University of Asia Pacific (UAP)
Department of Computer Science and Engineering (CSE)

Course Outline

Program:	B. Sc. in Computer Science and Engineering (CSE)
Course Title:	**Electrical and Electronic Engineering II**
Course Code:	**EEE 221**
Semester:	**Spring- 2021**
Level:	**2nd Year 1st Semester**
Credit Hour:	**4.0**

Name & Designation of Teacher: Md. Khairul Alam,
Assistant Professor, EEE

Office/Room: Department of EEE, 5th floor, UAP City Campus.

Class Hours:

Md. Khairul Alam	Sunday : 11:00 AM -12:30 AM
	Monday : 09:30 AM -11:00 AM
	Wednesday : 09:30 AM -11:00 AM

Consultation Hours: Sunday: 12:30 PM-02:00 PM, Wednesday: 02:00 am-03:20PM

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Rationale: This is a core course and required for CSE program because it gives the fundamental concepts regarding working principle and operation of different electronic device and electrical machine and without these knowledge a programmer cannot design a program for a complex system.

Pre-requisite (if any)**:** **EEE 121 (Electrical and Electronic Engineering I)**

Course Synopsis DC Generator, DC Motor, Transformers, Stepper Motor, Internal circuit design of different logic gates and circuits, Operational Amplifier its application, Different signal generating circuits. Timer circuits (555 timer), Filter, SMPS.

Course Objectives: The objectives of this course are to:

1. Review the fundamentals laws regarding electromagnetic induction.
2. Explain the basic principles, operations and characteristics of DC generator, DC motor, Transformer and Stepper motor, Relay, Solenoid.
3. Introduce the digital logic circuits and their internal circuit design process.
4. Provide a clear understanding of Operational amplifier, 555 timers & their applications.
5. Demonstrate the different analog signal generation and their applications.

Course Outcomes (CO) and their mapping with Program outcomes (PO) and Teaching-Learning Assessment methods:

CO No.	CO Statements: Upon successful completion of the course, students should be able to:	Corresponding POs (Appendix-1)	Bloom's taxonomy domain/level (Appendix-2)	Delivery methods and activities	Assessment Tools
CO1	Recall the fundamental laws regarding electromagnetic induction	1	Remember	Class lecture	Assignment, exam
CO2	Explain the operations and characteristics of different electrical machines, operational amplifier and timer circuits.	2, 9	Understand	Class lecture	Quiz, assignment and viva
CO3	Design basic logic circuits, filter circuits and shaping circuits.	3, 9	Apply	Class lecture	Assignment, exam

Weighting COs with Assessment methods:

Assessment Type	% weight	CO1	CO2	CO3
Final Exam : Open book exam/Assignment Viva voce	**50%**	5	20	25
Mid Term : Quiz/MCQ/Short questions	**20%**	5	10	5
Assessment: Class participation, Self assessment, Peer assessment	**30%**	5	15	10
Total	**100%**	15	45	40

Grading Policy: As per the approved grading policy of UAP (Appendix-3)

Course Content Outline and mapping with COs

Weeks	Topics / Content	Course Outcome	Delivery methods and activities	Reading Materials
1	Introduction and review related topics regarding this subject	CO1	Lecture,	Theraja (Vol II), Hand note
2	Introduction and review related topics regarding this subject & Basic laws regarding electromagnetic induction.	CO1	Lecture, Hand note	Theraja (Vol II), Hand note
3	DC Generator: Principles, operations and characteristics.	CO2	Lecture, Hand note, Multimedia	Theraja (Vol II), Hand note
4	DC Motor: Principles, operations and characteristics.	CO2	Lecture, Hand note, Multimedia	Theraja (Vol II), Hand note

5	Transformer: Principles, operations and characteristics	CO2	Lecture, Hand note	Theraja (Vol II), Hand note
6	Stepper Motor: Principles, operations and characteristics study,	CO2	Lecture, Multimedia	Theraja (Vol II), Hand note
7	Relay, Solenoid, Transducers	CO2	Lecture, Multimedia	Theraja (Vol II), Hand note
MIDTERM EXAMINATION				
8	Design procedures of internal circuits of different logic gates and Boolean functions using TTL, NMOS & CMOS technology	CO3	Lecture	Robert F. Coughlin, Ch-04 & 05
9	Operational amplifier, Different applications of operational amplifier	CO2	Lecture	Ramakant A. Gayakwad
10	Different applications of operational amplifier	CO2	Lecture	Ramakant A. Gayakwad
11	Analog to Digital Converter (ADC**),** Digital to Analog converter (DAC)	CO2	Lecture	Robert F. Coughlin, Ch-04 & 05
12	Filtter	CO2,CO3	Lecture, Hand note	Ramakant A. Gayakwad
13	Timer circuits: 555 timer, monostable & astable operations.	CO2, CO3	Lecture	Robert F. Coughlin, Ch-04 & 05
14	Switch Mode Power Supply(SMPS) and Review Class	CO3	Lecture	Robert F. Coughlin, Ch-04 & 05

Required Reference(s):

Recommended Reference(s)

1. B. L. Theraja, A. K. Theraja, A Text Book of Electrical Technology (Volume II), S.Chand.
2. A K. Sawhney A Course in Electrical and Electronic Measurements and Instrumentation
3. Ramakant A. Gayakwad, Op-Amps and Linear Integrated Circuits (4^{th} edition), Published by: Pearson.
4. Robert F. Coughlin, Frederick F. Driscoll Operational Amplifiers & Linear Integrated Circuits (6^{th} or 7^{th} edition).

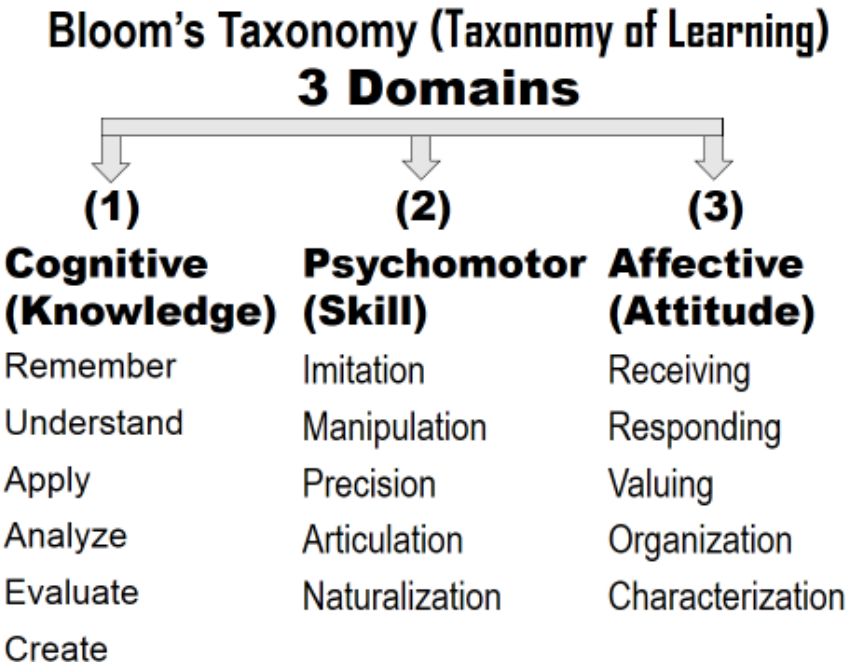
Prepared by	Checked by	Approved by
Md. Khairul Alam		

Appendix-1:

Washington Accord Program Outcomes (PO) for engineering programs:

No.	PO	Differentiating Characteristic
1	Engineering Knowledge	Breadth and depth of education and type of knowledge, both theoretical and practical
2	Problem Analysis	Complexity of analysis
3	Design/ development of solutions	Breadth and uniqueness of engineering problems i.e. the extent to which problems are original and to which solutions have previously been identified or codified
4	Investigation	Breadth and depth of investigation and experimentation
5	Modern Tool Usage	Level of understanding of the appropriateness of the tool
6	The Engineer and Society	Level of knowledge and responsibility
7	Environment and Sustainability	Type of solutions.
8	Ethics	Understanding and level of practice
9	Individual and Team work	Role in and diversity of team
10	Communication	Level of communication according to type of activities performed
11	Project Management and Finance	Level of management required for differing types of activity
12	Lifelong learning	Preparation for and depth of Continuing learning.

Appendix-2



Appendix-3

UAP Grading Policy:

Numeric Grade	Letter Grade	Grade Point
80% and above	A+	4.00
75% to less than 80%	A	3.75
70% to less than 75%	A-	3.50
65% to less than 70%	B+	3.25
60% to less than 65%	B	3.00
55% to less than 60%	B-	2.75
50% to less than 55%	C+	2.50
45% to less than 50%	C	2.25
40% to less than 45%	D	2.00
Less than 40%	F	0.00