الجمهورية الجزائرية الديمقر اطية الشعبية

People's Democratic Republic of Algeria

وزارة التعليم العالي والبحث العلمي

Ministry of Higher Education and Scientific Research

## TRAINING OFFER L.M.D. ACADEMIC LICENSE NATIONAL PROGRAM 2018-1019

Domain	Field	Specialty
Sciences and	Electronics	Electronics
Technologies		

I. Detailed program by subject

Semester 3

Bachelor's Degree Title: Electronics

## **Program by subject:**

Teaching unit: UEF 2.1.1 Subject 1: Mathematics 3 VHS: 67.5 hours (Cours: 3h00, TD: 1h30) Credits: 6 Coefficient: 3 Subject Content: Chapter 1: Simple and Multiple Integrals Chapter 2: Improper Integrals Chapter 3: Differential Equations Chapter 4: Series Chapter 5: Fourier Transform Chapter 6: Laplace Transform

Teaching unit: UEF 2.1.1 Subject 2: Waves and vibrations VHS: 45h00 (Course: 1h30, TD: 1h30) Credits: 4 Coefficient: 2 Chapter 1: Introduction to the Lagrange equations Chapter 2: Free oscillations of systems at a degree of freedom Chapter 3: Forced oscillations of systems at a degree of freedom Chapter 4: Free oscillations of two degrees of freedom systems Chapter 5: Forced oscillations of two degrees of freedom systems Chapter 5: Forced oscillations of two degrees of freedom systems Chapter 6: One-dimensional propagation phenomena Chapter 7: Vibrating Strings Chapter 8: Acoustic waves in fluids Chapter 9: Electromagnetic waves

Teaching unit: UEF 2.1.2 Subject 1: Basic electronics 1 VHS: 45h00 (Course: 1h30, TD: 1h30) Credits: 4 Coefficient: 2 Chapter 1. Continuum and Fundamental Theorems Chapter 2. Passive Quadrupoles Chapter 3. Diodes Chapter 4. Bipolar transistors Chapter 5 - Operational Amplifiers

Teaching unit: UEF 2.1.2

Subject 2: Basic electrotechnics 1 VHS: 45h00 (Course: 1h30, TD: 1h30) Credits: 4 Coefficient: 2 Chapter 1: Mathematical reminders on complex numbers (NC) Chapter 2: Fundamental Electricity Law Reminders Chapter 3: Electrical circuits and powers Chapter 4: Magnetic circuits Chapter 5: Transformers Chapter 6: Introduction to Electrical Machines

Teaching unit: UEM2.1 Subject 1: Probabilities and statistics VHS: 45h00 (Course: 1h30, TD: 1h30) Credits: 4 Coefficient: 2 Part A: Statistics Chapter 1: Basic definitions Chapter 2: Statistical series with a single variable Chapter 3: Statistical series with two variables

Part B: Probabilities

Chapter 1: Combinatorial analysis Chapter 2: Introduction to Probabilities Chapter 3: Conditioning and independence Chapter 4: Random variables Chapter 5: Usual discrete probability laws Chapter 6: Usual continuous probability laws

Teaching unit: UEM2.1
Subject 2: Computer science 3 VHS: 22h30 (TP: 1h30)
Credits: 2
Coefficient: 1
TP 1: Presentation of a scientific programming environment (Matlab, Scilab, ... etc)
TP 2: Script files and Data and variable types
TP 3: Read, view and save data
TP 4: Vectors and matrices
TP 5: Control instructions (For and While loops, if and switch instructions)
TP 6: Function files
TP 7: Graphics (Graphical window management, plot
TP 8: Using the toolbox

Teaching unit: UEM2.1

Subject 3:TP Electronics 1 and Electrical Engineering 1 VHS: 22h30 (TP: 1h30)
Credits: 2
Coefficient: 1
TP of Electronics 1
T.P.1.Fundamental theorems
T.P.2.Characteristics of passive filters
T.P.3.Characteristics of the diode/rectifier
T.P.4.Stabilized power supply with Zener diode
T.P.5.Characteristics of a transistor and point of operation
T.P.6.Operational amplifier.
TP of Electrotechnical 1
T.P.1.Single phase voltage and current measurement

T.P.1.Single phase voltage and current measurement T.P.2.Measurement of voltages and currents in three phases T.P.3.Three-phase active and reactive power measurement T.P.4.Magnetic circuits (hysteresis cycle) T.P.5.Tests on transformers T.P.6.Electrical machines (demonstration).

Teaching unit: UEM2.1 Material 4:TP Waves and vibrations VHS: 15h00 (TP: 1h00) Credits: 1 Coefficient: 1 TP.1 Mass -spring TP.2 Single pendulum **TP.3** Torsion pendulum TP.4 Study of electrical oscillations TP.5 Free and forced oscillating electrical circuit **TP.6** Coupled Pendulums **TP.7** Vibrating Rope TP.8 Hoffmann-style pulley TP.9 The speaker TP.10 The Pohl pendulum Teaching unit: EDU 2.1 Subject 1: State of the art of electrical engineering VHS: 22h30 (Course: 1h30) Credits: 1 Coefficient: 1

1- The Electrical Engineering family: Electronics, Electrotechnics, Automatic, Telecommunications, ... etc.

2- Impact of Electrical Engineering on the development of society: Advances in microelectronics, Automation and supervision, Robotics, Telecommunications development, Instrumentation in health development, ...

Teaching unit: EDU 2.1

Subject 2: Energies and environment VHS: 22h30 (Course: 1h30) Credits: 1 Coefficient: 1 Chapter 1: The different energy resources Chapter 2: Energy storage Chapter 3: Consumption, reserves and changes in energy resources Chapter 4: The different types of pollution Chapter 5: Detection and treatment of pollutants and wastes Chapter 6: Impact of pollution on health and the environment.

Teaching unit: UET2.1 Subject 1: Technical English VHS: 22h30 (Course: 1h30) Credits: 1 Coefficient: 1

- Oral comprehension and expression, vocabulary acquisition, grammar...etc.

- nouns and adjectives, comparisons, following and giving instructions, identifying things.

- Use of numbers, symbols, equations.
- Measurements: Length, surface, volume, power etc.
- Describe scientific experiments.
- Characteristics of scientific texts.

## Semester 4

Teaching unit: UEF 2.2.1 Subject 1: Basic electronics 2 VHS: 67h30 (Course: 3h00, TD: 1h30) Credits: 6 Coefficient: 3 Chapter 1: Field-effect transistors **Chapter 2: Power Amplifiers** Chapter 3: Counter Reaction (CR) **Chapter 4: Differential Amplifiers** Chapter 5: Sinusoidal oscillators Teaching unit: UEF 2.2.1 Subject 2: Combinatorial and sequential logic VHS: 45h00 (Course: 1h30, TD: 1h30) Credits: 4 Coefficient: 2 Chapter 1: Boolean algebra and simplification of logic functions Chapter 2: Numbering Systems and Coding of Information Chapter 3: Transcoder combinatorial circuits Chapter 4: Combinatorial circuits Chapter 5: Combinatorial comparison circuits Chapter 6: The scales Chapter 7: Meters

Chapter 8. The Registers

Teaching unit: UEF 2.2.2 Subject 1: Numerical methods VHS: 45h00 (Course: 1h30, TD: 1h30) Credits: 4 Coefficient: 2 Chapter 1: Solving non-linear equations f(x)=0Chapter 2: Polynomial interpolation Chapter 3: Function approximation Chapter 4: Digital Integration Chapter 5: Solving ordinary differential equations (initial condition or Cauchy's problem). Chapter 6: Method for the direct resolution of linear equation systems Chapter 7: Method of approximating linear equation systems Teaching unit: UEF 2.2.2 Subject 2: Signal theory VHS: 45h00 (Course: 1h30, TD: 1h30) Credits: 4 Coefficient: 2 Chapter 1: Signal Generalities Chapter 2: Fourier analysis Chapter 3: Laplace Transform **Chapter 4: Convolution Product** Chapter 5: Correlation of signals

Teaching unit: UEM2.2

Subject 1: Electrical and electronic measurements VHS: 37h30 (Course: 1h30, TP: 1h00) Credits: 3 Coefficient: 2 Chapter 1. Measurements, quantities and uncertainties Chapter 2. Measurement methods Chapter 3. Measuring devices

TP Electrical and electronic measurements

TP N°. 1: Resistance measurement

TP N°. 2: Inductance measurement

TP N°. 3: Capacity measurement

TP N°. 4: Phase shift measurement

TP Nº. 5: Single-phase power measurement

TP N°. 6: Three-phase power measurement

Teaching unit: UEM2.2 Subject 2:TP Electronique fondamentale 2 VHS: 22h30 (TP: 1h30) Credits: 2 Coefficient: 1

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TPN°1: Study of the FET field effect transistor amplifier and TP N°2: Power Amplifiers TP N°. 3: Sinusoidal oscillators

Teaching unit: UEM2.2 Subject 3:TP Combinatorial and sequential logic VHS: 22h30 (TP: 1h30) Credits: 2 Coefficient: 1 TP1: TTL and CMOS integrated circuit technology. TP2: Simplification of logical equations through practice TP3: Study and realization of usual combinatorial logic functions TP4: Study and realization of an arithmetic combinatorial circuit TP5: Study and realization of a logical combinatorial circuit TP6: Study and realization of a logical combinatorial circuit TP7: Study and implementation of meter circuits TP8: Study and record keeping Teaching unit: UEM2.2 Subject 4:TP Digital methods VHS: 22h30 (TP: 1h30) Credits: 2 Coefficient: 1 Chapter 1: Solving non-linear equations Chapter 2: Interpolation and approximation **Chapter 3: Digital Integrations** Chapter 4: Differential equations

Chapter 5: Linear equation systems

Teaching unit: UED2.2 Subject 1: Electronic component technology 1 VHS: 22h30 (Course: 1h30) Credits: 1 Coefficient: 1 Chapter 1: Resistance Chapter 2: Capacitors Chapter 3: The selfs Chapter 4: Diodes Chapter 5: Bipolar transistors Chapter 6: Logic integrated circuits Chapter 7: Analog circuits

Teaching unit: UED2.2 Subject 2: Physics of electronic components VHS: 22h30 (Course: 1h30) Credits: 1 Coefficient: 1 Chapter 1. Semiconductor physics concepts

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Chapter 2. PN Junction Chapter 3. Bipolar transistor Chapter 4. Field-effect transistors

Teaching unit: UET2.2 Subject 1: Techniques of expression and communication VHS: 22.30 (Course: 1.30) Credits: 1 Coefficient: 1 Chapter 1: Searching, analyzing and organizing information Chapter 2: Improving Expression Chapter 3: Improving communication skills in interaction situations Chapter 4: Developing autonomy, organizational and communication skills in a project approach