

DIGITAL CIRCUITS Programme Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
CTE104	Digital Circuits	2	4	3	6

GENERAL INFORMATION

Language of Instruction:	English
Level of the Course Unit:	Bachelor's Degree
Type of the Course:	Compulsory
Mode of Delivery of the Course Unit	Face to Face
Coordinator of the Course Unit	Khalis A. Mohammed
Instructor(s) of the Course Unit	Khalis A. Mohammed

OBJECTIVES AND CONTENTS

Objectives of the Course Unit:	<ul style="list-style-type: none"> To learn the basic techniques and methodologies for designing and analyzing digital circuits such as Adder – subtractor circuits. To learn the Decoder and Encoder circuits. To learn the Comparator, Multiplexer and Demultiplexer circuits. To learn and analysis sequential circuits such as flip-flop circuits and Registers. To learn the types of counters.
Contents of the Course Unit:	1 – Functions of Combinational Logic. 2 – Latches, Flip-Flops, and Timers. 3 – Counters 4 – Shift Registers

Week	KEY LEARNING OUTCOMES OF THE COURSE UNIT On successful completion of this course unit, students/learners will or will be able to dealing with:
1	1- Functions of Combinational Logic. Basic Adders; Half and Full Adders.
2	1- Functions of Combinational Logic. Basic Subtractors; Half and Full Subtractors.
3	1- Functions of Combinational Logic. Parallel Binary Adders and Subtractors. 1's, 2's Complement Subtractor, 2's Complement Adder-Subtractor, BCD Adder, etc.
4	1- Functions of Combinational Logic. Comparators, Code converters.
5	1- Functions of Combinational Logic. Decoders, Encoders.
6	1- Functions of Combinational Logic. Multiplexers (Data Selectors), Demultiplexer.
7	2- Latches, Flip-Flops, and Timers. Latches
8	2- Latches, Flip-Flops, and Timers. Edge-Triggered Flip-Flops.
9	2- Latches, Flip-Flops, and Timers. Flip-Flop operating (R-S, T, J-K, D)
10	3- Counters Synchronous Counters.
11	3- Counters Asynchronous Counters.
12	3- Counters Design of Counters.
13	4- Shift Registers Basic Operations, Serial In/Serial out Shift Registers, Serial In/Parallel out Shift Registers.
14	4- Shift Registers Parallel In/Serial Out Shift Registers, Parallel In/parallel Out Shift Registers, Bidirectional Shift Registers.
15	Final Exam.

No.	PRACTICAL PART
1	Lab 1: Half Binary Adder
2	Lab 2: Full Binary Adder
3	Lab 3: Half Binary Subtractor
4	Lab 4: Full Binary Subtractor
5	Lab 5: 2's Complement Adder-Subtractor
6	Lab 6: Binary Comparator
7	Lab 7: Digital Multiplexer
8	Lab 8: DeMultiplexer.
9	Lab 9: Decoders
10	Lab 10: Encoders
11	Lab 11: D Flip-Flop
12	Lab 12: JK- Flip-Flop
13	Lab 13: T- Flip-Flop
14	Lab 14: Review

WORKLOAD & ECTS CREDITS OF THE COURSE UNIT :		CTE104 DIGITAL CIRCUITS	
WORKLOAD FOR LEARNING & TEACHING ACTIVITIES			
TYPE OF THE LEARNING ACTIVITIES	LEARNING ACTIVITIES (# OF WEEK)	DURATION (HOURS, H)	WORKLOAD (H)
Lecture & In-Class Activities	15	2	30
Preliminary & Further Study	NA	NA	NA
Land Surveying	NA	NA	NA
Group Work	NA	NA	NA
Laboratory	14	2	28
Reading	6	1	6
Assignment (Homework)	3	2	6
Project Work	3	4	12
Seminar	3	1	3
Internship	NA	NA	NA
Technical Visit	NA	NA	NA
Web Based Learning	NA	NA	NA
Implementation/Application/Practice	NA	NA	NA
Practice at a workplace	NA	NA	NA
Occupational Activity	NA	NA	NA
Social Activity	NA	NA	NA
Thesis Work	NA	NA	NA
Field Study	NA	NA	NA
Report Writing	6	3	18
Final Exam	1	3	3
Preparation for the Final Exam	1	20	20
Mid-Term Exam	1		
Preparation for the Mid-Term Exam	1	12	12
Short Exam (Quizzes)	3	2	2
Preparation for the Short Exam	3	3	10
TOTAL WORKLOAD OF THE COURSE UNIT	50	55	150
Workload (h) / 25			150÷25
ECTS Credits allocated for the Course Unit			6

ENGINEERING MATHEMATICS Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
CTE105	Engineering Mathematics	2	3	3	5

GENERAL INFORMATION	
Language of Instruction:	English
Level of the Course Unit:	Bachelor's Degree
Type of the Course:	Compulsory
Mode of Delivery of the Course Unit	Face to Face
Coordinator of the Course Unit	Ayhan Ahmed Khaleel
Instructor(s) of the Course Unit	Ayhan Ahmed Khaleel

OBJECTIVES AND CONTENTS	introduce students to mathematics through the laws and issues necessary for the purpose of assisting them in their studies in their field of specialization.
Objectives of the Course Unit:	To learn the
Contents of the Course Unit:	1- Complex numbers 2- Multivariable functions and partial derivatives 3- Vector and analytic geometry in space 4- Vector valued functions 5- Multiple Integrals

Week	KEY LEARNING OUTCOMES OF THE COURSE UNIT On successful completion of this course unit, students/learners will or will be able to dealing with:
1	Complex numbers in Cartesian coordinates and polar form
2	linear algebra for complex number in polar and Cartesian Euler's formula.
3	DeMoivre's theorem to find powers and the nth roots of given complex numbers
4	Functions of several variables
5	Partial differentiation and the chain rule
6	Functions of a complex variable, Cauchy-Riemann equations
7	Cartesian coordinates and vectors in space, Dot product and Cross product
8	Lines and planes in space, Tangent and normal in the plane
9	The two-dimensional Coordinate system, The three dimensional Coordinate .
10	Directional derivatives, Gradient vectors
11	Divergence, curl and the laplacian
12	Double Integral in rectangular and polar form, Areas and volumes
13	Triple integrals in rectangular coordinates
14	Applications (Surface Area, Green's theorem and Stokes' theorem)
15	Final Exam

WORKLOAD & ECTS CREDITS OF THE COURSE UNIT : CTE105 ENGINEERING MATHEMATICS			
WORKLOAD FOR LEARNING & TEACHING ACTIVITIES			
TYPE OF THE LEARNING ACTIVITIES	LEARNING ACTIVITIES (# OF WEEK)	DURATION (HOURS, H)	WORKLOAD (H)
Lecture & In-Class Activities	15	3	45
Tutorial	13	1	13
Preliminary & Further Study	5	3	15
Land Surveying	NA	NA	NA
Group Work	NA	NA	NA
Laboratory	NA	NA	NA
Reading	NA	NA	NA
Assignment (Homework)	8	1	8
Project Work	NA	NA	NA
Seminar	NA	NA	NA
Internship	NA	NA	NA
Technical Visit	NA	NA	NA
Web Based Learning	NA	NA	NA
Implementation/Application/Practice	NA	NA	NA
Practice at a workplace	NA	NA	NA
Occupational Activity	NA	NA	NA
Social Activity	NA	NA	NA
Thesis Work	NA	NA	NA
Field Study	NA	NA	NA
Report Writing	NA	NA	NA
Final Exam	1	3	3
Preparation for the Final Exam	1	18	18
Mid-Term Exam	1	2	2
Preparation for the Mid-Term Exam	1	11	11
Short Exam (Quizzes)	4		
Preparation for the Short Exam	4	2.5	10
TOTAL WORKLOAD OF THE COURSE UNIT	53	41.5	125
Workload (h) / 25			125÷25
ECTS Credits allocated for the Course Unit			5

ELECTRICAL CIRCUITS Programme Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
CTE106	Electrical Circuits	2	2+2	3	6

GENERAL INFORMATION	
Language of Instruction:	English
Level of the Course Unit:	Bachelor's Degree
Type of the Course:	Compulsory
Mode of Delivery of the Course Unit	Face to Face
Coordinator of the Course Unit	Dr. Maysaloon A. Qasim
Instructor(s) of the Course Unit	Dr. Maysaloon A. Qasim

OBJECTIVES AND CONTENTS	
Objectives of the Course Unit:	<ul style="list-style-type: none"> To teach the fundamental concept of AC & 3-phase electrical circuits. To teach fundamentals of Electric Circuits, their components and the mathematical Tools used to represent and analyze AC electrical circuits including resistors, capacitors, and inductors, dependent and independent sources.
Contents of the Course Unit:	1 – Inductance & Capacitance in Electric circuits. 2 – Alternating Quantities. 3 – Single-phase AC Circuits. 4 – Power in AC Circuits. 5- Three-Phase Circuit Analysis.

We ek	KEY LEARNING OUTCOMES OF THE COURSE UNIT On successful completion of this course unit, students/learners will or will be able to dealing with:
1	1- Inductance & Capacitance in Electric circuits. 1-General concept of capacitance (charge and voltage, capacitors in series and parallel) 2- General concept of inductance (inductive and non-inductive circuits, capacitors in series and parallel)
2	2- Alternating Quantities. Ac systems, waveforms, terms and definitions.
3	2- Alternating Quantities. Average and R.M.S values of current and voltage.
4	2- Alternating Quantities. Phasor diagram
5	3- Single - phase of AC Circuits. AC in resistive circuits , current and voltage in inductive circuits, current and voltage in capacitive circuits.
6	3- Single - phase of AC Circuits. Concept of complex impedance and admittance , AC series and parallel circuits .
7	3- Single - phase of AC Circuits. RL , RC and RLC circuit analysis and phasor representation.
8	4- Power in AC circuits. Power in resistive circuits ,power in inductive and capacitive circuits ,power in circuit with resistance and reactance.
9	4- Power in AC circuits. Power factor ,its practical importance , improvement of power factor , measurement of power in a single – phase AC circuits.
10	5- Three – phase circuit analysis. Basic concept and advantages of three – phase circuit.
11	5- Three – phase circuit analysis. Phasor representation of star and delta connection.
12	5- Three – phase circuit analysis. Phase and line quantities.
13	5- Three – phase circuit analysis. Voltage and current computation in 3-phase balance and unbalance circuits.
14	5- Three – phase circuit analysis. Real and Reactive power computation , measurement of power and power factor in 3-phase system.
15	Final Exam.

No.	PRACTICAL PART
1	Lab 1: Measurement amplitude, frequency and time with oscilloscope using hardware and digital simulation.
	Lab 2: Examine phase relation in RL & RC circuit using hardware and digital simulation.
2	Lab 3: Calculate & verify average and RMS value,
3	Lab 4: Impedance of series RL and RC circuit using digital simulation..
4	Lab 5: Impedance of series RLC circuit using digital simulation..
5	Lab 6: Determination of average value, RMS value, form factor, peak factor of sinusoidal wave using digital simulation.
6	Lab 7: Measure currents and voltages in three-phase balanced AC circuits
7	Lab 8: Prove Y- Δ transformation, Lab 9: Exercise on phasor diagrams for three-phase circuits
8	Lab 10: Measurement of voltage, current & power in a three-phase circuit
9	Lab 11: Ohm's LAW, KVL AND KCL in AC circuits using digital simulation..
10	Lab 12: Determination of mesh currents in AC circuits using digital simulation.
11	Lab 13: Measurement of nodal voltages in AC circuits using digital simulation.
14	Lab 14: Review

WORKLOAD & ECTS CREDITS OF THE COURSE UNIT :		CTE106 ELECTRICAL CIRCUITS	
WORKLOAD FOR LEARNING & TEACHING ACTIVITIES			
TYPE OF THE LEARNING ACTIVITIES	LEARNING ACTIVITIES (# OF WEEK)	DURATION (HOURS, H)	WORKLOAD (H)
Lecture & In-Class Activities	15	2	30
Preliminary & Further Study	NA	NA	NA
Land Surveying	NA	NA	NA
Group Work	NA	NA	NA
Laboratory	14	2	28
Reading	6	1	6
Assignment (Homework)	3	2	6
Project Work	3	4	12
Seminar	3	1	3
Internship	NA	NA	NA
Technical Visit	NA	NA	NA
Web Based Learning	NA	NA	NA
Implementation/Application/Practice	NA	NA	NA
Practice at a workplace	NA	NA	NA
Occupational Activity	NA	NA	NA
Social Activity	NA	NA	NA
Thesis Work	NA	NA	NA
Field Study	NA	NA	NA
Report Writing	6	3	18
Final Exam	1	3	3
Preparation for the Final Exam	1	20	20
Mid-Term Exam	1		
Preparation for the Mid-Term Exam	1	12	12
Short Exam (Quizzes)	3	2	2
Preparation for the Short Exam	3	3	10
TOTAL WORKLOAD OF THE COURSE UNIT	50	55	150
Workload (h) / 25			150÷25
ECTS Credits allocated for the Course Unit			6

ELECTRONIC WORKSHOP Programme Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
CTE107	Electronic Workshop	2	2	1	3

GENERAL INFORMATION	
Language of Instruction:	English
Level of the Course Unit:	Bachelor's Degree
Type of the Course:	Compulsory
Mode of Delivery of the Course Unit	Face to Face
Coordinator of the Course Unit	Dr. Thabat F. Thabet
Instructor(s) of the Course Unit	Dr. Thabat F. Thabet

OBJECTIVES AND CONTENTS	
Objectives of the Course Unit:	<ul style="list-style-type: none"> • To learn the basics of electrical elements (Symbols and Abbreviations, Units). • To learn how to use measurement devices for DC and AC • How to measure electrical elements by using measurement devices • To learn the basics of electronic devices • How to test electronic devices by using measurement devices • How to use Oscilloscope (CRO) • How to use Function Generator
Contents of the Course Unit:	<ol style="list-style-type: none"> 1 - Electrical elements (Resistors, Capacitors) 2 - Measurement devices (AVO-meters). 3 - How to measure Direct Current DC and Alternative current AC. 3 - Electronic Devices (Diodes and Transistors) 4 - Oscilloscope (CRO) 5 - Function Generator

Week	KEY LEARNING OUTCOMES OF THE COURSE UNIT On successful completion of this course unit, students/learners will or will be able to dealing with:
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No.	PRACTICAL PART
1	Lab 1: Basic information
2	Lab 2: Color of resistance
3	Lab 3: Capacitors values
4	Lab 4: Measurement devices
5	Lab 5: How to measure resistors and capacitors values
6	Lab 6: How to measure DC and AC values
7	Lab 7: Diodes
8	Lab 8: Transistors.
9	Lab 9: Operating of Oscilloscope (CRO)
10	Lab 10: Function Generator
11	Lab 11: DC circuit
12	Lab 12: AC circuit
13	Lab 13: Electric circuit schematic diagram
14	Lab 14: Review

WORKLOAD & ECTS CREDITS OF THE COURSE UNIT :		CTE107 ELECTRONIC WORKSHIP	
WORKLOAD FOR LEARNING & TEACHING ACTIVITIES			
TYPE OF THE LEARNING ACTIVITIES	LEARNING ACTIVITIES (# OF WEEK)	DURATION (HOURS, H)	WORKLOAD (H)
Lecture & In-Class Activities	NA	NA	NA
Preliminary & Further Study	1	2	2
Land Surveying	NA	NA	NA
Group Work	4	1	4
Laboratory	14	2	28
Reading	NA	NA	NA
Assignment (Homework)	4	1	4
Project Work	1	5	5
Seminar	NA	NA	NA
Internship	NA	NA	NA
Technical Visit	NA	NA	NA
Web Based Learning	2	1	2
Implementation/Application/Practice	NA	NA	NA
Practice at a workplace	NA	NA	NA
Occupational Activity	NA	NA	NA
Social Activity	NA	NA	NA
Thesis Work	NA	NA	NA
Field Study	NA	NA	NA
Report Writing	4	3	12
Final Exam	NA	NA	NA
Preparation for the Final Exam	NA	NA	NA
Mid-Term Exam	NA	NA	NA
Preparation for the Mid-Term Exam	NA	NA	NA
Short Exam (Quizzes)	6		
Preparation for the Short Exam	6	3	18
TOTAL WORKLOAD OF THE COURSE UNIT	42	18	75
Workload (h) / 25			75÷25
ECTS Credits allocated for the Course Unit			3

COMPUTER PRINCIPLES Programme Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
NTU102	Computer Principles	2	3	2	3

GENERAL INFORMATION	
Language of Instruction:	English
Level of the Course Unit:	Bachelor's Degree
Type of the Course:	Compulsory
Mode of Delivery of the Course Unit	Face to Face
Coordinator of the Course Unit	A.L. Zaid A.Abdulrazzaq
Instructor(s) of the Course Unit	A.L. Zaid A.Abdulrazzaq

OBJECTIVES AND CONTENTS	
Objectives of the Course Unit:	<ol style="list-style-type: none"> 1. Studying computer principles. 2. Defining keyboards and mice. 3. Presenting principles of memories. 4. Explaining disc drives. 5. Explaining principles of windows.
Contents of the Course Unit:	<ul style="list-style-type: none"> • Computer types of: digital, analogues and hybrid. • Different memory types of: RAM, ROM, PROM, EPROM and EEPROM. • Different drives types of: magnetic and optical. <p>Windows facilities of: Notepad, Wordpad, Paint, Accessories and others.</p>

We ek	KEY LEARNING OUTCOMES OF THE COURSE UNIT
	On successful completion of this course unit, students/learners will or will be able to dealing with:
1	Introducing to the Computer System Including: What is Computer? Computer System, Functions of Computer Input Storage Process & Output, Classification of Computers and Computer Units
2	Explaining Types of Computer Keyboards and Types of Keyboard Keys
3	Explaining Types of Computer Keyboards and Types of Keyboard Keys
4	Explaining Types of Computer Keyboards and Types of Keyboard Keys
5	Explaining Types of Computer Mice and Mouse Functions
6	Explaining Different Plugs and Ports for Some Computer Parts
7	Illustrating Computer Discs and Drives
8	Illustrating RAM, Non-Volatile and Cache Memories
9	Demonstrating Computer Hardware Parts and Definitions
10	Demonstrating Computer Hardware Parts and Definitions
11	Demonstrating Computer Hardware Parts and Definitions
12	Presenting Windows, Windows Desktop and Windows Taskbar
13	Presenting Windows, Windows Desktop and Windows Taskbar
14	Illustrating Start Menu and Windows Accessories
15	Final Exam

No.	PRACTICAL PART
1	Lab 1: Computer System
2	Lab 2: Input and Output Storage
3	Lab 3: Types of Computer Keyboards
4	Lab 4: Types of Keyboard Keys
5	Lab 5: Computer Mice and Mouse Functions
6	Lab 6: Different Plugs and Ports for Some Computer Parts
7	Lab 7: Computer Discs and Drives
8	Lab 8: RAM, Non-Volatile and Cache Memories
9	Lab 9: Windows Desktop
10	Lab 10: Windows Taskbar
11	Lab 11: Windows Taskbar
12	Lab 12: Start Menu
13	Lab 13: Windows Accessories
14	Lab 14: Exam

WORKLOAD & ECTS CREDITS OF THE COURSE UNIT :		NTU102 COMPUTER PRINCIPLES	
WORKLOAD FOR LEARNING & TEACHING ACTIVITIES			
TYPE OF THE LEARNING ACTIVITIES	LEARNING ACTIVITIES (# OF WEEK)	DURATION (HOURS, H)	WORKLOAD (H)
Lecture & In-Class Activities	15	1	15
Preliminary & Further Study	NA	NA	NA
Land Surveying	NA	NA	NA
Group Work	NA	NA	NA
Laboratory	14	2	28
Reading	NA	NA	NA
Assignment (Homework)	2	2	4
Project Work	NA	NA	NA
Seminar	NA	NA	NA
Internship	NA	NA	NA
Technical Visit	NA	NA	NA
Web Based Learning	NA	NA	NA
Implementation/Application/Practice	NA	NA	NA
Practice at a workplace	NA	NA	NA
Occupational Activity	NA	NA	NA
Social Activity	NA	NA	NA
Thesis Work	NA	NA	NA
Field Study	NA	NA	NA
Report Writing	8	2	16
Final Exam	1	3	3
Preparation for the Final Exam	1	5	5
Mid-Term Exam	1	2	2
Preparation for the Mid-Term Exam	1	2	2
Short Exam (Quizzes)	2	1	
Preparation for the Short Exam	2	1	
TOTAL WORKLOAD OF THE COURSE UNIT	44	16	75
Workload (h) / 25			75÷25
ECTS Credits allocated for the Course Unit			3

ARABIC LANGUAGE Programme Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
NTU103	Arabic Language	2	2	2	2

GENERAL INFORMATION	
Language of Instruction:	Arabic
Level of the Course Unit:	Bachelor's Degree
Type of the Course:	Compulsory
Mode of Delivery of the Course Unit	Face to Face
Coordinator of the Course Unit	Dr .Eesha I. Mohammed
Instructor(s) of the Course Unit	Dr .Eesha I. Mohammed

OBJECTIVES AND CONTENTS	
Objectives of the Course Unit:	<p style="text-align: center;">أهداف مادة اللغة العربية :</p> <p>ينشأ الطالب على حب اللغة العربية لغة القرآن الكريم. التعرف على مواطن الجمال في اللغة العربية وآدابها، وأن يكتسب الطالب القدرة على دراسة فروع اللغة العربية. تعريف الطالب بألفاظ اللغة العربية الصحيحة وتراكيبها وأساليبها السليمة بطريقة مشوقة وجذابة. أن يستغل الطالب وقت فراغه بالقراءة والاطلاع والرجوع إلى المكتبة. تمكين الطالب من القراءة الصحيحة، وأن يكتسب القدرة على استعمال اللغة استعمالاً صحيحاً في الاتصال مع الآخرين؛ كالسرعة وجودة الإلقاء وحسن التعبير، وتعويد حسن الاستماع لما يسمع مما يبسر له أموره ويعينه على قضاء حوائجه. تنمية الذوق الأدبي لدى الطالب حتى يدرك النواحي الجمالية في أساليب الكلام ومعانيه وصوره. تعويد الطالب التعبيرات السليمة الواضحة عن أفكاره وما يقع تحت حواسه نطقاً وكتابة وحسن استخدام علامات الترقيم. تنمية قدرة ومهارة الطالب الإملائية والخطية بحيث يستطيع الكتابة الصحيحة من جميع النواحي. إيقاظ وعي الطالب لإدراك شرف الكلمة وتوجيهه؛ للمحافظة على طهارتها ونقاها حتى لا تستعمل إلا في الخير. مساعدة الطالب على فهم التراكيب المعقدة والأساليب الغامضة .</p>
Contents of the Course Unit:	<p style="text-align: center;">ملخص المحتويات :</p> <p>تتلخص المحتويات على مواضيع تمنع الطالب من الوقوع في الاخطاء فضلا عن الكتابة بلغة سليمة.</p>

Week	KEY LEARNING OUTCOMES OF THE COURSE UNIT On successful completion of this course unit, students will be able to dealing with:
1	مقدمة عن الأخطاء اللغوية
2	التاء المربوطة والتاء المفتوحة
3	همزة الوصل والقطع
4	الهمزة المتوسطة والمتطرفة
5	قواعد كتابة الالف الممدودة والمقصورة
6	الحروف الشمسية والقمرية
7	الضاد والطاء
8	العدد
9	المفاعيل
10	أقسام الكلام
11	معاني حروف الجر
12	تطبيقات الأخطاء اللغوية الشائعة
13	النون والتنوين
14	مقدمة عن الأخطاء اللغوية
15	الامتحان النهائي

WORKLOAD & ECTS CREDITS OF THE COURSE UNIT :		NTU103	ARABIC LANGUAGE
WORKLOAD FOR LEARNING & TEACHING ACTIVITIES			
TYPE OF THE LEARNING ACTIVITIES	LEARNING ACTIVITIES (# OF WEEK)	DURATION (HOURS, H)	WORKLOAD (H)
Lecture & In-Class Activities	15	2	30
Preliminary & Further Study	NA	NA	NA
Land Surveying	NA	NA	NA
Group Work	NA	NA	NA
Laboratory	NA	NA	NA
Reading	10	1	10
Assignment (Homework)	NA	NA	NA
Project Work	NA	NA	NA
Seminar	1	1	1
Internship	NA	NA	NA
Technical Visit	NA	NA	NA
Web Based Learning	NA	NA	NA
Implementation/Application/Practice	NA	NA	NA
Practice at a workplace	NA	NA	NA
Occupational Activity	NA	NA	NA
Social Activity	NA	NA	NA
Thesis Work	NA	NA	NA
Field Study	NA	NA	NA
Report Writing	1	1	1
Final Exam	1	3	3
Preparation for the Final Exam	1	3	3
Mid-Term Exam	1		
Preparation for the Mid-Term Exam	1	1	1
Short Exam (Quizzes)	1		
Preparation for the Short Exam	1	1	1
TOTAL WORKLOAD OF THE COURSE UNIT	33	13	50
Workload (h) / 25			50÷25
ECTS Credits allocated for the Course Unit			2

PROGRAMMING PRINCIPLES Programme Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
TECCAI101	Programming Principles	2	4	3	5

GENERAL INFORMATION	
Language of Instruction:	English
Level of the Course Unit:	Bachelor's Degree
Type of the Course:	Compulsory
Mode of Delivery of the Course Unit	Face to Face
Coordinator of the Course Unit	Najwan Z. Waisi
Instructor(s) of the Course Unit	Najwan Z. Waisi

OBJECTIVES AND CONTENTS	
Objectives of the Course Unit:	Introduce the students with computer programming techniques using C++ language, and how it can be used to solve problems related to their specialization.
Contents of the Course Unit:	To learn the 1- Introduction to C++. 2- Operators & Making Decisions 3- Looping & Arrays 4- Pointers & Functions.

Week	KEY LEARNING OUTCOMES OF THE COURSE UNIT On successful completion of this course unit, students/learners will or will be able to dealing with:
1	Introduction to C++ (Structure of a program)
2	Variables, Data Types, Declaration of variables, Scope of variables, Initialization of variables, Expressions and Basic Input/Output.
3	Operators (Assignment, Arithmetic operators, Compound assignment, Increase and decrease, Relational and equality operators, Conditional operator)
4	Making Decisions (if...else and switch).
5	Looping (while loop and for loop).
6	Bitwise Operators and Explicit type casting operator
7	Arrays (Single Dimensional arrays, Arrays as parameters)
8	Arrays (two Dimensional arrays, Arrays as parameters)
9	Character Sequences and String handling.
10	Structure
11	Pointers (Reference operator, dereference operator, Declaring variables of pointer types,)
12	Pointers and arrays, Pointers to pointers, void pointers and Pointers to functions
13	Functions (Local and global variables, Arguments passed by value and by reference, Default values in parameters)
14	Overloaded functions and Recursive functions.
15	Final Exam

No.	PRACTICAL PART
1	Lab 1: Introduction to C++ program using visual studio .
2	Lab 2: my first program and how solve a problem.
3	Lab 3: if...else and switch programs
4	Lab 4: while loop and for loop programs
5	Lab 5: Bitwise Operators programs
6	Lab 6: Single Dimensional arrays
7	Lab 7: two Dimensional arrays ..part1
8	Lab 8: two Dimensional arrays..part2
9	Lab 9: Character and String programs
10	Lab 10: how implement a Structure
11	Lab 11: Pointers and arrays
12	Lab 12: Functions..part1
13	Lab 13: Functions..part2
14	Lab 14: Review

WORKLOAD & ECTS CREDITS OF THE COURSE UNIT :		TECCAI101 PROGRAMMING PRINCIPLES	
WORKLOAD FOR LEARNING & TEACHING ACTIVITIES			
TYPE OF THE LEARNING ACTIVITIES	LEARNING ACTIVITIES (# OF WEEK)	DURATION (HOURS, H)	WORKLOAD (H)
Lecture & In-Class Activities	15	2	30
Preliminary & Further Study	2	2	4
Land Surveying	NA	NA	NA
Group Work	NA	NA	NA
Laboratory	14	2	28
Reading	NA	NA	NA
Assignment (Homework)	6	2	12
Project Work	1	2	2
Seminar	1	1	1
Internship	NA	NA	NA
Technical Visit	NA	NA	NA
Web Based Learning	4	2	8
Implementation/Application/Practice	NA	NA	NA
Practice at a workplace	NA	NA	NA
Occupational Activity	NA	NA	NA
Social Activity	NA	NA	NA
Thesis Work	NA	NA	NA
Field Study	NA	NA	NA
Report Writing	5	2	10
Final Exam	1	3	3
Preparation for the Final Exam	1	10	10
Mid-Term Exam	1	2	2
Preparation for the Mid-Term Exam	1	10	10
Short Exam (Quizzes)	5		
Preparation for the Short Exam	5	1	5
TOTAL WORKLOAD OF THE COURSE UNIT	62	41	125
Workload (h) / 25			125÷25
ECTS Credits allocated for the Course Unit			5