

REPUBLIQUE ALGERIENNE DEMOCRATIQUE ET POPULAIRE

MINISTERE DE L'ENSEIGNEMENT SUPERIEUR
ET DE LA RECHERCHE SCIENTIFIQUE

OFFRE DE FORMATION LICENCE ACADEMIQUE

Double Compétence

Etablissement	Faculté/ Institut	Département

Domaine : Mathématiques et Informatique

Filière : Informatique

Spécialité : Mathématiques et Informatique appliquées aux Sciences Economiques et de Gestion

Année universitaire : 2024/2025

الجمهورية الجزائرية الديمقراطية الشعبية

وزارة التعليم العالي والبحث العلمي

عرض تكوين ليسانس اكايمي

كفاءة مزدوجة

القسم	الكلية/ المعهد	المؤسسة

الميدان : رياضيات وإعلام آلي

الشعبة : إعلام آلي

التخصص : رياضيات و اعلام الي مطبقة في العلوم الاقتصادية و التسيير

السنة الجامعية: 2024-2025

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I - Fiche d'identité de la Licence

1 - Localisation de la formation :

Faculté (ou Institut) :

Département :

Section :

2- Partenaires extérieurs *:

- Autres établissements partenaires :

- Entreprises et autres partenaires socio-économiques :

- Partenaires internationaux :

3 - Contexte et objectifs de la formation

A - Organisation générale de la formation:

.

B - Objectifs de la formation

C - Profils et compétences visées :

D - Potentialités régionales et nationales d'employabilité

E - Passerelles vers les autres spécialités

F - Indicateurs de suivi de la formation

4 - Moyens humains disponibles

A : Capacité d'encadrement :

B : Equipe d'encadrement de la formation :

B-1 : Encadrement Interne :

Nom, prénom	Diplôme	Grade	Laboratoire de recherche de rattachement	Type d'intervention *	Emargement

B-3 : Synthèse globale des ressources humaines :

Grade	Effectif Interne	Effectif Externe	Total
Professeurs			
Maîtres de Conférences (A)			
Maîtres de Conférences (B)			
Maître Assistant (A)			
Maître Assistant (B)			
Autre (préciser)			
Total			

B-4 : Personnel permanent de soutien (indiquer les différentes catégories)

Grade	Effectif

5 - Moyens matériels disponibles

A- Laboratoires Pédagogiques et Equipements : Fiche des équipements pédagogiques existants pour les TP de la formation envisagée (1 fiche par laboratoire)

Intitulé du laboratoire :

Capacité en étudiants :

N°	Intitulé de l'équipement	Nombre	observations
01			
02			
03			
04			
05			

II - Fiche d'organisation semestrielle des enseignements

(Prière de présenter les fiches des 6 semestres)

FTF: Face-to-face mode, ELEARN: eLearning mode, H: Hybrid mode (FTF/ELEARN)

M: Methodological, F: Fundamental, D: Discovery, T: Transversal

The weighting 20%, 80% means that students will be present 1 week out of 4 for each course in an alternating manner.

Semester	Unit	Courses	Credit	Coef	Course	TD	TP	Evaluation		Teaching mode		
								Exam	Cont	Mode	FTF (%)	Elearning (%)
Semester 1	UFM1	Mathematic Analysis and Mathematic Logic	5	3	3H	1.5H		60%	40%	FTF	100	
		Introduction to Probabilities and Descriptive Statistics 1	4	2	3H		1.5H	60%	40%	FTF	100	
	UFC1	Machine Structure et Operating System Administration	4	2	3H		1.5H	60%	40%	FTF	100	
		Programming 1	5	3	3H		1.5H	60%	40%	FTF	100	
	UD1	Introduction to the Economic Sciences	3	2	1.5H	1.5H		60%	40%	FTF	100	
		Introduction to the Human and Social Sciences	3	2	1.5H	1.5H		60%	40%	FTF	100	
	UM1	University work	2	2	1.5H			100%		H	20	80
	UT1	Ethics and Professional Deontology	2	1	1.5H			100%		H	20	80
		English 1	2	1	1.5H			100%		ELEARN		100
				30	18							
Semester 2	UFM2	Linear Algebra	5	3	3H	1.5H		60%	40%	FTF	100	
	UFC2	Introduction to Artificial Intelligence	5	3	3H		1.5H	60%	40%	FTF	100	
		Programming 2	6	3	3H		1.5H	60%	40%	FTF	100	
	UD2	Introduction to Economic Theories	3	2	1.5H	1.5H		60%	40%	FTF	100	
		Introduction to the Human and Social Sciences 2	3	2	1.5H	1.5H		60%	40%	FTF	100	
	UM2	University work 2	2	2	1.5H			100%		H	20	80
	UT2	Entrepreneurship and Management of the Enterprise	2	1	1.5H			100%		H	20	80
		Introduction to Law	2	1	1.5H			100%		H	20	80
		English 2	2	1	1.5H			100%		ELEARN		100
			30	18								

Semester	Unit	Courses	Credit	Coef	Course	TD	TP	Evaluation		Teaching mode		
								Exam	Cont	Mode	FTF (%)	Elearning (%)
Semester 3	UFC3	Information Systems	4	2	1H30	1H30		60%	40%	FTF	100	
		Advanced Programming	5	3	1H30	1H30	1H30	60%	40%	FTF	100	
	UFE3	Microeconomics	5	3	3H	1H30		60%	40%	FTF	100	
		Financial Accounting	4	2	1H30	1H30		60%	40%	FTF	100	
	UD3	Introduction to Management	3	2	1H30	1H30		60%	40%	FTF	100	
		Public Finance	3	2	1H30				100%	FTF	100	
	UM3	Data Analysis 1	3	2	1H30		1H30	60%	40%	FTF	100	
	UT3	English 3	1	1	1.5H			100%		H	20	80
		Commercial Law	2	1	1.5H			100%		H	20	80
			30	18								
Semester 4	UFC4	Networks and Web Technologies	4	2	1H30		1H30	60%	40%	FTF	100	
		Databases	5	3	1H30	1H30	1H30	60%	40%	FTF	100	
	UFE4	Macroeconomics	5	3	3H	1H30		60%	40%	FTF	100	
		Introduction to Management Accounting	4	2	1H30	1H30		60%	40%	FTF	100	
	UD4	Business Information Systems	3	2	1H30	1H30		60%	40%	FTF	100	
	UM4	Data Analysis 2	3	2	1H30		1H30	60%	40%	FTF	100	
		Financial Mathematics	3	2	1H30	1H30		60%	40%	FTF	100	
	UT4	English 4	1	1	1.5H			100%		H	20	80
		Introduction to Marketing	2	1	1.5H			100%		H	20	80
			30	18								

Semester	Unit	Courses	Credit	Coef	Course	TD	TP	Evaluation		Teaching mode		
								Exam	Cont	Mode	FTF (%)	Elearning (%)
Semester 5	UFC5	Business Intelligence and Big Data	4	2	1H30		1H30	60%	40%	FTF	100	
		Data Science and Artificial Intelligence	5	3	3H		1H30	60%	40%	FTF	100	
	UFE5	Financial Management and Analysis	4	2	1H30	1H30		60%	40%	FTF	100	
		Management Control	5	3	3H	1H30		60%	40%	FTF	100	
	UD5	Business Taxation	3	2	1H30	1H30		60%	40%	FTF	100	
	UM5	Cybersecurity	3	2	1H30	1H30		60%	40%	FTF	100	
		Mobile application development	3	2	1H30		1H30	60%	40%	FTF	100	
	UT5	Monetary and Financial Economics	2	1	1H30			100%		H	20	80
		International Economics and Trade	1	1	1H30			100%		H	20	80
				30	18							
Semester 6	UFC6	E-Commerce	5	3	1H30		1H30	60%	40%	FTF	100	
		Specialized software	4	2	1H30		1H30	60%	40%	FTF	100	
	UFE6	Wage Management	4	2	1H30	1H30		60%	40%	FTF	100	
		Applied Numerical Methods for Economics	5	3	1H30	1H30		60%	40%	FTF	100	
	UM6	Final Project	9	6								
	UT6	Business Criminal Law	1	1	1H30			100%		H	20	80
		Business Ethics	2	1	1H30			100%		H	20	80
			30	18								

Mathematics analysis and Mathematics logic (MAML)

Semester 1

Unit: UFM1

Credit: 5

Coeff: 3

Course objectives

- Understand the concept of limits and continuity.
- Apply the principles of differentiation to solve problems.
- Develop logical and formal proof skills for analysis.

Course Content:

Part I: Mathematics analysis and logic

Chapter I.1: Sequences and Series

- Convergence and divergence
- Cauchy sequences
- Monotonic sequences
- Infinite series and tests for convergence (comparison test, ratio test, root test, etc.)

Chapter I.2: Functions and Continuity

- Limits of functions
- Continuity and discontinuity of functions
- Uniform continuity
- Intermediate Value Theorem
- Extreme Value Theorem

Chapter I.3: Differentiation

- Definition and properties of the derivative
- Mean Value Theorem
- Bernoulli's rule
- Taylor series
- Applications of derivatives: concavity, inflection points, optimization

Part II: Mathematics logic

Chapter II.1: Syntax and Semantics

- Propositional variables
- Logical connectives: AND, OR, NOT, IMPLIES, IFF
- Truth tables and interpretations

Chapter II.2: Tautologies and Logical Equivalences

- Laws of logic (De Morgan's Laws, distribution, etc.)
- Logical equivalence and implications
- Normal forms (Conjunctive Normal Form, Disjunctive Normal Form)

Chapter II.3: Proof Systems

- Natural deduction
- Axiomatic systems
- Soundness and completeness theorems for propositional logic

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

"Principles of Mathematical Analysis" by Walter Rudin

Introduction to Probabilities and Descriptive Statistics (IPDS)

Semester 1

Unit: UFM1

Credit: 4

Coeff: 2

Course objectives

- Understand basic concepts of probability and random variables.
- Compute and interpret key descriptive statistics (mean, median, mode, variance, standard deviation).
- Understand and apply the laws of probability, conditional probability, and independence.

Course Content:

Chapter 1: Introduction to Statistics and Data

- Overview of statistics and its importance
- Types of data: qualitative vs. quantitative
- Introduction to data collection methods
- Measures of frequency, proportions, and percentages
- Introduction to data visualization: charts and graphs

Chapter 2: Descriptive Statistics

- Measures of central tendency (mean, median, mode)
- Measures of spread (range, variance, standard deviation)
- Z-scores and percentile ranks
- Exploratory Data Analysis (EDA)
- Graphical representations: histograms, box plots, stem-and-leaf plots

Chapter 3: Basic Probability Theory

- Introduction to probability: concepts and rules
- Sample space and events
- The addition and multiplication rules of probability
- Complementary, joint, and conditional probabilities
- Independent and dependent events

Chapter 4: Discrete Probability Distributions

- Discrete random variables and probability mass functions (PMFs)
- The binomial distribution
- The Poisson distribution
- Expected value and variance of discrete distributions

Chapter 5: Continuous Probability Distributions

- Continuous random variables and probability density functions (PDFs)
- The normal distribution
- The standard normal distribution and Z-scores
- Applications of the normal distribution (Central Limit Theorem)

Teaching mode

Face to face mode (100%)

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

"Statistics for Business and Economics" by Paul Newbold

Machine Structure et Operating System Administration (MSOS)

Semester 1

Unit: UFC1

Credit: 4

Coeff: 2

Course objectives :

The objective of these chapters is to provide a comprehensive introduction to the fundamentals of computing, including the history and architecture of computers, number systems, data representation, and basic Linux system management. This course aims to equip learners with a strong foundational understanding of computers and Linux systems, enabling them to handle tasks such as system configuration, file management, user and storage management, and data backup and restoration effectively.

Course Content:

Chapter 1: General Introduction

- History and evolution of computers.
- Basic principles of Von Neumann architecture.
- Components of a computer.

Chapter 2: Number Systems

- Definition.
- Overview of decimal, binary, octal, and hexadecimal systems.
- Conversion between these systems.
- Basic operations in the binary system:
 - Addition.
 - Subtraction.

Chapter 3: Information Representation

- Binary coding:
 - Pure binary coding.
 - Reflected binary code (or Gray code).
 - DCB code (Decimal Coded Binary).
- Representation of numbers:
- Integer numbers:
 - Unsigned representation.
 - Signed representation (SVA, 1's complement, 2's complement).
- Fractional numbers: - Fixed-point. - Floating-point (IEEE 754 standard).
- Character representation:
 - ASCII code.
 - Unicode code.

Chapter 4: Introduction to Linux

- History and evolution of Linux.
- Linux operating system architecture.
- Differences between Linux distributions.
- Installation and initial configuration of Linux.

Chapter 5: Management and Manipulation

- Command Line Usage.
- File and directory management.
- Use of basic commands (ls, cd, mkdir, rm, etc.).
- User and Group Management:
 - Creating, modifying, and deleting users.

- Assigning permissions to files and directories.
- Managing user groups.
- Storage Management.
- Managing partitions and file systems:
 - Creating and managing logical volumes (LVM).
 - Use of fdisk, mkfs, mount commands, etc.
- Backup and Restoration: - Planning and executing backups.
 - Using backup tools (rsync, tar, etc.).
 - Restoring data from backups.

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- "Computer Organization and Design: The Hardware/Software Interface" by David A. Patterson and John L. Hennessy
- "The Linux Command Line: A Complete Introduction" by William Shotts

Programming 1 (PRG1)

Semester 1

Unit: UFC1

Credit: 5

Coeff: 3

Course objectives :

- Understand the history and fundamentals of computer science and how it has evolved to its current state.
- Comprehend the concept of algorithms and their importance in problem-solving, as well as how to represent and implement them using algorithmic language.
- Master basic data types, operations, and instructions used in programming, such as variables, constants, input/output, and assignments.
- Develop and represent simple sequential algorithms using Python, alongside the construction of flowcharts.
- Implement and understand conditional structures for decision-making in algorithms, such as simple, compound, and multiple-choice conditions in Python.
- Learn and apply looping structures (while, repeat, and for loops) to solve iterative problems, using Python.
- Understand arrays and strings as data structures, including their types, manipulations, and applications in programming.
- Utilize subprograms (functions and procedures), understanding parameter passing, local and global variables, and recursion, to write modular and efficient code.

Course Content:

Chapter 1: Introduction

- Brief history of computer science.
- Introduction to algorithms.

Chapter 2: Simple Sequential Algorithm (in algorithmic language and Python)

- Concept of language and algorithmic language.
- Parts of an algorithm.
- Data: variables and constants.
- Data types.
- Basic operations.
- Basic instructions: - Assignments. - Input/output instructions.
- Constructing a simple algorithm.
- Representing an algorithm using a flowchart.

Chapter 3: Conditional Structures (in algorithmic language and Python)

- Introduction.
- Simple conditional structure.
- Compound conditional structure.
- Multiple choice conditional structure.
- Branching.

Chapter 4: Loops (in algorithmic language and Python)

- While loop.
- Repeat loop.
- For loop.
- Nested loops.

Chapter 5: Arrays and Strings

- Introduction.
- Array type.
- Vectors and multidimensional arrays.
- Strings.

Chapter 6: Subprograms: Functions and Procedures

- Introduction.
- Definitions.
- Local and global variables.
- Parameter passing.
- Recursion.

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- "Introduction to Algorithms" by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein
- "Python Programming: An Introduction to Computer Science" by John Zelle

Introduction to Economic Sciences (IES)

Semester 1

Unit: UD

Credit: 3

Coeff: 2

Course objectives

- Enable the student to integrate into the field of economic sciences.
- Help the student understand the introduction to economics and train on its core topics and important economic terms, as well as the relationship of economics with various other sciences.
- Provide the student with foundational knowledge for economic subjects that will be studied throughout their academic journey.

Course Content:

- The nature of economics
- The nature of economics and its relationship with other sciences.
- The relationship between economics, mathematics, and computer science.
- Branches of economics: microeconomic theory and macroeconomic theory.
- The economic problem: concepts of needs and scarcity, resources and means of satisfaction, and how to address the economic problem.
- Factors of production: labor, nature (land), capital, and organization.
- The economic cycle and economic agents.
- Economic activity and processes: production, income, investment, exchange, consumption, and savings.
- Economic institutions: their concepts, definitions, classifications, and characteristics.
- Market, price, and equilibrium: concept of the market, its types and participants, demand and supply, and equilibrium.
- Economic system and economic policies.
- Money and banks: their origins, types, and traditional and modern functions.
- Economic terminology: unemployment and employment, inflation, globalization and economic globalization, economic growth, economic development, and sustainable development.

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- Bradley R. Schiller , Essentials of economics , 8th , ed , New york ,2001.
- Jacques Génèreux (2017), Introduction à l'économie, nouvelle édition, points économie, French Edition.
- Stephen Dobson and Susan PalFREMAN, Introduction to economics, Oxford University Publisher; 1999.
- ERIC BROUSSEAU, De la Science du Marche à l'Analyse Economique des formes de coordination, Université de Nancy IXATOM (Université de Paris 1), Apparaître dans les cahiers Français N 272, 1995

- Field, B. C., & Field, M. K. Environmental economics: an introduction, 7th. McGraw-Hill Education ,2016.
- McEachern, W. A. Economics: A contemporary introduction. Cengage Learning,2016.
- Dasgupta, P. Economics: A very short introduction. OUP Oxford,2007.
- Atkinson, A. B., & Bourguignon, F. Introduction: Income distribution and economics. Handbook of income distribution,2000.

Introduction to human and social sciences 1 (IHSS1)

Semester 1

Unit: UD1

Credit: 3

Coeff: 2

Course objectives

- Ability to understand the nature of the humanities and social sciences
- Knowledge of the role of the humanities and social sciences in understanding man and society

Course Content:

Part 1: A conceptual introduction to the humanities and social sciences

1. The concept of the humanities
2. The concept of the social sciences
3. The interdisciplinarity and integration between the humanities and social sciences
4. The importance of the humanities and social sciences in modern societies

Part 2 Fields of human sciences and social sciences.

1. Human sciences: library science, archaeology, media and communication, etc.
2. Social sciences: Sociology, psychology, educational sciences, philosophy, demography, etc.

Part 3: major topics in the field of humanities and social sciences

1. Globalization
2. Communication
3. Memory (History, Archives, Archeology...)
4. Cultural diversity
5. ... Other

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- HUNT, Elgin F., COLANDER, David C. - *Social Science - An Introduction To The Study of Society*. London: Routledge, 2016
- WOODWARD, Kath *Social Sciences: The Big Issues*. London: Routledge, 2021
- DORTIER, Jean-François. *Les sciences humaines. Panorama des connaissances*. Paris: Éditions Sciences Humaines, 2001
- GUSDORF, G. *Introduction aux sciences humaines. Essai critique sur leurs origines et leur développement*. Paris : Les éditions Ophrys. 1974
- FEUERHAHN, W. *Les sciences humaines et sociales : des disciplines du contexte*. Paris : Les éditions Ophrys, [S.D.]
- ROYCE, EDWARD; *Classical Social Theory and Modern Society*. London: Weber, 2015
- PERRY, John A., PERRY, Erna K. *Contemporary society: An Introduction to Social Science*. New York: Routledge, 2016.
- DELTHEY, Wilhelm. *Introduction to the Human sciences*, New jersey: Princeton university press, 1989.
- JONATHAN H. Turner. *Theoretical Sociology A Concise Introduction to Twelve Sociological Theories*. USA: Sage Publications, 2014.

University work 1(UW1)

Semester 1
Unit: UM1
Credit: 2
Coeff: 2

Course objectives

- Positive participation in university life
- Giving a good image of the university

Course Content:

Part1: LMD training system

1. The university, its social role and its objectives in global development
2. The training system in the Bachelor's, Master's and Doctorate
3. Explanation of terms: field, department and specialization
4. Meaning of the educational unit: Fundamental, Methodological, exploral, Transverse
5. Meaning of credit, coefficients, individual work
6. Nature of pedagogical assessment: lectures, practical work, Tutorial session
7. Conditions for transition and success during the training course
8. University guidance criteria and bridges and crossings between training course

Part2: - Distance education via electronic platforms

1. The university student is the focus of the educational process
2. Modern technologies in the educational and learning process
3. E-learning platforms (Moodle, MOOCs, DUAL... etc.)

Part3: Training on university work techniques

1. Using research methods and technological applications in study and research
2. Preparing a reading sheet and summarizing lessons
3. Preparing and presenting works using specialized applications

Part4: Integration into University Life

1. What's University Life
2. Emotional Intelligence and Teamwork Skills
3. Pedagogical Support for People with Disabilities and Their Integration into University Life
4. Participation in Scientific, Cultural and Sports Activities
5. Psychological Assistance Centers within the University

Teaching mode

Elearning (80%), Face to face mode (20%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- MINISTERE DE L'ENSEIGNEMENT SUPERIEUR ET DE LA RECHERCHE SCIENTIFIQUE. Guide pratique de mise en œuvre et de suivi du LMD. Alger : MESRS, 2011
- BARKLEY, Elizabeth F. Student engagement techniques: a handbook for a college faculty. USA: Jossey bas, 2010
- O'SHEA, Sarah [et al]. First in family students, university experience and family life: motivations, transitions and participation. Australia: Mc-Milan, 2017

- ROBERTS, Andrew. The thinking student guide to college: 75 tips for getting a better education. Chicago: University Chicago press, 2010

Ethics and Professional Deontology (EPD)

Semester 1

Unit: UT1

Credit: 2

Coeff: 1

Course objectives

- This course aims to provide students with the fundamental concepts of ethics and professional deontology, enhancing their awareness of the importance of adhering to professional ethics in the workplace. Students will learn how ethics influence the behavior of individuals and institutions, as well as the role of professional ethics in promoting transparency, credibility, and justice across various professions.

This course also allows students to:

- Understand the difference between ethics and professional deontology.
- Apply ethical standards in various fields of work.
- Identify ethical challenges and learn how to address them in professional life.

Course Content:

1. The Concept of Ethics

- Definition of ethics
- The difference between ethics and values
- The philosophical foundations of ethics
- The evolution of ethical concepts throughout history

2. The Concept of Professional Deontology

- Definition of professional deontology
- The difference between general ethics and professional deontology
- The importance of professional deontology in the workplace
- The fundamental principles of professional deontology (honesty, integrity, justice, responsibility)

3. Professional Deontology in Different Fields

- Ethics in the medical profession
- Ethics in the engineering profession
- Ethics in the teaching profession
- Ethics in the legal profession

4. Ethical Challenges in Professional Work

- Administrative corruption
- Conflict of interest
- Abuse of power
- Bias and discrimination in the workplace

5. The Role of Institutions in Promoting Professional Deontology

- Codes of professional conduct
- Employee ethics training
- Monitoring and transparency in professions
- Penalties for unethical behavior

6. The Relationship Between Ethics and Social Responsibility

- Definition of social responsibility

- The role of companies in achieving sustainable development
- The impact of professional behavior on society

7. Professional Ethics in the Digital Age

- Ethical challenges associated with modern technology
- Privacy and data protection
- Professional integrity in the digital world

Teaching mode

Elearning (80%), Face to face mode (20%).

Assessment mode

Final Exam (100%).

Recommended Textbooks:

- Beauchamp, T. L., & Childress, J. F. (2019). **Principles of Biomedical Ethics** (8th ed.). Oxford University Press.
- Banks, S. (2012). **Ethics and Values in Social Work** (4th ed.). Palgrave Macmillan.
- Evetts, J. (2013). **Professionalism: Value and ideology**. *Current Sociology*, 61(5-6), 778-796. <https://doi.org/10.1177/0011392113479316>
- Davis, M. (2017). **Ethics and the University** (2nd ed.). Routledge.
- Kitchener, K. S. (2000). **Foundations of Ethical Practice, Research, and Teaching in Psychology**. Lawrence Erlbaum Associates.
- May, W. F. (1980). **Codes of Ethics: Some History**. *The Hastings Center Report*, 10(4), 9-11. <https://doi.org/10.2307/3561140>
- Singer, P. (2011). **Practical Ethics** (3rd ed.). Cambridge University Press.
- Callahan, D. (2012). **The Roots of Bioethics: Health, Progress, Technology, Death**. Oxford University Press.

English 1 (ENG1)

Semester 1

Unit: UT1

Credit: 2

Coeff: 1

Course objectives: Students should have the B1 level in the end of Semester 1

Course Content:

1. Speaking Skills
2. Listening Skills
3. Reading Skills
4. Writing Skills
5. Grammar and Vocabulary
6. Pronunciation

Teaching mode

eLearning (100%).

Assessment mode

Exam (100%).

Recommended Textbooks:

"English File Intermediate" by Christina Latham-Koenig and Clive Oxenden

Linear Algebra (LIA)

Semester 2

Unit: UFM2

Credit: 5

Coeff: 3

Course objectives :

- Develop logical reasoning skills and understand algebraic structures like sets, functions, and rings.
- Perform matrix operations and solve systems of linear equations using Gaussian elimination.
- Understand vector spaces, their basis, dimension, and apply the rank-nullity theorem.
- Analyze linear transformations and their matrix representations, including kernel and image.
- Use change of basis techniques to simplify vector and transformation problems.

Course Content:

1. Foundations of Discrete and Algebraic Mathematics
 - Logic and Reasoning
 - Sets, Functions, and Relations
 - Algebraic Structures
 - Polynomial Ring
2. Matrices and Systems of Linear Equations
 - Matrix operations (addition, multiplication, inverse)
 - Determinants and properties of determinants
 - Gaussian elimination and echelon forms
 - Systems of linear equations: consistency and uniqueness
3. Vector Spaces
 - Definition of vector spaces and subspaces
 - Basis and dimension
 - Row space, column space, and null space of a matrix
 - Rank-nullity theorem
4. Linear Transformations
 - Definition and properties of linear transformations
 - Matrix representation of linear transformations
 - Kernel and image of a linear transformation
 - Change of basis

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- Linear Algebra and Its Applications by Gilbert Strang
- Linear Algebra Done Right by Sheldon Axler.

Introduction to Artificial Intelligence (IAI)

Semester 2

Unit: UFC2

Credit: 5

Coeff: 3

Course Objectives: This course is aimed at developers and students in the fields of computer science and engineering who are interested in AI. In this course, students will explore AI, understand what it's for and why mathematics is involved in subsequent courses. In this course, students will be able to: Understand the role of AI in industry; Define AI hardware and software; and finally, Evaluate the importance of datasets, data sources, problem solving with data and data science workflows.

Course Content:

Chapter 1. Introduction

- The definition of the Artificial Intelligence;
- Historical developments that now differentiate modern AI from earlier AI;
- The differences between supervised and unsupervised learning;
- Examples of AI applications.

Chapter 2. Artificial intelligence in the industry

- Health and genomics;
- Transportation and automated driving;
- Retail and supply chain;
- Finance;
- Industrial;
- Government.

Chapter 3. Artificial intelligence in the enterprise

- Steps of the data science workflow;
- Key roles and skills in AI;
- Ways to structure an AI team;
- Common misconceptions in data science;
- Components of post-deployment AI model maintenance.

Chapter 4. AI development tools

- Google Collab;
- Jupyter;
- NumPy;
- Matplotlib, SciKits Learn et Pandas.

Chapter 5. Supervised Learning

- How to formulate a supervised learning problem;
- Compare and understand the differences between training and inference;
- Describe the dangers of overfitting against test data.

Chapter 6. Data collection and enhancement

- Know when more data samples are necessary.
- Handling and augmenting data with feature engineering.
- Identify problems such as overfitting and underfitting.
- Popular datasets used in neural network training.
- Data pre-processing methods.
- Data labeling.

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

Artificial Intelligence: A Modern Approach, 4th US ed. by Stuart Russell and Peter Norvig

Programming 2 (PGM2)

Semester 1

Unit: UFC2

Credit: 6

Coeff: 3

Course Objectives:

- Master advanced algorithmic concepts and design techniques to solve complex problems efficiently.
- Understand and implement linked lists, stacks, and queues, focusing on dynamic memory management.
- Explore and apply advanced data structures like trees and graphs for effective data manipulation and problem-solving.
- Implement and analyze advanced sorting and search algorithms, and apply graph algorithms to real-world problems.

Course Content:

Chapter 1: Design and Analysis of an Algorithm

- Advanced concepts in algorithmics.
- Algorithm design techniques (divide and conquer, recursion...).
- Analysis and calculation of algorithm complexity.

Chapter 2: Linked Lists (in algorithmics and in Python)

- Introduction.
- Pointers.
- Dynamic memory management.
- Linked lists.
- Operations on linked lists.
- Doubly linked lists.
- Stacks and queues.

Chapter 3: Advanced Data Structures (in algorithmics and in Python)

- Trees (Binary trees, specialized binary trees, etc.).
- Graphs (Representation, traversal, search algorithms, etc.).
- Advanced data structures (Heaps, Hash tables, etc.).

Chapter 4: Advanced Algorithms (in algorithmics and in Python)

- Advanced sorting algorithms (Quick sort, Merge sort, etc.).
- Advanced search algorithms (Binary search, Interpolation search, etc.).
- Graph algorithms (Depth-first search, Breadth-first search, Shortest paths, etc.).

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- "Introduction to Algorithms" by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein
- "Algorithms" by Robert Sedgewick and Kevin Wayne
- "Python Algorithms" by Magnus Lie Hetland

Introduction to Economic Theories (IET)

Semester 2

Unit: UD2

Credit: 3

Coeff: 2

Course objectives

To enable students to grasp various schools of thought regarding their theories and intellectual approaches to key economic issues.

Course Content:

- Economic thought in ancient Eastern civilizations.
- Economic thought in ancient Western societies and the Middle Ages in Europe.
- Mercantilist economic thought.
- Economic thought in the Islamic era.
- Natural economic thought.
- Classical economic thought.
- Liberal capitalist economic thought and its stages.
- French socialist and Marxist economic thought.
- Economic thought of the historical school in Germany.
- Marginalist neoclassical economic thought.
- Keynesian economic thought and contemporary economic theories (Post-Keynesian).

Teaching mode

Face to face mode (100%)

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- Blaug, M. (1997). *Economic theory in retrospect* (5th ed.). Cambridge University Press.
- Medema, S. G., & Samuels, W. J. (2003). *The history of economic thought: A reader*. Routledge.
- Screpanti, E., & Zamagni, S. (2005). *An outline of the history of economic thought* (2nd ed.). Oxford University Press.
- Backhouse, R. E. (2002). *The ordinary business of life: A history of economics from the ancient world to the twenty-first century*. Princeton University Press.
- Ekelund, R. B., & Hébert, R. F. (2007). *A history of economic theory and method* (5th ed.). Waveland Press.
- Spiegel, H. W. (1991). *The growth of economic thought* (3rd ed.). Duke University Press.
- Hunt, E. K., & Lautzenheiser, M. (2011). *History of economic thought: A critical perspective* (3rd ed.). Routledge.
- Samuelson, P. A. (1947). *Foundations of economic analysis*. Harvard University Press.

Introduction to human and social sciences 2 (IHSS2)

Semester 2

Unit: UD2

Credit: 6

Coeff: 4

Course objectives

- Ability to understand the nature of the humanities and social sciences
- Knowledge of the role of the humanities and social sciences in understanding man and society

Course Content:

Part1: Theory in the field of humanities and social sciences

1. Major theories in the humanities
2. Major theories in the social sciences

Part2: Digital Humanities

1. Digital Humanities (concept, development and historical roots)
2. Practical applications of Digital Humanities (education and machine learning)
3. Digital transition and digital transformation
4. Innovation in Digital Humanities
5. Intersection of Artificial Intelligence with the Humanities and Social Sciences

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- HUNT, Elgin F., COLANDER, David C. - Social Science - An Introduction To The Study of Society. London: Routledge, 2016
- WOODWARD, Kath Social Sciences: The Big Issues. London: Routledge, 2021
- DORTIER, Jean-François. Les sciences humaines. Panorama des connaissances. Paris: Éditions Sciences Humaines, 2001
- GUSDORF, G. Introduction aux sciences humaines. Essai critique sur leurs origines et leur développement. Paris : Les éditions Ophrys. 1974
- FEUERHAHN, W. Les sciences humaines et sociales : des disciplines du contexte. Paris : Les éditions Ophrys, [S.D.]
- ROYCE, EDWARD; Classical Social Theory and Modern Society. London: Weber, 2015
- PERRY, John A., PERRY, Erna K. Contemporary society: An Introduction to Social Science. New York: Routledge, 2016.
- DELTHEY, Wilhelm. Introduction to the Human sciences, New jersey: Princeton university press, 1989.
- JONATHAN H. Turner. Theoretical Sociology A Concise Introduction to Twelve Sociological Theories. USA: Sage Publications,2014

University work 2 (UW2)

Semester 2

Unit: UM2

Credit: 2

Coeff: 2

Course objectives

- Ability to communicate smoothly
- Ability to work in a team and associative

Course Content:

Part1: Learning and organizing the educational environment

1. The concept of learning and its methods
2. Self-learning skills
3. Time organization and management skills
4. Skills for organizing the student's educational space.

Part2: Pedagogical accompaniment

1. What's pedagogical accompaniment
2. Pedagogical and personal objectives of accompaniment
3. On line pedagogical accompaniment

Part3: Prevention of social ills: drugs, suicide, ... etc.

1. The concept of social problems
2. Types of social problems: smoking, drugs, suicide, etc.
3. Health, psychological and social effects of social problems

Teaching mode

Elearning (80%), Face to face mode (20%).

Assessment mode

Exam (100%).

Recommended Textbooks:

- ROBERTS, Andrew. *The thinking student guide to college: 75 tips for getting a better education*. Chicago: University Chicago press, 2010
- MINISTERE DE L'ENSEIGNEMENT SUPERIEUR ET DE LA RECHERCHE SCIENTIFIQUE. *Guide pratique de mise en œuvre et de suivi du LMD*. Alger : MESRS, 2011
- BARKLEY, Elizabeth F. *Student engagement techniques: a handbook for a college faculty*. USA: Jossey bas, 2010
- O'SHEA, Sarah [et al]. *First in family students, university experience and family life: motivations, transitions and participation*. Australia: Mc-Milan, 2017

Entrepreneurship and Management of the Enterprise (EME)

Semester 2

Unit: UT2

Credit: 2

Coeff: 1

Course objectives

- Understand the concept of an enterprise, its characteristics, roles, and objectives.
- Learn about the enterprise environment.
- Master the concept of an enterprise as an economic agent, and learn about its origin and development, as well as the different types of enterprises.
- Highlight the importance of entrepreneurial education in promoting the spirit of creation and establishing enterprises for university students, by demonstrating the contents of entrepreneurial education programs, the necessary characteristics and skills for creating projects, and the socio-economic environment that fosters entrepreneurial culture.
- Master the concepts related to entrepreneurship.
- Understand and be knowledgeable about the socio-economic environment of entrepreneurship.
- Master the process of establishing an entrepreneurial project.
- Learn about the institutions that support entrepreneurship in the academic environment (and everything related to implementing Decision 1275 University Diploma/Startup - University Diploma/Patent).

Course Content:

- Unit 1: The enterprise: its concept, origin, development, and classifications
- Unit 2: The internal and external environment of the enterprise
- Unit 3: Organization and structures of the enterprise
- Unit 4: Enterprise functions
- Unit 5: Introduction to entrepreneurship and its forms
- Unit 6: Stages of establishing an entrepreneurial project
- Unit 7: Entrepreneurial support and assistance structures in Algeria
- Unit 8: From innovative project to startup

Teaching mode

Elearning (80%), Face to face mode (20%).

Assessment mode

Exam (100%).

Recommended Textbooks:

Continuous assessment + final exam. The course grade is based on the weighted average of lectures (60%) and directed work (40%).

Reference :

Chanteux A. et Niessen W. (2006). Les tableaux de bord et business plan. L. Venanzi, Edi.pro, Liège Belgique.

- Haidar, J.I , "Impact of Business Regulatory Reforms on Economic Growth," Journal of the Japanese and International Economies, Elsevier, vol. 26(3), , September2012
- Mark Van Osnabrugge and Robert J. Robinson, Angel Investing, the economist revue March 11, 2006.
- M.E KRUGER, "Entrepreneurship theory and practice", university of Pretoria etd, South Africa, 2004.
- Alain fayolle 'le métier de créateur d'entrepris 'tone2 ' les éditions d' organisation '2003.
- Mater .V, Zenovta .C : " Entrepreneurship versus Intrapreneurship " , Review of International Comparative Management ,Vol .(12) , No.(5) , Dec, 2011
- *M Darbelet (1996) : Économie d'Entreprise : BTS, enseignement supérieur, Editions Foucher . Paris.*
- *Rudolf Brennemann et Sabine Sépari (2001), Economie d'Entreprise, Editions Dunod, Paris.*
- *N. Mankiw, Mark Taylor and Andrew Ashwin (2019), Business Economics, 3rd Edition, Cengage Learning EMEA Publisher.*
- www.ansej.dz.
- www.cnac.dz
- www.angem.dz.
- www.sofinance.dz
- www.eldjazair-istithmar.dz
- www.commerce.gov.dz

Introduction to Law (ILW)

Semester 2

Unit: UT2

Credit: 2

Coeff: 1

Course objectives

To provide the student with the necessary amount of well-defined legal knowledge through law lessons, enabling them to act responsibly through informed practice.

Course Content:

- The concept of law
- Legal rule: definition, elements, characteristics, and divisions
- Divisions of law
- Sources of law
- Application of law concerning individuals
- Application of law concerning place and time
- Rights and their types (non-financial rights, financial rights, intellectual rights)
- Persons of rights (natural person and legal person) and their subject
- Means of proving rights and reasons for their termination
- Responsibility (criminal, civil, and disciplinary)
- Judicial organization in Algeria

Teaching mode

Elearning (80%), Face to face mode (20%).

Assessment mode

Final Exam (100%)

Recommended Textbooks:

1. Beatty, J. F., Samuelson, S. S., & Abril, P. S. (2021). Introduction to Business Law (7th ed.). Cengage Learning.
2. Curzon, L. B. (2019). Law Made Simple (14th ed.). Routledge.
3. Gardner, S. (2018). Introduction to the Law of Contract (6th ed.). Oxford University Press.
4. Hames, J. B., & Ekern, Y. (2020). Introduction to Law (7th ed.). Pearson.
5. McLeod, I. (2017). Legal Method (10th ed.). Palgrave Macmillan.
6. Harris, P. (2019). An Introduction to Law (9th ed.). Cambridge University Press.
7. Keenan, D., & Riches, S. (2019). Smith & Keenan's English Law (18th ed.). Pearson.
8. Beatty, J. F., Samuelson, S. S., & Abril, P. S. (2021). Introduction to Business Law (7th ed.). Cengage Learning

English 2 (ENG2)

Semester 2

Unit: UT2

Credit: 2

Coeff: 1

Course objectives: Students should have the B2 level at the end of Semester 2

1. Speaking Skills
2. Listening Skills
3. Reading Skills
4. Writing Skills
5. Grammar and Vocabulary
6. Pronunciation

Teaching mode

eLearning (100%).

Assessment mode

Exam (100%).

Recommended Textbooks:

"English File Upper-Intermediate" by Christina Latham-Koenig and Clive Oxenden

Information Systems (IS)

Unit: UFC3

Semester 3
Credit: 4
Coeff: 2

Course Objectives:

This course provides students with a foundational understanding of Information Systems (IS) and their role in organizations. Students will explore various techniques for information representation, methods for capturing and controlling information, and comprehensive IS development methodologies. The course also integrates additional essential topics such as IS strategy and planning, ethics and security in IS, and emerging trends in the field.

Content:

Chapter 1: Introduction to Information Systems

1.1 Overview of Information Systems (IS)

- Definition and Importance of IS
- Components of IS: People, Process, Technology
- Role and importance of IS in organizations

1.2 Types of Information Systems

- Transaction Processing Systems (TPS)
- Management Information Systems (MIS)
- Decision Support Systems (DSS)
- Executive Information Systems (EIS)

1.3 Evolution of Information Systems

- Historical Development of IS
- Impact of IS on business processes and decision-making
- Trends in Information Systems (Cloud Computing, Mobile Computing, IoT)

Chapter 2: Information Representation Techniques

2.1 Data Representation

- Data vs. Information vs. Knowledge
- Binary and Decimal Systems
- Data Encoding Techniques

2.2 Information Modeling

- Importance of data models
- Conceptual, logical, and physical data models
- Flowcharts
- Entity-Relationship Diagrams (ERDs)
- Unified Modeling Language (UML) Basics

2.3 Advanced Representation Techniques

- Semantic Representation (Ontologies, Taxonomies)
- Knowledge Representation (Concept Maps, Frame-Based Systems)

Chapter 3: Information Capture and Control

3.1 Information Capture

- Input Devices and Techniques (Scanners, Sensors, RFID, OCR)
- Data Entry Methods (Manual Entry, Automated Capture)
- Data Quality and Validation (Importance, Techniques)

3.2 Information Control

- Access Control Mechanisms (Authentication, Authorization, Encryption)
- Audit Trails and Logging (Monitoring IS Activity)
- Information Lifecycle Management (Data Retention, Archiving, Deletion)

Chapter 4: IS Development Methodologies

4.1 Overview of IS Development

- Importance of Methodology in IS Development
- Traditional vs. Modern Approaches (Waterfall, Agile)
- Role of Prototyping (Importance of Iterative Design)

4.2 MERISE Methodology

- Introduction to MERISE (Origins and Evolution)
- Phases of MERISE (Conceptual, Organizational, Logical Levels)
- Case Studies Using MERISE

4.3 Structured Systems Analysis and Design Method (SSADM)

- Overview and Applications
- Key Stages in SSADM (Feasibility Study, Requirements Analysis, System Design)
- Comparing SSADM with MERISE

4.4 Object-Oriented Methodologies

- Introduction to Object-Oriented Analysis and Design (OOAD)
- Unified Process (UP): Phases and Activities
- Case Studies Using OOAD

4.5 Agile Methodologies

- Principles of Agile Development
- Scrum and Extreme Programming (XP): Key Roles, Artifacts, Ceremonies
- Challenges and Best Practices in Agile

4.6 Emerging IS Methodologies

- Model-Driven Architecture (MDA)
- Domain-Driven Design (DDD)
- Comparison with Traditional Methodologies

Chapter 5: Integration and Future Directions in Information Systems

5.1 Systems Integration and Interoperability

- Systems Integration Approaches (Middleware, Web Services, API Management)
- Challenges in Interoperability (Data Exchange Standards)
- Real-world Examples of Integrated IS

5.2 Future Trends in Information Systems

- Artificial Intelligence in IS
- Quantum Computing and its Impact on IS

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- Laudon, Kenneth C., & Laudon, Jane P. (2022). *Management Information Systems: Managing the Digital Firm* (17th ed.). Pearson.
- Alter, Steven. (2023). *Information Systems: Foundations of E-Business* (5th ed.). Pearson.
- Galliers, Robert D., & Leidner, Dorothy E. (2024). *Strategic Information Management: Challenges and Strategies in Managing Information Systems* (5th ed.). Routledge.

- O'Brien, James A., & Marakas, George M. (2023). *Introduction to Information Systems* (17th ed.). McGraw-Hill Education.
- Beynon-Davies, Paul. (2022). *Business Information Systems* (4th ed.). Palgrave Macmillan.
- Rainer, R. Kelly, Prince, Brad, & Cegielski, Casey. (2023). *Introduction to Information Systems: Enabling and Transforming Business* (8th ed.). Wiley.
- Hirschheim, Rudy, Heinzl, Armin, & Dibbern, Jens. (2024). *Information Systems Outsourcing: Enduring Themes, Emergent Patterns, and Future Directions* (3rd ed.). Springer.

Advanced Programming (AP)

Unit: UFC3

Semester: 3

Credit: 5

Coeff: 3

Course Objectives:

This course provides an in-depth exploration of advanced Python programming concepts. It covers efficient algorithms, data structures, object-oriented design, functional programming, and concurrency. It also touches on Python's applications in systems programming, web development, data analysis, and machine learning.

Content:

1. Advanced Python Data Structures

- Review of Core Python Data Types: Lists, sets, dictionaries, and tuples
- Collections Module: Namedtuples, defaultdicts, Counters, OrderedDicts
- Custom Data Structures: Implementing stacks, queues, trees, and graphs in Python
- Memory-efficient Structures: Arrays, dequeues, and generators

2. Object-Oriented Programming in Python

- Deep Dive into Classes and Objects: `__init__`, `__str__`, `__repr__`, `__del__`, etc.
- Inheritance, Encapsulation, and Polymorphism: Method resolution order (MRO), `super()`
- Abstract Classes and Interfaces: Using `abc` module
- Design Patterns in Python: Singleton, Factory, Observer, Decorator, etc.
- Metaprogramming: Dynamic creation of classes, attributes, and methods using `type()`, `getattr()`, `setattr()`

3. Functional Programming in Python

- Higher-Order Functions: `map()`, `filter()`, `reduce()`, lambda expressions
- Comprehensions: List, dictionary, and set comprehensions
- Decorators and Closures: Understanding decorators, function factories, `functools` module
- Immutable Data Structures: Namedtuples, frozensets
- Introduction to `itertools` and `functools`: Efficient iteration, memoization, and lazy evaluation

4. Concurrency and Parallelism in Python

- Multi-threading and Multi-processing: Using `threading`, `multiprocessing`, and `concurrent.futures`
- Asynchronous Programming: `asyncio`, `await`, event loops, coroutines
- Concurrency Control: Locking mechanisms, semaphores, and deadlock prevention
- Parallel Computation: Using Python with GPUs (CUDA, PyCUDA)

5. Python for Systems Programming

- File I/O and System Interaction: Working with files, directories, and the OS using `os` and `shutil` modules
- Network Programming with Python: Sockets, HTTP requests using `socket` and `requests` modules
- Inter-process Communication (IPC): Pipes, queues, and shared memory
- Signal Handling and Process Control: Managing processes, signals, and system interrupts

6. Memory Management and Performance Optimization

- Python Memory Model: Reference counting, garbage collection, and memory leaks
- Profiling and Optimization: Using `cProfile`, `line_profiler`, and memory profilers
- Optimizing with NumPy: Vectorized operations and array manipulation for performance
- Efficient Iteration and Lazy Evaluation: Using generators, coroutines, and the `yield` statement

Teaching Mode

Face-to-**face** mode (100%)

Assessment Mode

Exam (60%), Continuous assessment (40%)

Recommended Textbooks:

- "Fluent Python" by Luciano Ramalho
- "Python Cookbook" by David Beazley, Brian K. Jones
- "Effective Python: 90 Specific Ways to Write Better Python" by Brett Slatkin
- Official Python Documentation and Libraries

Microeconomics (Micro)

Unit: UFE3

Semester 3

Credit: 5

Coeff: 3

Course objectives

- Mastering basic economic concepts, as well as the theoretical framework of consumer and producer behavior, and the ability to use quantitative tools to scientifically measure and analyze rational behaviors of consumers and producers;
- The ability to make correct decisions through the economic logic of each economic problem related to consumer and producer actions;
- The ability to understand individual consumer and production behaviors, and to link actual behaviors with theoretical ones;
- Learning scientific economic culture and developing rational economic behavior based on the optimal achievement of individual goals.

Course Content:

- Introduction to Microeconomics
- Demand Theory (Consumer Behavior)
- Producer Behavior Theory
- Cost Theory
- Market System and Price Formation

Teaching mode

Face to face mode (100%)

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

1. Armand Colin(2018), la microéconomie en pratique, DUNOD, France.
2. BIEN Franck et MERITET Sophie, (2019), Microéconomie : Comportements des agents et concurrence parfaite, Pearson, France.
3. Christopher T.S. Ragan(2019) , Ragan Microeconomics, Pearson, Canada.
4. Hal R. Varian(2006), Introduction à la microéconomie, traduction de la 7^e édition américaine par Bernard THIRY, 6^e édition, De Boeck, Bruxelles, Belgique.
5. Martin Kolmar ; Magnus Hoffmann(2018), Workbook for Principles of Microeconomics,
6. Michael PARKIN,Robin BADE, Patrick GONZALES(2010), Introduction à la microéconomie moderne, Edition du renouveau Pédagogique Inc, 4^{ème} édition.
7. R Frank and E Cartwright(2016), Microeconomics and Behaviour (2nd ed), McGraw-Hill, Springer Texts in Business and Economics, ISBN 978-3-319-62661-1 .
8. VARIAN Hal, (2015), Introduction à la Microéconomie, De Boeck, 8^e edition, France.

Financial Accounting (FA)

Unit: UFE3

Semester 3

Credit: 4

Coeff: 2

Course objectives

The objective of this module is to provide an understanding of the role of accounting in the production of financial information, the fundamental aspects of financial statements (balance sheet, income statement, cash flow statement), the accounting cycle, and the essential accounting concepts. The ability to record simple transactions is essential for the accurate recording of assets, liabilities, income, expenses and flows.

Course Content:

- Introduction to financial accounting and statements
- Basic Concepts in financial accounting
- Main accounting books and recording process
- Accounting for current operations
- Accounting for Value added tax
- Accounting for non-current operations
- End of year work and closing accounts

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

1. Kieso, Donald E., Warfield, Terry D., Weigandt, Jerry J.. (2018). *Financial accounting: ifrs edition 3rd ed.* (3rd). New Jersey: John Wiley & Sons.
2. B. COLASSE, *Les fondements de la comptabilité*, La Découverte, Paris, 2007
3. G. LANGLOIS & M. FRIÉDÉRICH, *Comptabilité générale*, Foucher, 2005
4. Sahraoui Ali (2011) , *Comptabilité financière ; Cours et exercices corrigés*, Berti Edition, Alger.
5. Conseil National de Comptabilité (2014), *Manuel de comptabilité financière : conforme à la loi 07-11 du 25 novembre 2007 portant système comptable financier*, ENAG éditions, Alger.
6. المحاسبة العامة 1 بعدادش عبد الكريم الصفحات الزرقاء، الجزائر، 2019.
7. المحاسبة المالية وفق النظام المحاسبي المالي لعياشي نور الدين دار بهاء الدين للنشر والتوزيع، الجزائر، 2018.
8. المحاسبة المالية ومعايير المحاسبة الدولية محمد بوتين الصفحات الزرقاء، الجزائر، 2015.
9. نظام المحاسبة المالية: سير الحسابات وتطبيقها لخضر علاوي الصفحات الزرقاء، الجزائر، 2014.
10. المحاسبة العامة وفق النظام المحاسبي المالي (المخطط المحاسبي الجديد) عبد الرحمن عطية دار جيطلي للنشر والتوزيع، الجزائر، 2011.

Introduction to Management (IM)

Unit: UD3

Semester 3
Credit: 3
Coeff: 2

Course objectives

- - Enable the student to understand the importance of business administration for organizations and institutions in a practical and applied way, after having approached it in a theoretical introduction in the subject "Introduction to the Sociology of Organizations."
- Provide the student with basic knowledge of business administration on one hand, and prepare them for further courses and subjects in the Bachelor's program in the fields of economic and commercial sciences, and management sciences on the other. Specifically, the student will be able to:
 - Recognize the importance of business administration as a scientific method for managing any organization, regardless of its size.
 - Acquire fundamental knowledge of business administration.
 - Understand the importance of a systems approach in today's world, considering the organization as a system.
 - Explore modern trends in business administration.

Course Content:

1. General concepts of business administration
2. The classical school of management.
3. The human relations school.
4. Modern management schools.
5. Contingency theory
6. Modern trends in management
7. Basics of international business management.

Teaching mode

Face to face mode (100%)

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

1. Armand Colin(2018), la microéconomie en pratique, DUNOD, France.
2. BIEN Franck et MERITET Sophie, (2019), Microéconomie : Comportements des agents et concurrence parfaite, Pearson, France.
3. Christopher T.S. Ragan(2019) , Ragan Microeconomics, Pearson, Canada.
4. Hal R. Varian(2006), Introduction à la microéconomie, traduction de la 7^e édition américaine par Bernard THIRY, 6^e édition, De Boeck, Bruxelles, Belgique.
5. Martin Kolmar ; Magnus Hoffmann(2018), Workbook for Principles of Microeconomics,
6. Michael PARKIN,Robin BADE, Patrick GONZALES(2010), Introduction à la microéconomie moderne, Edition du renouveau Pédagogique Inc, 4^{ème} édition.
7. R Frank and E Cartwright(2016), Microeconomics and Behaviour (2nd ed), McGraw-Hill, Springer Texts in Business and Economics, ISBN 978-3-319-62661-1 .
8. VARIAN Hal, (2015), Introduction à la Microéconomie, De Boeck, 8^e édition, France.

Public Finance (PF)

Unit: UD3

Semester 3

Credit: 3

Coeff: 2

Course objectives

Some of the main objectives of this course include:

- The ability to analyze the components of public finance, such as expenditures and revenues.
- The ability to analyze the elements of the general budget and the exceptions it includes.
- The ability to analyze and discuss real-world issues related to public finance and offer solutions.
- Applying the knowledge gained to the Algerian economy and attempting to diagnose it.
- Providing the student with the necessary and essential information to understand all aspects of public finance, especially regarding the economic role of the state in allocation, government spending, etc. This will be achieved through an in-depth study of the following elements:
 - Public expenditures.
 - Public revenues.
 - The general state budget.

Course Content:

1. The emergence of public finance and its evolution in economic thought.
2. The conceptual framework of public expenditures.
3. The conceptual framework of public revenues.
4. The state's general budget and finance laws.
5. Budget oversight/general budget.
6. Public budget policies.
7. Local government budgets.
8. Public finance issues in Algeria: (public spending rationalization, double taxation, tax evasion, etc.)
9. Contemporary trends in public budgeting.
10. Public finance from an Islamic perspective.

Teaching mode

Face to face (100%)

Assessment mode

Final exam (100%)

Recommended Textbooks:

- Rosen, H. S., & Gayer, T. (2020). *Public finance* (11th ed.). McGraw-Hill Education.
- Gruber, J. (2019). *Public finance and public policy* (6th ed.). Worth Publishers.
- Musgrave, R. A., & Musgrave, P. B. (1989). *Public finance in theory and practice* (5th ed.). McGraw-Hill.
- Auerbach, A. J., & Feldstein, M. (Eds.). (1987). *Handbook of public economics* (Vol. 2). Elsevier.
- Hyman, D. N. (2014). *Public finance: A contemporary application of theory to policy*. Cengage Learning.

- أعرم يحيوي، (2005)، مساهمة في دراسة المالية العامة – النظرية العامة وفقا للتطورات الراهنة، دار هومة للطباعة والنشر والتوزيع، الجزائر.

- حسين مصطفى حسين، (2016)، المالية العامة، ط7، ديوان المطبوعات الجامعية، الجزائر.
- حياة بن إسماعيل، (2009)، تطوير إيرادات الموازنة العامة، إيتراك للطباعة والنشر والتوزيع، الطبعة الأولى، مصر.
- خيابة عبد الله، (2009)، أساسيات في اقتصاد المالية العامة، كلية الاقتصاد والتجارة والتسيير، جامعة محمد بوضياف المسيلة، الجزائر، الناشر مؤسسة شباب الجامعة، الإسكندرية، مصر.
- سوزي عدلي ناشد، (2009)، أساسيات المالية العامة، منشورات الحلبي الحقوقية، بيروت.
- عادل فليح العلي، (2007)، المالية العامة والتشريع الضريبي، الطبعة الأولى، دار حامد للنشر والتوزيع، عمان.
- علي زغود، (2006)، المالية العامة، ط02، ديوان المطبوعات الجامعية، الجزائر.
- لعمارة جمال، (2004)، منهجية الميزانية العامة للدولة في الجزائر، دار الفجر للنشر والتوزيع، الجزائر.
- محمد عباس محرز، (2003)، اقتصاديات المالية العامة، ديوان المطبوعات الجامعية، الجزائر.

Data Analysis 1 (DA1)

Unit: UM3

Semester 3

Credit: 3

Coeff:2

Requirement knowledge:

Descriptive statistics, probability, linear algebra

Course Objectives

Students will learn how to apply statistical inference techniques, linear regression, and ANOVA, and interpret their results. They will also begin the study of nonlinear and logistic regressions to prepare for more complex analyses.

Course Content: :

Chapter 1: Fundamental Statistical Concepts: Review of probability and distributions, descriptive statistics.

Chapter 2: Statistical Inference: Estimation techniques, hypothesis testing.

Chapter 3: Linear Regression and Modeling: Simple and multiple linear regression techniques, model diagnostics.

Chapter 4: Analysis of Variance (ANOVA): Principles and applications of ANOVA, post hoc tests for multiple comparisons.

Chapter 5: Introduction to Nonlinear and Logistic Regression: Basic principles and applications.

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

Reference books on standard statistics such as "Statistics" by Freedman, and online resources for statistical applications.

English 3 (ENG3)

Unit: UT3

Semester 3

Credit: 1

Coeff: 1

Course objectives:

To enrich the student's linguistic repertoire with specialized terms in the field of economic, commercial, and management sciences.

Course Content:

- Introduction to Economics
- Introduction to Commerce and Trade
- Introduction to Finance
- Introduction to Management
- Introduction to Accounting
- Introduction to Marketing

Teaching mode

Hybrid (20% face to face and 80% online)

Assessment mode

Final Exam (100%)

Recommended Textbooks:

- Bill Mascull (2006). Business Vocabulary in Use - Elementary. Cambridge University Press.
- Business English pods
- Handouts with texts and exercises to do.

Commercial Law (CL)

Unit :UT3
Semester 3
Credit: 2
Coeff: 1

Course objectives

-- Prepare students to better understand legal standards related to business, trade, and the economy, particularly project execution by selecting the appropriate company structure.

Course Content:

- Concept of commercial law and its sources
- The merchant and classification of commercial activities
- Commercial papers
- Commercial contracts
- The commercial establishment
- Commercial bonds
- Commercial companies and their classifications
- Bankruptcy and judicial settlement.

Teaching mode

Hybrid (20% face to face and 80% online)

Assessment mode

Final exam (100%)

Recommended Textbooks:

1. DABIN : La théorie du droit- 2ème ed. Paris1953.
2. Weill. A : Droit civil-Introduction générale-2ème ed.1970.
3. MARTY et Raynaud : Introduction générale à l'étude de droit-Paris1961.
4. Aubert.J.L: Introduction au droit et thèmes fondamentaux du droit civil-2èmeEd. Paris 1984-
5. SAVATIER : Du droit civil au droit public- 2ème ed.1950-
6. Burdeau (G) : Droit Constitutionnel et institutions politiques- 19eme Ed-Paris 1980.
7. Rivero (J) : Droit administratif-9eme Ed 1980.
8. Stéphanie(G.), Levasseur (G.) et Bouloc (B.) : Droit pénal général-11eme ed.1980
9. Vidal et Delvolé: Droit administratif- 7 eme Ed. 1980-
10. Chantebout (B.) : Droit constitutionnel et science politique- 3ème Ed 1980-
11. David (R.) et Jauffret-Spinosi (C.) : Les grands systèmes de droit contemporain-Ed. 1992-
- 12.Ripert (J.) : Traité élémentaire de Droit Commercial-Tom 1-L.G.D.G. -15eme Ed. Paris 1993
13. Hunelin : Droit Commercial Romain-1992-
14. Thaller : traité élémentaire de droit commercial- Vol 1-
15. Lyon-Can : Livre du centenaire du code civil-T1-Paris 1904-
16. Hamel (J.)-Lagarde (G.)- Jauffret (A.) : droit commercial- 2 emeEd. Tom 1- Dalloz-Paris 1998-
17. Jorges Ripert : Traité élémentaire de Droit Commercial-Tom 1-L.G.D.G- 15eme Ed- Paris 1993-
18. Joseph Escarra: Manuel de droit commercial-Paris 1948-

19. Yves Reinhard : droit commercial- 5eme Ed
20. J.Ripert-R.Roblot : traité élémentaire du droit commercial-T1-15eme Ed. G.D.J- Paris 1993
21. Alfred Jauffret : manuel de droit commercial- 3eme Ed. Librairie générale de droit et de jurisprudence-Paris 1970-
22. Jean Bernard Blaise: droit des affaires-commerçants-concurrence- distribution - 3eme Ed. L.G.D.J 2002-librairie générale de droit et de jurisprudence-F.J.A
23. Yves Reinhard : droit commercial-acte de commerce-commerçants- fonds de commerce- 5 eme Ed.Litec 1998

- نادية فوضيل، القانون التجاري الجزائري، الأعمال التجارية، التاجر، المحل التجاري، الطبعة التاسعة، ديوان المطبوعات الجامعية.2007.
- عباس حلمي "القانون التجاري والعقود والأوراق التجارية ديوان المطبوعات الجامعية الطبعة الثانية 1997
- عمار عمورة شرح القانون التجاري الجزائري دار المعرفة سنة 2000 الجزائر
- بلعيساوي محمد الطاهر الشركات التجارية النظرية العامة وشركات الأشخاص الجزء الأول دار العلوم 2011
- نادية فوضيل أحكام الشركة طبقاً للقانون التجاري الجزائري دار هومة 1999 الجزائر
- أحمد محرز: القانون التجاري الجزائري الجزء الثالث السندات التجارية دار النهضة العربية دون ذكر تاريخ النشر
- سميحة القليوبي: الشركات التجارية دار النهضة بيروت لبنان 2001
- زراوي صالح فرحة: الكامل في القانون التجاري الجزائري. دار النشر توزيع ابن خلدون وهران. 2003
- دليل تأسيس الشركات التجارية في القانون التجاري الجزائري. دار هومة 2014

Networks and Web Technologies (NWT)

Unit: UFC4
Semester 4
Credit:4
Coeff:2

Requirement knowledge:

Students should have a grasp of internet protocols, including HTTP/HTTPS, and an understanding of how data is transmitted over networks. Basic skills in web development, including knowledge of HTML, CSS, and JavaScript, are beneficial for understanding the structure and functionality of web applications.

Course Objectives

The primary objectives of a Networks and Web Technologies course are to equip students with a comprehensive understanding of the fundamental concepts and technologies that underpin modern networking and web development. Students will learn to design, implement, and manage computer networks, gaining hands-on experience with network configuration and troubleshooting.

Course Content:

Chapter 1: Introduction to Computer Networks

- Definition of computer networks
- Types of networks (LAN, WAN, MAN)
- Components of a network (servers, clients, routers, switches)
- OSI and TCP/IP reference models

Chapter 2: Network Protocols

- TCP/IP: operation and main protocols (TCP, UDP, IP)
- Transport protocols (TCP vs. UDP)
- Routing protocols (RIP, OSPF, BGP)
- Operation of the Ethernet protocol in the data link layer
- MAC addressing and operation of the Ethernet frame
- ARP (Address Resolution Protocol): resolving IP addresses to MAC addresses
- ICMP (Internet Control Message Protocol): managing control and diagnostic messages in IP networks

Chapter 3: Basic Web Technologies

- Operation of the World Wide Web
- HTTP and HTTPS: web communication protocols
- Structure of a URL

Chapter 4: Server-Side Web Development

- Introduction to server-side programming languages (PHP, Python, Node.js)
- Introduction to databases (MySQL, MongoDB)
- Implementation of GET and POST methods in form handling and HTTP requests

Chapter 5: Client-Side Web Development

- HTML and CSS: structuring and presenting web pages
- JavaScript: client-side programming language

- JavaScript frameworks (React, Angular, Vue.js)

Chapter 6: Network and Web Application Security

- Common threats and attacks
- Security mechanisms (firewalls, VPNs, encryption)
- Best security practices for web development

Chapter 7: Evolution of Web Technologies

- Web 2.0 and beyond: interactive and social applications
- Mobile web and responsive design
- Emerging trends (IoT, semantic web, AI in the web)
- Impacts of operations research on industries and economic sectors

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- "Computer Networking: A Top-Down Approach" (8th Edition) by James Kurose and Keith Ross (2021)
- "Web Development with Node and Express: Leveraging the JavaScript Stack" by Ethan Brown (2021)
- "Networking All-in-One For Dummies" by Doug Lowe (2020)
- "Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics" (5th Edition) by Jennifer Niederst Robbins (2018)
- "Modern Networking: An Introduction to Computer Networking" by Andrew McDonald (2022)

Databases (DB)

Unit: UFC4

Semester 4

Credit: 5

Coeff: 3

Course objectives

The course introduces foundational concepts in database management, including data modeling, relational database design, and SQL for data manipulation. Students learn to design normalized database schemas, ensure data integrity, and implement basic security measures. The course provides hands-on experience with database systems, preparing students for advanced database studies and practical applications.

Content:

Chapter 1: Introduction to Databases

- **Definition and Purpose:** What is a database? Why are databases important?
- **Database Applications:** Examples of database systems in real-world applications.
- **Database Management Systems (DBMS):** Overview of DBMS and its components.

Chapter 2: Entity-Relationship Model

- **Entities and Attributes:** Definition and examples.
- **Relationships:** Types of relationships (one-to-one, one-to-many, many-to-many).
- **ER Diagrams:** Symbols and conventions.

Chapter 3: Relational Database Design

- **Normalization:** Concepts of 1NF, 2NF, 3NF, and BCNF.
- **Denormalization:** When and why to denormalize.
- **Primary Keys, Foreign Keys, and Indexes:** Importance and usage.

Chapter 4: Structured Query Language (SQL)

- **Basics of SQL:** SELECT, INSERT, UPDATE, DELETE commands.
- **Joins:** Inner Join, Outer Join, Cross Join.
- **Subqueries and Nested Queries**
- **Aggregations and Grouping:** COUNT, SUM, AVG, etc.

Chapter 5: Database Integrity and Security

- **Constraints:** Primary key, Foreign key, Unique, Not null, Check.
- **Transactions and ACID Properties**
- **Database Security:** Users, Roles, Privileges, and Authentication.

Chapter 6: Advanced SQL

- **Complex Queries:** Advanced subqueries, CTEs (Common Table Expressions), and window functions.
- **Advanced Joins:** Self-joins, Natural joins, inner and outer join, and advanced use cases.
- **Set Operations:** UNION, INTERSECT, and EXCEPT.
- **Recursive Queries:** Working with hierarchical data.

Chapter 7: Query Optimization

- **Query Execution Plans:** Understanding and interpreting execution plans.
- **Indexing Strategies:** Types of indexes (B-tree, hash, bitmap) and their impact on performance.
- **Cost-Based Optimization:** How DBMS chooses the best execution plan.
- **Materialized Views:** Usage, benefits, and maintenance.

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- Fundamentals of Database Systems 7th Edition, by Ramez Elmasri, Shamkant Navathe
- Database Systems: The Complete Book 2nd Edition, Hector Garcia-Molina , Jeffrey Ullman, Jennifer Widom

Macroeconomics (Macro)

Unit: UFE4

Semester 4

Credit: 5

Coeff: 3

Course objectives

This course helps students understand the theoretical aspects of macroeconomic phenomena. It enables them to comprehend the economic modeling of these phenomena and economic behavior through numerical and mathematical models. Additionally, students will gain a solid understanding of the economic analysis of mathematical models that represent theoretical frameworks and connect them to real-world scenarios, particularly within the context of classical and Keynesian schools of thought.

By studying the course content, the student will be able to:

- Understand macroeconomic aggregates and indicators and how to measure them.
- Distinguish between different economic activities of economic agents at the macro level.
- Master the basic concepts of macroeconomic analysis through the study of macroeconomic theory (classical and Keynesian theory).
- Understand and analyze general economic equilibrium in both closed and open economies.
- To analyze macroeconomic phenomena such as unemployment, inflation, economic growth, and business cycles.

Course Content:

1. Introduction to macroeconomic theory (concepts and terminology).
2. Measuring the level of economic activity.
3. The classical model of general economic equilibrium.
4. The Keynesian model in a closed open economy
5. The IS-LM model.
6. Unemployment and inflation.
7. Economic growth and business cycles.

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- Mankiw, N. G. (2020). Principles of macroeconomics. Cengage learning.
- Blanchard, O. (2017). *Macroeconomics* (7th ed.). Pearson.
- Dornbusch, R., Fischer, S., & Startz, R. (2018). *Macroeconomics* (12th ed.). McGraw-Hill Education.
- Rode, S. (2012). Advanced macroeconomics. Denmark: Ventus Publishing.
- Romer, D. (2011). Advanced macroeconomics fourth edition. University of California. Berkeley.

Introduction to Management Accounting (IMA)

Unit: UFE4

Semester 4

Credit: 4

Coeff: 2

Course objectives

The main objective of the course is to enable students to use accounting information as a management tool. This course introduces the student to the basic elements of management accounting by explaining the meaning and ways of allocating costs to products or services, as well as the main approaches used in traditional or modern cost accounting.

After completing this course, the student will be able to

- Calculate costs and determine the analytical results using different methods.
- Select the most appropriate costing method.
- Use a variety of costing methods for different organisational objective

Course Content:

- An introduction to management accounting
- Inventories and inventory valuation methods (CMUP, FIFO, LIFO...)
- Full cost method
- Variable cost method
- Absorption costing
- Standard costing and Variances analysis
- Marginal cost method
- ABC- Activity-Based Costing Method
- Target costing method

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

Jerry J. Weygandt, Paul D. Kimmel, Donald E. Kieso. (2017). *Managerial Accounting: Tools for Business Decision Making (Wiley)* (8th edition). : Wiley.

Drury C (2015). *Management and cost accounting*. Ninth edition. Andover: : Cengage Learning.
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Lanen WN, Anderson SW, Maher M (2011). *Fundamentals of cost accounting*. 3rd ed. NewYork : McGraw-Hill Irwin

Atrill P, McLaney EJ (2015). *Management accounting for decision makers*. 8th edition. Harlow : : Pearson Education.

Ray H. Garrison, Theresa Libby, Alan Webb (2016) *Fondements de la comptabilité de gestion* Chenelière, Canada.

Louis Dubrulle, Didier Jourdain, Roger Servan (2013) Comptabilité analytique de gestion Dunod, France, 6 -ème édition.

Francis Grandguillot, Béatrice Grandguillot (2021), La comptabilité de gestion, Gualino Editeur, 22 -ème édition.

Business Information Systems (BIS)

Unit: UD4

Semester 4

Credit: 3

Coeff: 2

Course objectives

Through this course, the student will be able to become familiar with the various basic concepts of information system and information, as well as the basics of the information system and its importance in the organisation, its various types from different perspectives, and how it can affect the decision-making process and the achieving of competitive advantage.

Course Content:

- Introduction to Systems, Information and Knowledge
- Nature of Management Information Systems
- The resources, components and functions of management information systems
- Types of computer-based management information systems
- Management information systems according to levels of management
- Functional information systems (finance and accounting, production, marketing, human resources...)
- Integrated management information systems (ERP)
- Operations and warehouse management
- Customer relationship management

Teaching mode

Face to face (100%)

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- ماركليود رايموند (1990)، نظم المعلومات الإدارية ج+1 ج2، تعريب سرور علي سرور وعاصي الحمادي، دار المريخ، الرياض، السعودية.
- سعد غالب ياسين، (2005) نظم المعلومات الإدارية وتكنولوجيا المعلومات، دار اليازوري العلمية عمان، الأردن .
- عامر ابراهيم قنديلجي، علاء الدين عبد القادر الجناحي، نظم المعلومات الإدارية، دار المسيرة للنشر والتوزيع، عمان، الأردن، .
- Laudon, Kenneth C., Laudon, Jane P. (2020). Management Information Systems : Managing the Digital Firm (16). Harlow : Pearson Education.
- Vidal Pascal, Petit Vincent (2009), Systèmes d'informations organisationnels, 2ème édition, Pearson Education Ins, Paris,.
- Baltzan, Paige (2008), Business driven information systems. Toronto: McGraw-Hill Ryerson,.
- Michel Kalika, Frantz Rowe, Bernard Fallery, Robert Reix, Jean-Loup Richet (2023), Systèmes d'information et management Le manuel de référence sur les SI, 8^{ème} édition, Vuibert Gestion. Paris

Data Analysis 2 (DA2)

Unit: UM4

Semester 4

Credit: 3

Coeff: 2

Requirement knowledge:

Advanced Statistics: Data Analysis 1

Course Objectives

Students will be trained to use advanced regression techniques, time series data analysis, dimensionality reduction, and classification. They will also learn advanced clustering methods and sophisticated visualization techniques to interpret complex data.

Course Content:

- **Chapter 1:** Advanced regression techniques: Polynomial regression, spline, quantile regression.
- **Chapter 2:** Dimensionality reduction and exploration methods: PCA, factor analysis.
- **Chapter 3:** Advanced models for dependent data: Time series, duration models.
- **Chapter 4:** Advanced classification techniques: Discriminant analysis, SVM.
- **Chapter 5:** Advanced clustering methods: K-means, hierarchical clustering, DBSCAN.
- **Chapter 6:** Advanced data visualization: Visualization techniques, software tools, interactive visualizations.

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

Reference books on advanced statistics, specialized online courses, and statistical software like R and Python.

Financial Mathematics (FM)

Unit: UM4

Semester 4

Credit: 3

Coeff: 2

Course objectives

This course aims to enable students to master various financial calculations and mechanisms used in commercial banks and other financial institutions related to loans, deposits, and loan repayments. These are essential quantitative tools for managers to make optimal decisions. The course also aims to provide detailed knowledge of different types of interest, methods of calculating interest and discounts, amortization of both lump-sum and installment loans, types of payments, and the criteria used in evaluating investment projects.

Course Content:

1. Introduction to macroeconomic theory (concepts and terminology).
2. Measuring the level of economic activity.
3. The classical model of general economic equilibrium.
4. The Keynesian model in a closed open economy
5. The IS-LM model.
6. Unemployment and inflation.
7. Economic growth and business cycles.

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- Boissonnade, M., & Fredon, D. (2016). Mathématiques financières-5e éd: en 22 fiches. Dunod.
- Frensidy, B. (2008). Financial mathematics. Penerbit Salemba.
- Ginglinger, E., & Hasquenoph, J. M. (2006). Mathématiques financières (No. halshs-00162677).
- Hamini Allal. (2006). Mathématiques financières. Tome 1. 3^{ème} édition. OPU. Alger.
- Roberts, A. J. (2009). Elementary calculus of financial mathematics (Vol. 15). SIAM.
- Masiéri W., 2001, Mathématiques financières, Dalloz.
- Piermay M., Lazimi A. et Hereil O., 1998, Mathématiques financières, Economica.
- الشقيري نوري موسى. (2009). الرياضيات المالية، دار المسيرة للنشر والتوزيع، عمان.
- منصور بن عوف عبد الكريم. (2016). مدخل إلى الرياضيات المالية، ديوان المطبوعات الجامعية، الجزائر.

English4 (ENG4)

Unit: UT4

Semester 4

Credit: 1

Coeff: 1

Course objectives

This teaching allows the student to acquire the necessary skills in scientific English, such as writing a summary note in English and presenting it at the end.

Course Content:

1. Effective Writing Skills
2. Understanding and Applying Vocabulary
3. Remedial English Grammar and Usage
4. Preparing for a Career
5. Presentation Skills
6. Business Communication
7. Soft Skills for Leadership and Team Management

Teaching mode

Hybrid (20% face to face and 80% online)

Assessment mode

Final Exam (100%)

Introduction to Marketing (IMark)

Unit: UT4

Semester 4

Credit: 2

Coeff: 1

Course objectives

The Introduction to Marketing course is related to information technology and allows students to become familiar with the basic principles and concepts of marketing, as well as to understand the main areas where marketing practices are applied.

Course Content:

- The nature of marketing and the evolution of its philosophy
- Study and analysis of the marketing environment
- Study of consumer behavior
- The nature of the market and the process of targeting it
- Marketing information systems
- The marketing mix (Product strategy, Pricing strategy, Distribution strategy, Promotion strategy, etc.)
- Modern marketing practices

Teaching mode

Hybrid (20% face to face and 80% online)

Assessment mode

Final Exam (100%)

Recommended Textbooks:

- Boissonnade, M., & Fredon, D. (2016). Mathématiques financières-5e éd: en 22 fiches. Dunod.
- Frensidy, B. (2008). Financial mathematics. Penerbit Salemba.
- Ginglinger, E., & Hasquenoph, J. M. (2006). Mathématiques financières (No. halshs-00162677).
- Hamini Allal. (2006). Mathématiques financières. Tome 1. 3^{ème} édition. OPU. Alger.
- Roberts, A. J. (2009). Elementary calculus of financial mathematics (Vol. 15). SIAM.
- Masiéri W., 2001, Mathématiques financières, Dalloz.
- Piermay M., Lazimi A. et Hereil O., 1998, Mathématiques financières, Economica.
- الشقيري نوري موسى. (2009). الرياضيات المالية، دار المسيرة للنشر والتوزيع، عمان.
- منصور بن عوف عبد الكريم. (2016). مدخل إلى الرياضيات المالية، ديوان المطبوعات الجامعية، الجزائر.

Business Intelligence and Big Data (BIBD)

Unit: UFC5

Semester:5

Credit:4

Coeff:2

Course Objectives:

This course introduces Business Intelligence (BI) and its role in supporting decision-making within organizations. Students will learn how to collect, process, and analyze large datasets using BI and Big Data tools. The course emphasizes data visualization, reporting, data-driven decision-making, and the integration of Big Data with BI systems. Topics include data warehousing, data mining, dashboards, predictive analytics, and Big Data technologies.

Content:

Chapter 1: Introduction to Business Intelligence

- Overview of Business Intelligence
- Role of BI in organizations
- BI vs. Data Science vs. Analytics

Chapter 2: BI Architecture and Components

- BI system architecture
- Data sources and data integration
- ETL processes (Extraction, Transformation, Loading)

Chapter 3: Data Warehousing and Big Data Integration

- Concepts of data warehousing
- Design and implementation of data warehouses
- Star and snowflake schemas
- Introduction to Big Data (characteristics: volume, variety, velocity, veracity)
- Integration of Big Data with BI

Chapter 4: Data Mining, Analytics, and Big Data Processing

- Introduction to data mining techniques
- Classification, clustering, and association
- Applications of data mining in BI
- Big Data analytics (MapReduce, Hadoop, Spark)

Chapter 5: BI and Big Data Tools

- Overview of popular BI tools (e.g., Tableau, Power BI, QlikView)
- Introduction to Big Data tools (e.g., Hadoop, Spark)
- Hands-on training with selected BI and Big Data tools
- Creating reports and dashboards from large datasets

Chapter 6: Reporting, Performance Management, and Big Data

- Creating and managing reports
- Key Performance Indicators (KPIs)
- Scorecards and balanced scorecards
- Reporting on Big Data insights

Teaching Mode

Face-to-face mode (100%).

Assessment Mode

Exam (60%), Continuous assessment (40%)

Recommended Textbooks:

- "Business Intelligence: A Managerial Perspective on Analytics" by Ramesh Sharda, Dursun Delen, and Efraim Turban
- "Business Intelligence Guidebook: From Data Integration to Analytics" by Rick Sherman

- "Successful Business Intelligence: Unlock the Value of BI & Big Data" by Cindi Howson
- "Big Data: Principles and Best Practices of Scalable Real-Time Data Systems" by Nathan Marz and James Warren

Data Science and Artificial Intelligence (DSAI)

Unit: : UFC5

Semester 5

Credit: 5

Coeff: 3

Requirement knowledge:

Programming in Python, basic statistics.

Course Objectives

Students should master the complete process of data science, from data collection to advanced data analysis. They will learn to apply machine learning and deep learning techniques in practical projects while considering the ethical aspects related to the use of AI.

Course Content:

- **Chapter 1:** Introduction to Data Science: Definition, process.
- **Chapter 2:** Data Cleaning and Preparation: Handling missing data, normalization.
- **Chapter 3:** Data Exploration and Statistics: Exploratory analysis, correlation vs. causation.
- **Chapter 4:** Advanced Machine Learning: Complex predictive models, validation.
- **Chapter 5:** Deep Learning Techniques: Concepts and applications.
- **Chapter 6:** AI and Ethics in Data Science: Ethical issues, regulatory frameworks.
- **Chapter 7:** Data Science Project: Implementing a project, communicating results.

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

Reference books on data science, documentation for AI frameworks such as TensorFlow and PyTorch, online case studies.

Financial Management and Analysis (FMA)

Unit :UFE5

Semester 5

Credit: 4

Coeff: 2

Course objectives

- Identify the basic concepts involved in the financial management of an organisation.
- Distinguish between the functions of the manager and the financial manager.
- Understand the progression of financial flows within the basic cycles.
- Assess the financial needs of an organisation and identify the different sources of finance available to the organisation and the cost of obtaining them.
- Read financial statements and identify sources of financial information using simple financial analysis and diagnostic techniques.

Course Content:

- An Overview of Financial Management.
- The financial function (concept, characteristics, objectives, tasks...).
- The relationships between the economic organisation and the financial environment.
- Basic cycles in the organisation (operating cycle, investment cycle, financing cycle)
- Sources of funding for the economic organisation (funding policy, internal, external, new sources of funding, cost of funding sources...)
- Financial information of the firm (sources of financial information, financial reading of financial statements...)
- Financial analysis tools (vertical analysis, horizontal analysis, ...)
- Introduction to financial analysis ratios (definition, importance, types of ratios)
- Other issues related to financial management

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- Brealey, R.A. et Myers, S.C. : Principles of corporate finance, McGraw-Hill, 11e éd., Global Edition, 2013.
- Berk, Jonathan & DeMarzo, Peter & Harford, Jarrad & Ford, Guy & Mollica, Vito. (2017) Fundamentals of corporate finance. Melbourne, VIC : Pearson Australia
- Jonathan Berk & Peter De Marzo, Finance d'entreprise, Person Education, paris, 2008.
- Patrick Toppsacalian & Jacques Teulié ; Finance, 7e édition, Vuibert, 2015.
- Jacqueline Delahaye & Florence Delahaye, Finance entreprise, Manuel et applications DCG6, 2ème édition, Dunod, Paris, 2009.
- Gerard Melyon, Gestion Financière, collection Lexifac, Breal, 1999.
- Bodie Zvi, Merton Robert & Thibierge Christophe, Finance, 3e édition, Pearson, 2011.
- Ross, S.A., Westerfield, R.W. et Jaffe, J.F. : Corporate finance, Irwin, 10e éd., 2013.
- Vernimmen, P., Quiry, P. et Le Fur, Y. : Finance d'entreprise, Dalloz, 2013.

إلياس بن ساسي ويوسف قريشي، التسيير المالي 1 و2، دار وائل للنشر، 2016
خميسي شريحة، (2011) : التسيير المالي للمؤسسة، دار هومة، الجزائر
مليلة زغيب، ميلود بوشنقير، (2010) : التسيير المالي حسب البرنامج الرسمي، ديوان المطبوعات الجامعية، الجزائر

. ديوان المطبوعات الجامعية SCF نبيل بوفليح، (2019) : دروس وتطبيقات في التحليل المالي حسب
منير ابراهيم هندي (2007)، الإدارة المالية مدخل تحليلي معاصر، الطبعة السادسة، المكتب العربي الحديث، الإسكندرية، مصر
عبدالغفار حنفي (2006)، الإدارة المالية المعاصرة: مدخل اتخاذ القرارات، الدار الجامعية، الإسكندرية، مصر

Management Control (MC)

Unit: UFE5

Semester 5

Credit: 5

Coeff: 3

Course objectives

Mastering management control to evaluate the performance of the organization, take corrective actions, and ensure the efficient management of available resources. This is achieved by:

- Understanding the basic concepts of management control and the tools used.
- Developing the ability to conduct studies, evaluations, performance monitoring, and coordination within the organization.
- Acquiring the capacity to offer advice, guidance, and assist in decision-making to meet the organization's set objectives.
- Mastering the principles of planning and preparing different types of organizational budgets.

Course Content:

- 1. Introduction to management control
2. Sales budget
3. Production budget
4. Investment budget
5. Procurement budget
6. Treasury management
7. Dashboard

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- Anthony, R. N., Govindarajan, V., Hartmann, F. G. H., Kraus, K., & Nilsson, G. (2014). Management control systems (1st European ed.). McGraw-Hill Education.
- Merchant, K. A., & Van der Stede, W. A. (2017). Management control systems: Performance measurement, evaluation and incentives (4th ed.). Pearson.
- Horngren, C. T., Sundem, G. L., & Stratton, W. O. (2012). Introduction to management accounting (16th ed.). Pearson.
- Kaplan, R. S., & Norton, D. P. (1996). The balanced scorecard: Translating strategy into action. Harvard Business Press.
- Gerd Peters. (2008). Contrôle de Gestion : Méthode et technique principales. Versus verlag.
- Hélène Ioning et al. (2013). Contrôle de gestion: des outils de gestion aux pratiques organisationnelles. Dunod, Paris.
- Merchant, K. A., & Van der Stede, W. A. (2007). Management control systems: performance measurement, evaluation and incentives. Pearson education.

Business Taxation (BT)

Unit: UD5

Semester 5

Credit: 3

Coeff: 2

Course objectives

The course offers a detailed analysis of the various tax transactions of the institution according to the Algerian tax law, as well as the methods of calculating the most important taxes and fees. It provides a basic analysis of taxation on the business activities of any business organization from a sole trader to a partnership and a company and some of the latest international developments and trends on taxation.

Course Content:

- Principles of taxation
- Imposition of Income tax
- Taxation of Individuals and Partnership
- Taxation of Companies
- Other taxes
- Tax planning
- New Trends in Taxation

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- حميد بوزيدة (2010)، جباية المؤسسات، الطبعة الثانية، ديوان المطبوعات الجامعية، الجزائر،
- رضا خلاصي (2014)، شذرات النظرية الجبائية، دار هومة، الجزائر.
- سعيد علي العبيدي (2011)، اقتصاديات المالية العامة، الطبعة الأولى، دار دجلة، الأردن
- طفي شعباني (2017)، جباية المؤسسات، دروس وتمارين محلولة، الصفحات الزقاء، الجزائر،
- محمد حمو، منور اوسرير (2009)، محاضرات في جباية المؤسسة، الطبعة الاولى، مكتبة الشركة الجزائرية، الجزائر.
- محمد عباس محرز (2004)، اقتصاديات الجباية والضرائب، دار هومة، الجزائر
- محمد عباس محرز، اقتصاديات الجباية و الضرائب، دار هومه، 2003
- وزارة المالية، قانون الضرائب المباشرة و الرسوم المماثلة، ديوان المطبوعات الجامعية، 1997.
- Maherzi, M. A. (2010). Introduction à la Fiscalité. ITCIS Edition.
- Tessa, A., & Hammadou, I. (2010). Fiscalité De L'entreprise: Cours Et Applications. Pages Bleues.
- Singhania, V.K. and Singhania, Monica, (2019). Income Tax Including GST, Taxmann.

Cybersecurity (CS)

Unit: UM5

Semester 5

Credit: 3

Coeff:2

Requirement knowledge:

Recommended prerequisite knowledge for a Cybersecurity course includes a foundational understanding of computer systems and networks, as well as familiarity with operating systems such as Windows and Linux. Students should have basic programming skills, particularly in languages like Python or Java, to understand scripting and automation tasks.

Course Objectives

This course is intended for students pursuing a career in fields related to cyber-security. Since cryptography is present in everyday life (using smartphones, sending messages, paying with a credit card, ...), this course will cover classical cryptography algorithms, Symmetric and asymmetric cryptography, hash functions, digital signatures and other fundamental cryptographic protocols.

Course Content:

Part I

Chapter 1: Introduction to Cybersecurity

- Definitions and basic concepts
- Importance of Cybersecurity in the modern world
- Common online threats and attacks

Chapter 2: Basic Principles of Cybersecurity

- Confidentiality, integrity, and availability (CIA) of data
- Security models (Bell-LaPadula, Biba, etc.)
- Information security principles (ISO 27001)

Chapter 3: Network and Operating System Security

- Network threats and attacks (denial of service attack, brute force attack, etc.)
- Firewalls and packet filtering
- Wireless security (Wi-Fi, WPA2, etc.)
- VPN (Virtual Private Network)
- Operating system security (Windows, Linux, macOS)
- Patch and update management
- Access control mechanisms (ACL, permissions, etc.)

Chapter 4: Application Security

- Secure application development
- SQL injection, XSS, CSRF, and other common vulnerabilities
- Penetration testing and vulnerability analysis

Part II

Chapter 5: Cryptography

- Introduction and terminology
- Mathematical background
 - GCD, Modulo, Modular inverse
- Cryptographic protocols

- Symmetric cryptography:
- Caesar, Vigenère, Substitution, Hill, Affine, ...
- Public-key cryptography: RSA, Elgamal, ...
- Hybrid cryptography
- Hash functions: MD4, MD5, SHA-1, ...
- Cryptanalysis: Brute force attack, Frequency analysis
- Key exchange algorithms:
 - Diffie-Hellman
 - Shamir's Three-pass protocol
- Digital signature
- Blockchain

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- "Handbook of applied cryptography". Menezes Alfred J., Paul C. Van Oorschot and Scott A. Vanstone. CRC press, 2018.
- "Applied cryptography: protocols, algorithms, and source code in C". Schneier Bruce. 1996.

Mobile application development (MAD)

Unit: UM5

Semester 5

Credit: 3

Coeff: 2

Requirement knowledge:

- Basic concepts of object-oriented programming.
- Embedded systems
- Network programming

Course Objectives

Enables students to acquire the skills needed to conceptualize, program, test and troubleshoot a mobile application.

Course Content:

CHAPTER I. Introduction to mobile systems

1. Basic notions and concepts.
2. Areas of application,
3. Operating and development constraints
4. Mobile system architecture
5. Overview of the main mobile systems

CHAPTER II. Programming languages for mobile application development

1. Mobile development environments.
2. Mobile application types
 - a. Native Applications
 - b. Web applications
 - c. Hybrid applications
3. Mobile development languages
 - a. Objective-C
 - b. Swift
 - c. Kotlin
 - d. Java
 - e. React Native (JavaScript)
 - f. C++
 - g. C#

CHAPTER III. Android mobile application development

1. SDK Android
2. Android application components
3. Activity lifecycle
4. Concept of resources

- a. XML language
 - b. Different types of resources
 - c. Retrieving a resource (The R class)
 - d. XML file handling
5. Creation of graphic interfaces
 6. Advanced concepts
 - a. AndroidManifest.xml
 - b. Communication between components
 - c. Data storage
 - d. Databases (SQLite)
 - e. Thread management
 - f. Services
 - g. Sharing content between applications
 - h. Creating an AppWidget
 7. Exploiting Android features
 - a. Network connectivity
 - b. Learn to draw
 - c. Location and maps
 - d. Telephony
 - e. Multimedia
 - f. Sensors
 8. Publish an Android app

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- Florent Garin, ANDROID Développer des applications mobiles pour les Google Phones, Dunod 2009.
- Sylvain HEBUTERNE, Guide de développement d'applications Java pour Smartphones et Tablettes, 3e édition, 1er août 2016 ENI.
- Nazim BENBOURAHILA - Serge UNGAR, Des fondamentaux du développement Java à la mise en pratique d'une application sous Android, ENI - 1re édition, 9 avril 2014.
- Mathias Seguy, Android, A Complete Course, From Basics To Enterprise Edition, android2ee - 1re édition, 15 avril 2011.

Monetary and Financial Economics (MFE)

Unit: UT5

Semester 5

Credit: 2

Coeff: 1

Course objectives

To familiarize students with the principles of monetary and financial economics, enabling them to understand the nature of money and its role in the economy. Students will also explore the institutions responsible for creating and issuing money, as well as the various components of the monetary and financial markets. This will provide a true picture of the role that money, monetary institutions, and financial markets play and the benefits they offer to individuals, businesses, and the government sector.

Course Content:

- Conceptual introduction to money
- Monetary systems
- Monetary theories
- Financial and banking institutions
- Money creation and the money multiplier
- Inflation and monetary policy
- Financial intermediation
- The money market
- Capital market

Teaching mode

Hybrid (20% face to face and 80% online)

Assessment mode

Final Exam (100%)

Recommended Textbooks:

1. Marc Mantoussé, Economie monétaire et financière, Edition Leila Moussouni, 2000.
2. 2-Mongi Smaili, Cours d'économie monétaire, Institut Supérieur de gestion de Tunis-Tunisie, 2009.
3. 3-Mounir Smida, L'économie monétaire pas à pas, Université Virtuelle de Tunis et Cours publiés en France, 2007.
4. 4-Naas Abdelkrim, Le système bancaire Algérien de la décolonisation à l'économie de marché, Maison neuve & la rose, Paris, France, 2003.
5. 5-Ammour Benhalima, Le système bancaire en Algérie, édition Dahleb,
6. Algérie, 1996.
7. 6-Emmanuel Nyahoho, Finances internationales théorie, politique, et pratique, 2ème édition, Presse de l'université du QUEBEC Canada, 2002.
8. 7-Eric Lamarque, Vincent Maymo, Economie et gestion de la banque, édition DUNOD, Paris, 2015.
9. 8-KPMG, Guide des banques et des établissements financiers, Edition KPMG, Algérie, 2012.
10. 9-Paul Jaques Lehman, Economie des marchés financiers, 2ème édition
11. Boeck Supérieure, Belgique, 2014 .
12. 10-Sophie Brana, Michel Cazals, Pascal Kauffeman, Monnaie ,Banques et
13. fiance, 5ème édition, DUNOD, Paris ,2016.
14. 11-Thierry Bechu, Economie et marchés financiers, perspectives 2010-2020

15. édition d'organisation groupe Eyrolles, Paris, 2010.
16. 12-J.P.Parat, Monnaie, institution financière et politique monétaire, Economica, Paris, 1982.

International Economics and Trade (IET)

Unit: UT5

Semester 5

Credit: 1

Coeff: 1

Course objectives

The student is expected to understand the following:

- Analyze international transactions (economic, commercial, monetary, and financial) and their settlement mechanisms.
- Manage related risks.
- Understand the global trade system and international trade policies.

Course Content:

1. Concept, topics, and evolution of international economics.
2. Introduction to international trade and international finance.
3. Theories explaining international exchange and international trade theories.
4. International regional blocs.
5. The World Trade Organization and the new trade system.
6. Balance of payments.
7. Exchange rate systems.
8. Foreign exchange markets.
9. E-commerce.

Teaching mode

Hybrid (20% face to face and 80% online)

Assessment mode

Final Exam (100%)

Recommended Textbooks:

- . Krugman, P., Obstfeld, M., & Melitz, M. *International Economics: Theory and Policy*, Pearson, 2018.
- 2. Alibert, R. (1978). *Exchange Risk and Corporate International Finance*. MacMillan, London.
- 3. Bekaert, G., & Hodrick, R. (2017). *International Financial Management* (3rd ed.). Cambridge University Press, UK.
- 4. ICC. (2007). *Uniform Customs and Practice for Documentary Credits* (ICC Publication). Paris.
- 5. Krugman, P., Obstfeld, M., & Melitz, M. (2018). *International Finance* (11th ed.). Pearson Education, London.

E-Commerce (EC)

Unit: UFC6

Semester 6

Credit: 5

Coeff:3

Requirement knowledge:

Basic web development Skills

Course Objectives

The course objective is to examine the history and evolution of electronic commerce and analyze its impact in business today. You will examine current e-commerce systems, software, and issues in the field.

Course Content:

- Origins of E-Commerce
- Technological Foundations of E-Commerce
- E-Commerce Software & Applications
- Online Retailing
- Selling to Consumers Online
- Selling to Businesses Online
- Revenue in E-Commerce
- Digital Marketing & E-Commerce
- Payment Systems for E-Commerce
- Internet & Information Security
- Legal Issues in E-Commerce
- Ethical Issues in E-Commerce

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- E-Business and E-Commerce Management, by Dave Chaffey FT-Prentice Hall, (Latest Edition)
- Dave Chaffey, Strategy, Implementation and Practices, FT-Prentice Hall, (Latest Edition)
- Ian Chasten, E-Marketing Strategy, McGraw-Hill, (Latest Edition)
- Electronic Commerce. A Managerial Perspective by Efraim Turban David (Latest Edition)
- One-Click: Jeff Bezos and the Rise of Amazon.com by Richard I. Brandit 2018 Edition
- SEO 2018 by Adam Clarke Harper Collins Edition 2019

Specialized Software in Economy (SSE)

Unit: UFC6

Semester: 6
Credit: 4
Coeff: 2

Course Objectives:

This course introduces students to specialized software used in economy research. It covers tools for qualitative and quantitative data analysis, as well as methods for visualizing and interpreting data. Students will gain hands-on experience with software that enhances research in fields such as economy, commerce and marketing.

Content:

1. Introduction to Specialized Software in Economy

- Overview of data types in economy (qualitative vs. quantitative)
- Introduction to software applications in research
- Importance of software in modern research methodologies

2. Qualitative Data Analysis Tools

- **NVivo**: Managing qualitative data, coding, text analysis, and report generation
- **ATLAS.ti**: Qualitative data coding and analysis
- Case studies: Analyzing interviews, focus group discussions, and ethnographic data

3. Quantitative Data Analysis Software

- **SPSS**: Statistical analysis, surveys, regression analysis, and hypothesis testing
- **R**: Statistical computing for complex data analysis in economy
- **STATA**: Econometric analysis for social sciences

4. Mixed-Methods Software

- **MAXQDA**: Integrating qualitative and quantitative data analysis
- Combining qualitative insights with quantitative metrics

5. Survey and Questionnaire Tools

- **Qualtrics**: Designing and distributing surveys, analyzing responses
- **Google Forms**: Simple survey tools for economy research
- Using tools to gather data from diverse populations

Teaching Mode

Face-to-face mode (100%).

Assessment Mode

Exam (60%), Continuous assessment (40%)

Recommended Textbooks:

- Bazeley, P., & Jackson, K. (2013). *Qualitative Data Analysis with NVivo*.
- Pallant, J. (2020). *SPSS Survival Manual*.
- Luke, D. A. (2015). *A User's Guide to Network Analysis in R*.

Wage Management (WaM)

Unit: UFE6

Semester 6

Credit: 4

Coeff: 2

Course objectives

Understand the wage system ;

- Differentiate between job evaluation methods as a basis for designing a wage structure ;
- Manage the wage bill ;
- Focus on modern methods of wage payment

Course Content:

1. Introduction to Human Resource Management
2. The nature of the wage system (definition of wages, objectives of the wage system, wage classifications)
3. Job evaluation for wage determination (job evaluation methods: descriptive, quantitative)
4. Using job classification to design a wage structure (determining wage value monetarily)
5. Managing and controlling the wage bill
6. Wage payment systems (based on units produced, time-based, competency-based)
7. Wage slip analysis (example of a wage slip)
8. Automated wage management

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

1. أحمد ماهر ، (2010)، نظم الأجور والتعويضات: دليلك إلى الرواتب والحوافز ومزايا وخدمات العاملين، الدار الجامعية، الإسكندرية.
2. صفوان المبيضين - عائض الاكلبي، (2012)، تحليل الوظائف وتصميمها في الموارد البشرية، دار اليازوري.
3. محمد بن علي ظافر الشهري، (2018)، إدارة الرواتب والأجور مركز البحوث، معهد الإدارة العامة، الرياض.
4. Büchel R et Wachter TH : Gestion des salaires, Weka business media, suisse, 2022
5. Guillame campistron, L'essentiel de la paie, Eyrolles, paris, 2016.
6. Laroche P et Guery L et autres ; GRH : Théories et nouvelles pratiques de la fonction RH ; Ed° de Boeck 2019.
7. Ralph Büchel, Thomas Wachter, Gestion des salaires, weka business media, suisse, 2022
8. Thévenet M et Dejeux C et autre : Fonction RH, politiques, métiers et outils des ressources humaines ; Ed° Pearson Education 2012.

Applied Numerical Methods for Economics (ANME)

Unit: UFE6

Semester 6

Credit: 5

Coeff: 3

Course objectives

The objective of the course is to acquire a good basic understanding and overview of numerical techniques typically used for economics and finance. This knowledge should enable you to use numerical methods for your own research projects.

Course Content:

PART I: NUMERICAL METHODS

- 1) Concepts in Numerical Analysis (Computer Arithmetic and Data Storage, Economics of Computation, Rounding Error, Stopping Criteria....)
- 2) Solving Linear Equations
- 3) Solving Nonlinear Equations
- 4) Optimization methods
- 5) Numerical Integration and Differentiation (Gaussian Quadrature, Monte Carlo Integration)
- 6) Function Approximation

PART II: APPLICATIONS

- 1) Macroeconomic Models
- 2) Finance Applications
- 3) Other Applications (depending on composition of the course and desires of students)

Teaching mode

Face to face mode (100%).

Assessment mode

Exam (60%), Continuous assessment (40%).

Recommended Textbooks:

- Mario J. Miranda and Paul L. Fackler "Applied Computational Economics and Finance", MIT Press, 2004.
- Kenneth L. Judd "Numerical Methods in Economics", MIT Press, 1998.
- Burkhard Heer and Alfred Maussner "Dynamic General Equilibrium Modelling", Springer Verlag, 2004.

Final Project

Unit : UM6
Semester 6
Credit: 9
Coeff: 6

The project focuses on one or more themes addressed in the MIAGE degree curriculum.
It is supervised by a teacher from the department.

Business Criminal Law (BCL)

Unit: UM6
Semester 6
Credit: 1
Coeff: 1

Course objectives

This course aims to familiarize students with the key principles of business law in Algerian legislation. It helps students view the field of business and commercial projects from a legal perspective, in accordance with the principles and rules established by Algerian law. The course involves analyzing legal texts related to business and understanding the most significant crimes committed in the business field, as well as the special laws that fall under business law.

Course Content:

-

1: Introduction to Business Criminal Law

- The concept of business criminal law
- The position of business criminal law within the divisions of law and its sources
- Definition and characteristics of business criminal law

2: Examples of business crimes under general criminal law

- Breach of trust and its evolving function
- Money laundering
- Bankruptcy crimes in commercial companies

3: Examples of crimes under special criminal laws

- Misuse of funds and abuse of management authority in commercial companies
- Trademark crimes
- Stock market crimes

Teaching mode

Hybrid (20% face to face and 80% online)

Assessment mode

Final Exam (100%)

Recommended Textbooks:

- Chartier Yves (1998), Droit des affaires T1 l'entreprise commerciale collection « thémis» PUF 4^{ème} édition.
- Yves Guyon (2003), Droit des affaires Tome1 et tome 2, édition Economica.
- Blaise Jean berbard (1999), Droit des affaires – Commerçant, concurrence, distribution, LGDJ.
- Edmund W Kitch ,Economy crime :Theory, Encyclopedia of crime and justice, the free press, New York, Vol 2, 1983.
- Edwin Sutherland, White Collar Criminality, American Sociological Review, V 1940.
- F. J-Pansier, Le droit pénal des affaires, Que sais-je ? n° 1653, 1^{ère} éd. PUF, 1992.
- Fabien Bonan, Le guide pénal du chef d'entreprise et du commerçant, Montchretien, Paris, 1986.
- F-J Pansier, La prévention du risque pénal par le chef d'entreprise, Ellipses, Paris, 2004.

Business Ethics (BE)

Unit: UT6

Semester 6

Credit: 2

Coeff: 1

Course objectives

The syllabus describes the concept of business ethics required in the workplace, highlighting its sources and how to instill it within human resources. It also addresses the concept of workplace discipline and the social responsibility of business organizations. Additionally, the course explains codes of conduct and unethical behavior by employees, as well as administrative corruption within business ethics. Every profession has its own values, principles, and ethical standards, as well as scientific knowledge and technical skills that regulate professional practices and define their guidelines.

1. The student will acquire work ethics and understand its positive role in reducing the phenomenon of corruption.
2. The student will be able to recognize the intricacies of corruption, its harms, and ways to combat it.
3. Understanding the values of the individual and the organization and their impact on the performance of individuals and organizations.
4. Providing the student with the concept of the necessity of discipline and professional commitment, and the factors of work ethics in terms of responsibility and public interest.
5. Managing patterns and elements of social responsibility.
6. Defining the code of conduct, general principles, and legal articles that govern the rules of employee conduct.
7. Identifying the consequences of unethical business activities on community development.

Course Content:

9. Introduction to Business Ethics
10. Sources of Business Ethics and Methods of Developing Them
11. Professional Ethics and the Code of Ethics
12. Business Ethics and Corporate Functions
13. Business Ethics and Managerial Functions
14. Introduction to Administrative Corruption
15. Dimensions of Administrative Corruption and Methods of Combating It
16. Corruption Indicators and Governance
17. Business Ethics, Governance, and Social Responsibility
18. Organizational Culture and Business Ethics

Teaching mode

Hybrid (20% face to face and 80% online)

Assessment mode

Final exam (100%)

Recommended Textbooks:

9. Blackburn, S. (2001). *Ethics: A very short introduction*. Oxford University Press.
10. Aristotle. (2009). *The Nicomachean ethics* (W. D. Ross, Trans.). Oxford University Press. (Original work published 4th century B.C.E.)

11. Kant, I. (1997). *Groundwork of the metaphysics of morals* (M. J. Gregor, Trans.). Cambridge University Press. (Original work published 1785)
 12. MacKinnon, B., & Fiala, A. (2018). *Ethics: Theory and contemporary issues* (9th ed.). Cengage Learning.
 13. Deigh, J. (2010). *An introduction to ethics*. Cambridge University Press.
 14. Haji, I. (2002). *Deontic morality and control*. Cambridge University Press.
 15. Rachels, J., & Rachels, S. (2018). *The elements of moral philosophy* (9th ed.). McGraw-Hill Education.
 16. Singer, P. (Ed.). (2013). *A companion to ethics*. Wiley-Blackwell.
 17. HALL J. Kay, (1996), *Nursing Ethics and Law*, WB Saunders Company, ,
1. عبد الحق أحمد حميش، 2003، مكافحة الفساد من منظور إسلامي، المؤتمر العربي الدولي لمكافحة الفساد، مركز الدراسات والبحوث، المملكة العربية السعودية
 2. إبراهيم بدر الخالدي، المسؤولية الأخلاقية والاجتماعية لمنظمات الأعمال المعاصرة، دار العالم، 2010.
 3. فرانك سنبرغ، الإدارة بضمير، ترجمة بيت الأفكار الدولية، أمريكا.
 4. كينيث بلانكارد، مايكل أو. كونور، 2000، الأخلاق الحديثة للإدارة (الإدارة بالقيم)، ترجمة عدنان سليمان، ط1، دار الرضا للنشر، عمان، الأردن.