- 4- Bibliotic

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Mastering Windows 2000 Server by Mark Minasi, Sybex, ISBN: 0-7821-2774-6	
Essential References Materials	Mastering Microsoft Windows Server 2008 R2 Minasi M., Gibson D., Finn A., Henry W., Hynes B., First Edition, Sybex (2010), ISBN: 978- 0470532867	
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 (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) teaching class room with board and internet access. Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Power point data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Traditional Machine shop, Metrology Lab.

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



Evaluation Areas/Issues	Evaluators	Evaluation Methods
Teaching and learning quality	Students, Faculty Program	Direct Indirect
and effectiveness.	Leaders, Peer Reviewer	Direct, manoet

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	21/01/2022

