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

# SEMESTER 2

Ecole Supérieure d'Ingénieurs
Privée de Gafsa

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

| | |
|---|---|
| **Course Title:** | Languages theory and compilation |
| **Course Code:** | CSE211 |
| **Program:** | Master Degree In Computer Engineering |
| **Department:** | Computer Engineering |
| **Course coordinator:** | Dr. Naziha DHIBI |
| **Institution:** | Private Higher School of Engineers of Gafsa (ESIP) |

Ecole Supérieure d'Ingénieurs
Privée de Gafsa

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

## A. Course Identification

| | |
|---|---|
| **1. Credit hours:** | 3 (1.5-1.5-0) |

**2. Course type**

**a.** College ☐  Department ■  Others ☐

**b.** Fundamental ■  Transversal ☐  Optional ☐

**3. Level/year at which this course is offered:** 01/3

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

**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** | 45 | 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** | 22.5 |
| 4 | **Others** (specify) | - |
| | **Total** | 45 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

The course "Language theory and compilation " covers the fundamental notions in language theory, Need for Theory of Languages in the computer field. Allows students to acquire basic knowledge language theory and compilation allowing them to subsequently understand words, language, automata, grammars and compilation phases.

**2. Course Main Objective**

- State and relate basics concepts of language theory and compilation, fundamental notions in words, language,
- Master the manipulation of deterministic finite automata
- Learn how to determine the language recognized by the automata.
- Present the grammars, languages generated by a grammar.
- Learn how to link between deterministic finite Automata, regular grammar and language.
- Master the compilation phases

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

ESIP

- Mange the design problems and ethics related to language theory and compilation.
- Conclude effectively the basics, principles, and theories related to language theory and compilation with other disciplines

1. **Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | State and relate basics concepts of language theory and compilation, fundamental notions in words, language | K.1 |
| 2 | **Skills** | |
| 2.1 | Master the manipulation of deterministic finite automata, grammars, languages generated by a grammar | S.1 |
| 3 | **Values** | |
| 3.2 | Persuade, present, communicate, supervise and lead effectively topics in language theory and compilation and other related disciplines | V.4 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Fundamental notions in language theory | 3 |
| 2 | Need for Theory of Languages in the computer field | 3 |
| 3 | Symbol and words | 4 |
| 4 | Language and operation on language | 3 |
| 5 | Regular expression and language | 3 |
| 6 | Finite Automata | 6 |
| 7 | Recognition of a word by an automaton | 3 |
| 8 | Notion of grammars | 6 |
| 9 | MidTerm-1 | 2 |
| 10 | Link between deterministic finite Automata, regular grammar and language | 4 |
| 11 | The compilation phases | 6 |
| 16 | Final Exam | 2 |
| | **Total** | 45 |

## 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 | State and relate basics concepts of language theory and compilation, fundamental notions in words, language | Lecturing | Assignments, Quizzes , Exams, |

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

| Code | Course Learning Outcomes | TeachingStrategies | AssessmentMethods |
|------|--------------------------|--------------------|--------------------|
| **2.0** | **Skills** | | |
| S.1 | Master the manipulation of deterministic finite automata, grammars, languages generated by a grammar | Lecturing | Assignments, Quizzes , Exams, |
| **3.0** | **Values** | | |
| V.4 | Persuade, present, communicate, supervise and lead effectively topics in language theory and compilation and other related 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 | 10% |
| **2** | Quizzes, Homework assignments | Random | 10% |
| **3** | First mid Term | 8 | 20% |
| **4** | Final Exam | 16 | 50% |

## E. Student Academic Counselling and Support

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

- Office hours
- Blackboard interface
- Academic advisor
- Bibliotic

## F. Learning Resources and Facilities

### 1. Learning Resources

| Required Textbooks | - Christine Solnon, Language theory |
|---|---|
| **Essential References Materials** | - François Yvon and Akim Demaille, Language Theory Course Notes <br> - J. Hopcroft, R. Motwani and J. Ullman, Introduction to Automata Theory, Languages and Computation, Addsion Wesley, 2003 |
| **Electronic Materials** | - Lecture material in PPT <br> - Any Related material including the YouTube videos relating to engineering measurement <br> - Blackboard |
| **Other Learning Materials** | - NA |

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

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 survey, Program Leaders, Quality manager, | Direct |
| 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** | 05/01/2022 |

Ecole Supérieure d'Ingénieurs Privée de Gafsa

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

| **Course Title:** | Graph theory and optimization |
|---|---|
| **Course Code:** | CSE211 |
| **Program:** | Master Degree In Computer Engineering |
| **Department:** | Computer Engineering |
| **Course coordinator:** | Dr. Naziha DHIBI |
| **Institution:** | Private Higher School of Engineers of Gafsa (ESIP) |

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

## A. Course Identification

| | |
|---|---|
| **1. Credit hours:** 3 (1.5-1.5-0) | |

**2. Course type**

**a.** College ☐   Department ■   Others ☐

**b.** Fundamental ■   Transversal ☐   Optional ☐

**3. Level/year at which this course is offered:** 01/3

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

**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 | 45 | 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 | 22.5 |
| 4 | Others (specify) | - |
| | Total | 45 |

## B. Course Objectives and Learning Outcomes

### 1. Course Description

The course "Graph Theory" covers the basic notions and concepts of graph theory, as well as the fundamental optimization algorithms to solve the shortest path problem. Allows students to acquire basic knowledge of graph theory allowing them to subsequently understand the topological structures of computer networks and to apply search and optimization algorithms.

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

2.  **Course Main Objective**

-   State and relate basics concepts of graph theory, fundamental algorithms on graphs, and their applications
-   Master coloring and optimization problems on graphs, algorithms: minimum cost tree, maximum or minimum paths.
-   Learn how to solve the problem of finding a shorter path by optimization algorithms.
-   Present the transport networks, flows, circuits, separators; Ford-Fulkerson algorithms, Assignment problems, maximum couplings.
-   Learn how to plan projects through networks.
-   Mange the design problems and ethics related to graphs theory
-   Conclude effectively the basics, principles, and theories related to graphs theory with other disciplines

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

**ESIP**

### 3. Course Learning Outcomes

| | CLOs | | AlignedPLOs |
|---|---|---|---|
| 1 | **Knowledge and Understanding** | | |
| 1.1 | State and relate basics concepts of graph theory, fundamental algorithms on graphs, and their applications | | K.1 |
| 2 | **Skills** | | |
| 2.1 | Present the transport networks, flows, circuits, separators; Ford-Fulkerson algorithms, Assignment problems, maximum couplings | | S.1 |
| 3 | **Values** | | |
| 3.2 | Conclude effectively the basics, principles, and theories related to graphs theory with other disciplines | | V.1 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Fundamental concepts of graph theory | 3 |
| 2 | Representation of a graph | 3 |
| 3 | Pathways and Connections | 4 |
| 4 | Hamiltonian graph concept | 3 |
| 5 | Coloring a graph: Welch-Powell algorithm | 3 |
| 6 | Tree course | 3 |
| 7 | Research problem: a tree of minimum weight | 2 |
| 8 | Kruskal's algorithm Prim's algorithm | 3 |
| 9 | MidTerm-1 | 2 |
| 10 | Shorter path problem | 2 |
| 11 | Dijkstra algorithm, Bellman-Ford algorithm | 3 |
| 12 | The central problem of scheduling | 4 |
| 13 | The potential-Tasks graph, The potential steps graph (PERT) | 4 |
| 14 | Transport networks | 3 |
| 15 | Maximum flow problem | 3 |
| 16 | Final Exam | 2 |
| **Total** | | 45 |

## 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 | State and relate basics concepts of graph theory, fundamental algorithms on graphs, and their applications | Lecturing | Assignments, Quizzes , Exams, |
| **2.0** | **Skills** | | |
| S.1 | Present the transport networks, flows, circuits, separators; Ford-Fulkerson | Lecturing | Assignments, Quizzes , Exams, |

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

| Code | Course Learning Outcomes | TeachingStrategies | AssessmentMethods |
|------|--------------------------|--------------------|--------------------|
|  | algorithms, Assignment problems, maximum couplings |  |  |
| 3.0 | **Values** |  |  |
| V.1 | Conclude effectively the basics, principles, and theories related to graphs theory 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 | 00% |
| 2 | Quizzes, Homework assignments | - | 0% |
| 3 | First mid Term | 8 | 35% |
| 4 | Final Exam | 16 | 65% |

## E. Student Academic Counselling and Support

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

- Office hours
- Blackboard interface
- Academic advisor
- Bibliotic

## F. Learning Resources and Facilities
### 1. Learning Resources

| Required Textbooks | Christine Solnon, Graph theory and optimization in graphs |
|--------------------|-----------------------------------------------------------|
| **Essential References Materials** | Aimé Sache, The theory of graphs, University Press of France.<br>Lilia Horchani, graph algorithmic and optimization, ENSI, 2012.<br>Michel COUPRIE, Graphs and algorithms Written notes and exercises, 2017 |
| **Electronic Materials** | Lecture material in PPT<br>Any Related material including the YouTube videos relating to engineering measurement<br>Blackboard |
| **Other Learning Materials** | NA |

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

2. **Facilities Required**

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

Ecole Supérieure d'Ingénieurs
Privée de Gafsa

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

| Course Title: | Digital Transmission |
|---|---|
| Course Code: | CSE221 |
| Program: | Master Degree In Computer Engineering |
| Department: | Computer Engineering |
| Course coordinator: | Dr. Wajdi SAADAOUI |
| Institution: | Private Higher School of Engineers of Gafsa (ESIP) |

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

## 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: 01/3 |
|---|
| 4. Pre-requisites for this course (if any): |
| 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 | 45 | 100% |
| 3 | E-learning | --- | ---- |
| 4 | Distance learning | --- | ---- |
| 5 | Other | --- | ---- |

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

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

## B. Course Objectives and Learning Outcomes

### 1. Course Description

The course introduces engineering students to the basic notions of data transmission. This course focuses on the first two layers of the OSI model, namely the physical layer and the data link layer.

### 2. Course Main Objective

- Understand the objective of the digital conversion of analog information.
- Analyze the advantages and disadvantages of the different modes of transmission.

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

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Understand the basic elements used in signal processing, particularly in the technique of data transmission | K.1 |
| **2** | **Skills** | |
| 2.1 | Master the basic elements of IT networks (physical and logical structure, addressing, naming and network protocols) | S.1 |
| **3** | **Values** | |
| 3.1 | The ability to use the acquired skills in digital transmission to solve real problems related to telecommunication and to use them in the development of this field | V.1 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Chapter I: Structure of teleinformatics systems Section<br>      Part 1: Concepts and Terminology<br>      Part 2: Theoretical operation of a communication network | 8 |
| 2 | Chapter II: The physical layer<br>      Part 1: Principle of transmission<br>      Part 2: Baseband transmission (coding)<br>      Part 3: Transmission by modulation | 8 |
| 3 | Chapter III: The Data Link Layer<br>      Part 1: Detector codes and error correctors<br>      Part 2: HDLC Protocol | 4.5 |
| **Total** | | 22.5 |

## D. Teaching and Assessment

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

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| **1.0** | **Knowledge and Understanding** | | |
| K.1 | Understand the basic elements used in signal processing, particularly in the technique of data transmission | -Lecturing<br>- Class discussions | Exams, |
| **2.0** | **Skills** | | |
| S.2 | Master the basic elements of IT networks (physical and logical structure, addressing, naming and network protocols) | -Lecturing<br>- Class discussions | Assignments, Report, Exams, |
| **3.0** | **Values** | | |

**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 |
|------|--------------------------|---------------------|--------------------|
| V.1 | The ability to use the acquired skills in digital transmission to solve real problems related to telecommunication and to use them in the development of this field | - Lectures<br>- Class discussions<br>- Assignments<br>- projects | Assignments, Report, Exams |

### 2. Assessment Tasks for Students

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

## E. Student Academic Counselling and Support

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

- Office hours
- Blackboard interface
- Academic advisor
- Bibliotic

## F. Learning Resources and Facilities

### 1. .Learning Resources

| | |
|---|---|
| **Required Textbooks** | − Guy Pujolle "Les Réseaux" édition 2003 EYROLLES<br>− Guy Pujolle. "Cours. réseaux. télécoms. Avec exercices corrigés" 3ème edition<br>− EYROLLES |
| **Essential References Materials** | |
| **Electronic Materials** | − Lecture material in PPT<br>− PC<br>− Blackboard |
| **Other Learning Materials** | NA |

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

2. **Facilities Required**

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br>teaching class room with board and internet access. Computer Lab. |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | Power point data show |
| **Other Resources**<br>(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 | Verification |
| Teaching and learning quality and effectiveness. | Students, Faculty Program Leaders, Peer Reviewer | Follow-up |

## H. Specification Approval Data

| Council / Committee | Computer Engineering Council |
|---|---|
| **Date** | 17/01/2022 |

Ecole Supérieure d'Ingénieurs
Privée de Gafsa

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

| | |
|---|---|
| **Course Title:** | Programming Project |
| **Course Code:** | CSE221 |
| **Program:** | Master Degree In Computer Engineering |
| **Department:** | Computer Engineering |
| **Course coordinator:** | Dr. Naziha DHIBI |
| **Institution:** | Private Higher School of Engineers of Gafsa (ESIP) |

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

## I. Course Identification

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

**2. Course type**

**a.**  College ☐  Department ■  Others ☐

**b.**  Fundamental ■  Transversal ☐  Optional ☐

**3. Level/year at which this course is offered:** 01/3

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

**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** | 22.5 | 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** | 22.5 |
| **3** | **Tutorial** | - |
| **4** | **Others** (specify) | - |
| | **Total** | 22.5 |

## J. Course Objectives and Learning Outcomes

### 1. Course Description

The programming project course is in the form of projects of which the ideas of the projects are proposed for each group and at each session the teacher monitors the progress of the design and implementation of each project.

### 2. Course Main Objective

- Apply the concepts of object-oriented programming to carry out a mini application project
- Implement an object-oriented programming code to create a mini application project
- Integrate the theoretical knowledge acquired in programming.
- Learn how to produce documentation for a programming project.
- Mange the design problems and ethics related to programming
- Conclude effectively the basics, principles, and theories related to programming with other disciplines

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

3. **Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Integrate the theoretical knowledge acquired in programming. | K.1 |
| **2** | **Skills** | |
| 2.1 | Apply the concepts of object-oriented programming to carry out a mini application project | S.1 |
| **3** | **Values** | |
| 3.1 | Ability to use computer facilities to resolve Computer science engineering problems related to programming | V.1 |
| 3.2 | Customize the use of technical and scientific engineering tools in Computer science engineering practices related to programming | V.2 |

## K. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Integrate the theoretical knowledge acquired in programming. | 3 |
| 2 | Gain practical experience in implementing object-oriented code. | 3 |
| 3 | Realization and documentation of a programming project | 3 |
| 5 | Source code | 3 |
| 6 | Demonstration of the final product, | 4.5 |
| 7 | Written report | 3 |
| 8 | Oral defense of 20 to 30 minutes | 3 |
| **Total** | | 22.5 |

## L. 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 | Integrate the theoretical knowledge acquired in programming. | - Class discussions<br>- Assignments<br>- Projects | Assignments, Quizzes , Report, |
| **2.0** | **Skills** | | |
| S.1 | Apply the concepts of object-oriented programming to carry out a mini application project | - Class discussions<br>- Assignments<br> - Projects | Assignments, Quizzes , presentation, |
| **3.0** | **Values** | | |
| V.1 | Ability to use computer facilities to resolve Computer science engineering problems related to programming | - Class discussions<br>- Assignments<br>- Projects | Assignments, Report, Quizzes, presentation |

**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 |
|------|--------------------------|---------------------|--------------------|
| V.2 | Customize the use of technical and scientific engineering tools in Computer science engineering practices related to programming | | 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 | 90% |
| 2 | Quizzes, Homework assignments | Random | 10% |

## M. Student Academic Counselling and Support

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

- Office hours
- Blackboard interface
- Academic advisor
- Bibliotic

## N. Learning Resources and Facilities

### 3. Learning Resources

| Required Textbooks | |
|--------------------|---|
| **Essential References Materials** | |
| **Electronic Materials** | - Lecture material in PPT<br>- Any Related material including the YouTube videos relating to engineering measurement<br>- Blackboard |
| **Other Learning Materials** | NA |

### 4. 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. |

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

| Item | Resources |
|---|---|
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | Power point data show |
| **Other Resources**<br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | Traditional Machine shop, Metrology Lab. |

## O. 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 | Verification |
| Teaching and learning quality and effectiveness. | Students, Faculty Program Leaders, Peer Reviewer | Follow-up |

## P. Specification Approval Data

| Council / Committee | Computer Engineering Council |
|---|---|
| **Date** | 21/01/2021 |

Ecole Supérieure d'Ingénieurs
Privée de Gafsa

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

| | |
|---|---|
| **Course Title:** | Web and multimedia programming |
| **Course Code:** | CSE231 |
| **Program:** | Master Degree In Computer Engineering |
| **Department:** | Computer Engineering |
| **Course coordinator:** | Mrs. Khawla BEN SALAH |
| **Institution:** | Private Higher School of Engineers of Gafsa (ESIP) |

Ecole Supérieure d'Ingénieurs
Privée de Gafsa

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

## A. Course Identification

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

**2. Course type**

**a.**   College ☐   Department ■   Others ☐

**b.**   Fundamental ■   Transversal ☐   Optional ☐

| | |
|---|---|
| **3. Level/year at which this course is offered:** 01/3 | |
| **4. Pre-requisites for this course (if any):** | |
| **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 | 22.5 | 100% |
| 3 | E-learning | - | - |
| 4 | Distance learning | - | - |
| 5 | Other | - | - |

### 1. Contact Hours (based on academic semester)

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

## B. Course Objectives and Learning Outcomes

### 1. Course Description

This course contains an introduction to programming and computer science with an emphasis on the development of multimedia applications.

The course introduces the fundamental principles of programming, including object-oriented and event-driven programming.

Students will develop an understanding of how to use and create classes and methods and combine them with multimedia libraries to produce animations, handle input from keyboard and mouse, and import sounds and videos to produce multimedia applications which can be directly deployed on the Internet.

  Multimedia Web Programming covers the main technologies and techniques of client-side web development, with an emphasis on graphics and multimedia interface programming.

This course gives an introduction to the Angular framework

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

2. **Course Main Objective**

- The objective of this module is to familiarize students with HTML, CSS, and JavaScript programming
- Introducing main Scripting and Common Programming Concepts
- Preparing Angular framework (installing programming environments such as Visual studio code and NodeJS)
- Understanding JavaScript Operators, Expressions, alerts, and Prompts
- Understanding JavaScript Keywords and Reserved Words
- Understanding Functions, Methods, Exceptions, and Events in JavaScript
- Understanding Controlling Decisional Program Flow
- Installing dependencies of the angular framework
- Building an Angular application with the CLI
- Setting the stage for Angular
- Building components
- Learning how to react to events
- Adding custom properties
- Structuring a document with guidelines

2. **Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | General knowledge of programming environments and system commands for web page building. | K.1 |
| **2** | **Skills** | |
| 2.2 | Apply concepts and basics of web programming to create structured websites using HTML grouping, text-level elements, and hyperlinked text, and further to enhance the website with multimedia, animations, and graphic design with CSS | S.2 |
| **3** | **Values** | |
| 3.4 | Implement and maintain hypertext-based Web sites using authoring and scripting languages; create Web content; use Web management tools and digital media tools; and apply human-factor principles to design. | V.4 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Introduction to HTML, CSS, and JavaScript | 25 |
| 2 | Introduction to Typescript | 3 |
| 3 | Visual Studio Code and NodeJS: Explore and install Cli dependencies to prepare Angular framework | 3 |
| 4 | Building components and learning how to react to events | 10 |
| 5 | Adding custom properties and structuring a document with guidelines | 4 |
| | **Total** | **45** |

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

## 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 | General knowledge of programming environments and system commands for web page building. | Lecturing | Assignments, Quizzes |
| **2.0** | **Skills** | | |
| S.2 | Apply concepts and basics of web programming to create structured websites using HTML grouping, text-level elements, and hyperlinked text, and further to enhance the website with multimedia, animations, and graphic design with CSS | Lecturing,projects | Assignments, Quizzes |
| **3.0** | **Values** | | |
| V.4 | Implement and maintain hypertext-based Web sites using authoring and scripting languages; create Web content; use Web management tools and digital media tools; and apply human-factor principles to design. | - Lectures<br>- Class discussions<br>- Assignments<br>- projects | Assignments, Quizzes;Exams |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|-------------------|----------|--------------------------------------|
| **1** | Practical Work (written or oral) | 16 | 50% |
| **2** | Quizzes, Homework assignments | Random | 50% |
| **3** | First mid Term | - | 00% |
| **4** | Final Exam | - | 00% |
| **5** | Final Exam | - | 00% |

## E. Student Academic Counselling and Support

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

- Office hours
- Blackboard interface
- Academic advisor
- Bibliotic

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

## F. Learning Resources and Facilities

### 1. Learning Resources

| | |
|---|---|
| **Required Textbooks** | - Angular Development with TypeScript<br>- Yakov Fain and Anton Moiseev<br>- Pro Angular 9: Build Powerful and Dynamic Web Apps Adam Freeman |
| **Essential References Materials** | |
| **Electronic Materials** | - Lecture material in PPT<br>- PC<br>- Any Related material including the YouTube videos relating to image and signal processing<br>- Blackboard<br>- Collaboratory Software |
| **Other Learning Materials** | - NA |

### 2. Facilities Required

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

## 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** | 12/09/2021 |

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

| | |
|---|---|
| **Course Title:** | Object Oriented Programming |
| **Course Code:** | CSE232 |
| **Program:** | Master Degree In Computer Engineering |
| **Department:** | Computer Engineering |
| **Course coordinator:** | Dr. Rim AFDHAL |
| **Institution:** | Private Higher School of Engineers of Gafsa (ESIP) |

Ecole Supérieure d 'Ingénieurs
Privée de Gafsa

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

## A. Course Identification

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

**2. Course type**

**a.**  College ☐   Department ■   Others ☐

**b.**  Fundamental ■   Transversal ☐   Optional ☐

**3. Level/year at which this course is offered:**    01/3

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

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

### 3. Mode of Instruction (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| **1** | **Traditional classroom** | - | - |
| **2** | **Blended** | 67.5 | 100 |
| **3** | **E-learning** | --- | ---- |
| **4** | **Distance learning** | --- | ---- |
| **5** | **Other** | --- | ---- |

### 4. Contact Hours (based on academic semester)

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

## B. Course Objectives and Learning Outcomes

### 3. Course Description

This course is an introduction to object programming. We learn to identify objects and classes in a problem, as well as we learn to solve a problem through a set of interacting objects.

### 4. Course Main Objective

- Define fundamental concepts of the object paradigm (objects, classes, attributes and methods, ...)
- Define the basic elements of the Java language
- Study the Inheritance, polymorphism, abstract classes and interfaces
- Teach students the exception handling

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

### 5. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Demonstrate basics of the object programming. | K.1 |
| **2** | **Skills** | |
| 2.1 | Apply principles of the oriented object programming to identify, formulate, and solve complex problems | S.2 |
| **3** | **Values** | |
| 3.1 | Mange the design problems and ethics related to oriented object programming. | V.3 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Fundamental concepts of the object paradigm (objects, classes, attributes and methods, ...) | 9 |
| 2 | General introduction to Java:<br>- Introduce the Java language,<br>- Introduce the JDK,<br>- Detail the general structure of a Java application<br>- Writing arguments to the command line | 4.5 |
| 3 | The basic elements of the Java language:<br>- Comments and identifiers in Java<br>- Data types<br>- Control structures<br>- Reference types | 6.5 |
| 4 | Principles of object-oriented programming:<br>- Classes and objects<br>- The builders<br>- References and destruction of objects<br>- Packages<br>- Encapsulation and visibility levels<br>- Accessors<br>- Characteristics of attributes and methods | 9.5 |
| 5 | Inheritance<br>- Constructors and inheritance<br>- The redefinition of methods<br>- The redefinition of attributes<br>- The keywords super and final<br>- Type compatibility | 9.5 |
| 6 | Polymorphism<br>- Abstract classes<br>- Interfaces<br>- Genericity | 9 |
| 7 | Exception handling:<br>- Exceptional objects | 5.5 |

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

| No | List of Topics | Contact Hours |
|---|---|---|
| | - The keywords try, catch and finally | |
| 8 | Exception handling<br>- The multi catch | 5 |
| 9 | The throw and throws keywords<br>- Interception vs Spread<br>- Exception checked/unchecked | 9 |
| **Total** | | 67.5 |

## D. Teaching and Assessment

### 6. 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 the oriented object programming. | Lecturing | Assignments, Quizzes , Exams, |
| **2.0** | **Skills** | | |
| S.2 | Apply principles of the oriented object programming to identify, formulate, and solve complex problems | Lecturing | Assignments, Quizzes , Exams, |
| **3.0** | **Values** | | |
| V.3 | Mange the design problems and ethics related to oriented object programming. | - Lectures<br>- Class discussions<br>- Assignments<br>- projects | Assignments, Report, Quizzes , Exams |

### 7. 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 | 0% |
| 3 | First mid Term | 8 | 25% |
| 4 | Final Exam | 16 | 65% |

## E. Student Academic Counselling and Support

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

- Office hours
- Blackboard interface
- Academic advisor
- Bibliotic

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

## F. Learning Resources and Facilities

### 1. Learning Resources

| | |
|---|---|
| **Required Textbooks** | - La programmation orientée objet by Released July 2011 Publisher(s): Eyrolles ISBN: 9782212128062 |
| **Essential References Materials** | - https://www.emse.fr/~picard/cours/1A/java/livretJava.pdf<br>- https://members.loria.fr/goster/files/teaching/oop/OOP-CM1-classroom.pdf |
| **Electronic Materials** | - Lecture material in PPT<br>- Any Related material including the YouTube videos relating to engineering measurement<br>- 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** | 21/01/2022 |

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

| Course Title: | Introduction to operating systems and the Unix environment |
|---|---|
| Course Code: | CSE241 |
| Program: | Master Degree In Computer Engineering |
| Department: | Computer Engineering |
| Course coordinator: | Dr. Rim AFDHAL |
| Institution: | Private Higher School of Engineers of Gafsa (ESIP) |

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

## A. Course Identification

| | |
|---|---|
| **1. Credit hours:** | 4.5 (3-0-1.5) |

**2. Course type**

**a.** College ☐ Department ■ Others ☐

**b.** Fundamental ■ Transversal ☐ Optional ☐

**3. Level/year at which this course is offered:** 1/3

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

**5. Co-requisites for this course** (if any)**:** CSE132

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

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 1 | Traditional classroom | - | - |
| 2 | Blended | 67.5 | 100 |
| 3 | E-learning | --- | ---- |
| 4 | Distance learning | --- | ---- |
| 5 | Other | --- | ---- |

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

| No | Activity | Contact Hours |
|---|---|---|
| 1 | Lecture | 45 |
| 2 | Laboratory/Studio | 22.5 |
| 3 | Tutorial | - |
| 4 | Others (specify) | - |
| | Total | 67.5 |

## B. Course Objectives and Learning Outcomes

### 1. Course Description

This course is an introduction to operating systems. It presents two models of reasoning based on the logic of propositions and the logic of predicates. We examine propositional logic and first-order predicate logic. We discuss the links between the formal aspects in these logics and the statements expressed informally. Different methods of formal proof are presented and applied.

### 2. Course Main Objective

- Define the notion of operating system as well as its different functionalities.
- Show the links between a hardware architecture and an operating system.
- Teach students how operating systems and software are structured way to use them.
- Study theoretically and practically the "File Management System" part of operating systems.
- Teach students the techniques of securing systems and the techniques data protection

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

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Demonstrate basics of operating system. | K.1 |
| **2** | **Skills** | |
| 2.1 | Apply principles of operating system to identify, formulate, and solve complex problems | S.1 |
| **3** | **Values** | |
| 3.1 | Ability to use operating system facilities to resolve problems | V.1 |
| 3.4 | Conclude effectively the basics, principles, and theories related to operating system with other disciplines | V.4 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Notion of Operating System | 9 |
| 2 | Links between physical architecture and operating system | 4.5 |
| 3 | Classes of operating systems | 4 |
| 4 | Types of operating systems | 4 |
| 5 | Functions of an operating system | 4.5 |
| 6 | Structuring operating systems | 9 |
| 7 | Computer Programming and Operation | 9 |
| 8 | File Management System | 9 |
| 9 | Protection and Security in Systems | 5 |
| 10 | UNIX Environment | 9.5 |
| **Total** | | **67.5** |

## D. Teaching and Assessment

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

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| **1.0** | **Knowledge and Understanding** | | |
| K.1 | Demonstrate basics of operating system. | Lecturing | Assignments, Quizzes, Exams, |
| **2.0** | **Skills** | | |
| S.1 | Apply principles of operating system to identify, formulate, and solve complex problems | Lecturing | Assignments, Quizzes, Exams, |
| **3.0** | **Values** | | |

**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 |
|------|--------------------------|---------------------|--------------------|
| V.1 | Ability to use operating syetem facilities to resolve problems | - Lectures<br>- Class discussions<br>- Assignments<br>- 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 | 00% |
| 3 | First mid Term | 08 | 25% |
| 4 | Final Exam | 16 | 50% |

## E. Student Academic Counselling and Support

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

## F. Learning Resources and Facilities
### 1. Learning Resources

| | |
|---|---|
| **Required Textbooks** | - https://www.eyrolles.com/Informatique/Theme/239/theories-des-systemes-d-exploitation/ |
| **Essential References Materials** | - https://www.bestcours.com/systeme-exploitation/ |
| **Electronic Materials** | - Lecture material in PPT<br>- Any Related material including the YouTube videos relating to engineering measurement<br>- Blackboard |
| **Other Learning Materials** | - NA |

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

2. **Facilities Required**

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br>teaching class room with board and internet access.<br>Computer Lab. |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | Power point data show |
| **Other Resources**<br>(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** | 03/02/2022 |

Ecole Supérieure d'Ingénieurs
Privée de Gafsa

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

| | |
|---|---|
| **Course Title:** | Architecture & micro processors |
| **Course Code:** | CSE242 |
| **Program:** | Master Degree In Computer Engineering |
| **Department:** | Computer Engineering |
| **Course coordinator:** | Dr. Oussama BOUFARES |
| **Institution:** | Private Higher School of Engineers of Gafsa (ESIP) |

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

## 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:** 01/3

**4. Pre-requisites for this course (if any):** CSE311, CSE242

**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 | 45 | 100% |
| 3 | E-learning | --- | ---- |
| 4 | Distance learning | --- | ---- |
| 5 | Other | --- | ---- |

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

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

## B. Course Objectives and Learning Outcomes

### 1. Course Description

At the end of this course, the engineering student will know the key elements of computer architectures. In addition, the objective of this course is to provide the necessary elements for the understanding of processors and the practice of programming in assembly language.

### 2. Course Main Objective

- Know the key elements of computer architectures
- Master assembly language

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

3. **Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Understand the organization of a microcomputer, and the impact of its components on performance. Understand how the microprocessor executes its programs in interaction with the other components of the system, and particularly the RAM | K.1 |
| **2** | **Skills** | |
| 2.1 | Master assembly language | S.2 |
| **3** | **Values** | |
| 3.1 | Develop the skills required for assembly programming | V.4 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Chapter 1: Background and basic architecture<br>    Section 1: Von Neumann model.<br>    Section 2: The central unit.<br>    Section 3: Main memory.<br>    Section 4: Input/output interfaces. | 8 |
| 2 | Chapter 2: Memory<br>    Section 1: Organization and Characteristics of a memory.<br>    Section 2: Types of memory (RAM, ROM).<br>    Section 3: Criteria for choosing a dissertation.<br>    Section 4: Notion of memory hierarchy. | 12 |
| 3 | Chapter 3: The Processor<br>    Section 1: Basic architecture of a microprocessor (control unit, processing unit, block diagram).<br>    Section 2: Cycle of execution of an instruction.<br>    Section 3: Instruction set (definition, type of instructions, coding, addressing mode, execution time). | 10 |
| 4 | Chapter 4: Concept of RISC and CISC architecture. | 5 |
| 5 | Chapter 5: 8086 assembly programming | 10 |
| | **Total** | 45 |

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

## 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 | Understand the organization of a microcomputer, and the impact of its components on performance. <br><br> Understand how the microprocessor executes its programs in interaction with the other components of the system, and particularly the RAM | -Lecturing <br> - Class discussions | Exams, |
| **2.0** | **Skills** | | |
| S.2 | Master assembly language | -Lecturing <br> - Class discussions | Assignments, Report, Exams, |
| **3.0** | **Values** | | |
| V.1 | Develop the skills required for assembly programming | - Lectures <br> - Class discussions <br> - Assignments <br> - projects | Assignments, Report, Exams |

### 2. Assessment Tasks for Students

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

## E. Student Academic Counseling and Support

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

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

## F. Learning Resources and Facilities

### 1. Learning Resources

| | |
|---|---|
| **Required Textbooks** | - Tourki, r., "l'ordinateur pc 'architecture et programmation cours et exercices", edition cpu tunis, 2002.<br>- Voir le catalogue des ouvrages disponibles : http://opac.ge.ch/ (selectionner heg dans la liste des bibliotheques)<br>- Visual studio/ visual basic (vb)/ ihm/ architectures logicielles |
| **Essential References Materials** | |
| **Electronic Materials** | - Lecture material in PPT<br>- PC<br>- Blackboard |
| **Other Learning Materials** | - NA |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br>teaching class room with board and internet access.<br>Computer Lab. |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | Power point data show |
| **Other Resources**<br>(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 | Verification |
| Teaching and learning quality and effectiveness. | Students, Faculty Program Leaders, Peer Reviewer | Follow-up |

## H. Specification Approval Data

| | |
|---|---|
| **Council / Committee** | Computer Engineering Council |
| **Date** | 30/01/2022 |

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

| | |
|---|---|
| **Course Title:** | Computer related business English |
| **Course Code:** | LAC251 |
| **Program:** | Master Degree In Computer Engineering |
| **Department:** | Computer Engineering |
| **Course coordinator:** | Mrs. Rim RADDADI |
| **Institution:** | Private Higher School of Engineers of Gafsa (ESIP) |

Ecole Supérieure d 'Ingénieurs
Privée de Gafsa

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

## A. Course Identification

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

**2. Course type**

| | | | | | | |
|---|---|---|---|---|---|---|
| **a.** | College | ☐ | Department | ■ | Others | ☐ |
| **b.** | Fundamental | ■ | Transversal | ☐ | Optional | ☐ |

| | |
|---|---|
| **3. Level/year at which this course is offered:** | 01/3 |
| **4. Pre-requisites for this course (if any):** | |
| **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 | 22.5 | 100% |
| 2 | Blended | - | - |
| 3 | E-learning | - | - |
| 4 | Distance learning | - | - |
| 5 | Other | - | - |

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

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

## B. Course Objectives and Learning Outcomes

### 1. Course Description

The course is designed so that learners would get acquinted to some lexis and vocabulary around computer science and technologies.

The first part of the course would introduce the learner to the importance of computer technology. In the second part, faces of the internet and programming jobs in ICTs would be introduced to the learner.

The course would help the leaners communicate effectively in English while discussing compter science and compter technology.

### 2. Course Main Objective

- Describing technical functions and technologies.
- Specifying and describing properties.
- Analysing grafics and chart.
- Effective communication around computer science and technologies.
- Recognize an engineering drawing of a complex part ; and how you will be able to correctly program the part.

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

- - Understand the various elements of the robots system.
- - Identify the different type of robots and appreciate the differences between them.
- - Understand the various types of robot geometry.
- - Train on CNC M/C (turning – Milling)Get the basics knowledge of nontraditional machining processes.

### 3. Course Learning Outcomes

| | CLOs | | AlignedPLOs |
|---|---|---|---|
| 1 | **Knowledge and Understanding** | | |
| 1.1 | Knowledge of certain comtemporary issue in computer science | | K.3 |
| 1.2 | Kwoledge of computer software and programming | | |
| 2 | **Skills** | | |
| 2.1 | Employ the knowledge of computer technolohies and science to communicate effectively in english | | S.2 |
| 3 | **Values** | | |
| 3.1 | Lead an effective communication about topics aroud computer and computer science | | V.4 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Unit one: technology in use | 4.5 |
| 2 | Unit two: material technology | 4.5 |
| 3 | Unit three: faces of the internet | 4.5 |
| 4 | Unit four: creative software | 4.5 |
| 5 | Unit five: programming jobs in ICT | 4.5 |
| **Total** | | 22.5 |

## D. Teaching and Assessment

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

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| **1.0** | **Knowledge and Understanding** | | |
| K.3 | Knowledge of certain comtemporary issue in computer science | activities | Indirect assessement Peer to peer assessement |
| **2.0** | **Skills** | | |
| S.2 | Employ the knowledge of computer technolohies and science to communicate effectively in english | activities | Assignments, Peer to peer assessement, Indirect assessement |
| **3.0** | **Values** | | |

**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 |
|------|--------------------------|---------------------|--------------------|
| V.4 | Lead an effective communication about topics aroud computer and computer science | - Lectures<br>- Class discussions<br>- Assignments<br>- projects | Assignments, evaluation test |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|------------------|----------|--------------------------------------|
| 1 | Indirect assessement | Weekly | 00% |
| 2 | Peer to peer | Weekly | 00% |
| 3 | Fassigment | Weekly | 00% |
| 4 | Final Exam | 16 | 100% |

## E. Student Academic Counseling and Support

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

- Office hours
- Blackboard interface
- Academic advisor
- Bibliotic

## F. Learning Resources and Facilities

### 1. Learning Resources

| | |
|---|---|
| **Required Textbooks** | M. Ibboston, Cambridge English for Engineering. Cambridge University press. |
| **Essential References Materials** | M. Ibboston, Cambridge English for Engineering. Cambridge University press. |
| **Electronic Materials** | You tube videos |
| **Other Learning Materials** | NA |

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

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** | 02/02/2022 |

Ecole Supérieure d 'Ingénieurs
Privée de Gafsa

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

| | |
|---|---|
| **Course Title:** | French II |
| **Course Code:** | LAC252 |
| **Program:** | Master Degree In Computer Engineering |
| **Department:** | Computer Engineering |
| **Course coordinator:** | Miss. Houda HENCHIRI |
| **Institution:** | Private Higher School of Engineers of Gafsa (ESIP) |

Ecole Supérieure d 'Ingénieurs
Privée de Gafsa

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

## A. Course Identification

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

**2. Course type**

a. College ☐ Department ■ Others ☐

b. Fundamental ■ Transversal ☐ Optional ☐

**3. Level/year at which this course is offered:** 01/3

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

**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** | 22.5 | 100% |
| 3 | **E-learning** | --- | ---- |
| 4 | **Distance learning** | --- | ---- |
| 5 | **Other** | --- | ---- |

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

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

## B. Course Objectives and Learning Outcomes

### 1. Course Description

This French communication course presents in a specific way the mechanisms necessary for a student to improve his or her oral and written language skills.

In this advanced stage of learning, students should be encouraged to correct frequent errors in their written and oral production by following a specific strategy. In this spirit, this course should be seen as a collection of linguistic, written and oral production activities using a variety of knowledge and evaluation methods.

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

**2. Course Main Objective**

- To enable the student to acquire (or consolidate in) the rapid and reliable use of all kinds of documentation, the ability to synthesise, to take accurate and complete notes and to express him/herself fluently and easily.
- To move from active listening/reading to coherent and effective written or oral production.
- Synthesise and reformulate.
- Avoiding any ambiguitý (oral and written).
- Mastering certain linguistic structures enabling one to speak and write coherently and fluently.
- Interact in formal and non-formal contexts.

**3. Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Knowledge of organizational communication. Fundamental concepts of communication: awareness of the complex process of communication, identification of the means of communication, the functions of speech, the obstacles to communication. | K.1 |
| 1.2 | the ability to synthesise, to take accurate and complete notes and to express him/herself fluently and easily | K.2 |
| 2 | **Skills** | |
| 2.1 | Expressing oneself correctly in terms of written language and in the context of professional documents (letters, minutes of meetings, notes, files, press reviews, etc.), which presupposes an adequate command of the French language itself and of certain computer tools. | S.2 |
| 3 | **Values** | |
| 3.1 | Mastering certain linguistic structures enabling one to speak and write coherently and fluently. | V.3 |
| 3.2 | Acquire the necessary skills to enter professional life. Conducting a meeting: preparation, moderation, participation, evaluation of a meeting, conflict management, decision making. | V.4 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Presentation of the course and correction of the S1 exam. | 2 |
| 2 | Synthesis of documents. | 2,5 |
| 3 | Taking notes from audio/written material. | 3 |
| 4 | The internship report: a brief overview and steps to follow. | 3 |
| 5 | Practice session on some professional writing (cover letter and a CV prepared for an internship...) | 2,5 |

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

| 6 | Audio-visual session: videos to watch and comment on (interviews, how to write a good internship report, a cover letter for an internship, a professional e-mail...) | 3,5 |
|---|---|---|
| 7 | Preparation for the Delf B2 and a placement test | 3,5 |
| 8 | Pre-examination debriefing | 1 |
| 9 | Main review | 1,5 |
| **Total** | | 22,5 |

## D. Teaching and Assessment

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

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| **1.0** | **Knowledge and Understanding** | | |
| K.1 | Knowledge of organisational communication | Lecturing speaking & writing | Assignments, Quizzes, Exams, |
| K.2 | the ability to synthesise, to take accurate and complete notes and to express him/herself fluently and easily | | |
| **2.0** | **Skills** | | |
| S.2 | Expressing oneself correctly in terms of written language and in the context of professional documents (letters, minutes of meetings, notes, files, press reviews, etc.), which presupposes an adequate command of the French language itself and of certain computer tools. | Lecturing Tutorials Courses project | Assignments, Quizzes, Exams, |
| **3.0** | **Values** | | |
| V.3 | Mastering certain linguistic structures enabling one to speak and write coherently and fluently. | - Lectures - Class discussions - Assignments - projects | Assignments, Report, Quizzes, Exams |
| V.4 | Acquire the necessary skills to enter professional life. Conducting a meeting: preparation, moderation, participation, evaluation of a meeting, conflict management, decision making. | | Assignments, Report, Quizzes, Exams |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 1 | Practical Work (written or oral) | Weekly | 00% |
| 2 | Quizzes, Homework assignments | Random | 00% |
| 3 | First mid Term | - | 00% |
| 4 | Second mid Term | - | 00% |
| 5 | Final Exam | 16 | 100% |

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

## E. Student Academic Counselling and Support

| Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice: |
|---|
| <ul><li>Office hours</li><li>Blackboard interface</li><li>Academic advisor</li><li>Bibliotic</li></ul> |

## F. Learning Resources and Facilities

### 1. Learning Resources

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

### 2. Facilities Required

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

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

## 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 | 03/02/2022 |

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

| | |
|---|---|
| **Course Title:** | Introduction to financial systems and banking management |
| **Course Code:** | LAC253 |
| **Program:** | Master Degree In Computer Engineering |
| **Department:** | Computer Engineering |
| **Course coordinator:** | Mrs. Safa ELGHAIEB |
| **Institution:** | Private Higher School of Engineers of Gafsa (ESIP) |

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

### A. Course Identification

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

**2. Course type**

**a.**  College ☐  Department ■  Others ☐

**b.**  Fundamental ■  Transversal ☐  Optional ☐

**3. Level/year at which this course is offered:**   01/3

**4. Pre-requisites for this course (if any):** CSE432 , LAC153 , LAC253, ECUETL513

**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** | 45 | 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** | 22.5 |
| 4 | **Others** (specify) | - |
| | **Total** | 45 |

### B. Course Objectives and Learning Outcomes

#### 1. Course Description

The course aims to provide students with the basic knowledge related to banking management and bank financial systems.

This course offers a brief introduction to banking and financial economics. It describes the main characteristics of the financial system and seeks to explain them: financial structure, bond market, stock market, foreign exchange market, financial crises, and financial regulation.

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

**2. Course Main Objective**
- Introduction to the concepts of Banks: economic, legal and fiscal aspects;
- Present internal control and accounting organization in banks;
- Accounting treatment of the securities portfolio in banks;
- Accounting treatment of commitments and related income in banks;
- Accounting treatment of foreign currency transactions in banks;
- Distinguish the main elements of the bank's balance sheet and obtain practical knowledge through case studies;
- Presentation of bank financial statements;
- Explain the foreign exchange market;
- Apply basics, principles, and theories to identify, formulate, and solve complex banking management.

**3. Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | State and relate basics, principles, and theories related to the Banks: economic, legal and fiscal aspects. | K.1 |
| 1.3 | Explore banking management contemporary issues constraints to judge and reach the optimum solutions. | K.3 |
| 2 | **Skills** | |
| 2.1 | Apply basics, principles, and theories to identify, formulate, and solve complex banking management. | S.1 |
| 3 | **Values** | |
| 3.1 | Ability to use management technics to resolve banking management and bank financial systems problems. | V.1 |
| 3.4 | Persuade, present, communicate, supervise and lead effectively the basics, principles, and theories related to banking management and bank financial systems with other disciplines. | V.4 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Overview of the financial system and bank management | 3 |
| 2 | Definition and role of a bank | 2 |
| 3 | How do credit transactions work? | 2 |
| 4 | The functions of the financial system | 2 |
| 5 | Direct finance, indirect finance | 2 |
| 6 | The debt market and the equity market | 2 |
| 7 | Banking and management of financial institutions | 2 |
| 8 | Asset and liability management | 2 |
| 9 | Credit risk management | 2 |
| 10 | Interest rate risk management | 2 |
| 11 | Analysis of money creation | 2 |
| 12 | The role of the money multiplier | 2 |

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

| 13 | The stock market | 2 |
|----|------------------|---|
| 14 | BONDS: Definition and characteristics | 1 |
| 15 | The main clauses of the loan contract | 2 |
| 16 | Valuation of bonds | 2 |
| 17 | Zero-coupon bonds and stripped coupons: tax consequences | 3 |
| 18 | Measures of rates of return | 3 |
| 19 | The risks of a bond investment | 3 |
| 20 | The determinants of default risk | 2 |
| 21 | A bank's balance sheet | 2 |
| **Total** | | **45** |

## D. Teaching and Assessment

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

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|------|--------------------------|---------------------|--------------------|
| **1.0** | **Knowledge and Understanding** | | |
| K.1 | State and relate basics, principles, and theories related to the Banks: economic, legal and fiscal aspects. | Lecturing Debate | Assignments, Quizzes Homework |
| K.3 | Explore banking management contemporary issues constraints to judge and reach the optimum solutions. | | |
| **2.0** | **Skills** | | |
| S.1 | Apply basics, principles, and theories to identify, formulate, and solve complex banking management. | Lecturing Research activities Assignment work | Assignments, Quizzes Homework Course project report and presentation |
| **3.0** | **Values** | | |
| V.1 | Ability to use management technics to resolve banking management and bank financial systems problems. | - Lectures - Class discussions - Assignments - Projects - Case study | Assignments, Report, Quizzes Homework Team-work |
| V.4 | Persuade, present, communicate, supervise and lead effectively the basics, principles, and theories related to banking management and bank financial systems with other disciplines. | | Course project report and presentation |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|------------------|----------|--------------------------------------|
| 1 | Practical Work (written or oral) | Weekly | 5% |
| 2 | Quizzes, Homework assignments | Random | 10% |
| 3 | First mid Term | - | - |
| 4 | Second mid Term | 8 | 25% |
| 5 | Final Exam | 15 | 60% |

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

## E. Student Academic Counseling and Support

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

## F. Learning Resources and Facilities

### 1. Learning Resources

| Required Textbooks | - Mishkin (2004), Monnaie, Banque et marchés financiers, Pearson Education, ch. 9, Université d'Orléans |
| --- | --- |
| Essential References Materials | - Olivier Loisel (2021), « Économie bancaire et financière, Structure des taux d'intérêt », Ensae <br> - Sylvie Coussergues, Gautier Bourdeaux, Héger Gabteni (2020), « Gestion de la banque - Tous les principes et outils à connaître », Dunod, 336 pages. |
| Electronic Materials | - Lecture material in PPT <br> - Any Related material including the YouTube videos relating to banking management <br> - Blackboard |
| Other Learning Materials | - NA |

### 2. Facilities Required

| Item | Resources |
| --- | --- |
| **Accommodation** <br> (Classrooms, laboratories, demonstration rooms/labs, etc.) | Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) <br> Teaching class room with board and internet access. <br> Computer Lab. |
| **Technology Resources** <br> (AV, data show, Smart Board, software, etc.) | Power point data show |
| **Other Resources** <br> (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 |

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

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| 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 | 01/03/2022 |