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

Course Outline

Program:	Computer Science and Engineering (CSE)
Course Title:	Peripheral and Interfacing Lab
Course Code:	CSE 316
Semester:	Fall-2020
Level:	6th Semester
Credit Hour:	1.5
Name & Designation of Teacher:	Abdullah Al Omar, Lecturer
Office/Room:	7th Floor
Class Hours:	**TBA.**
Consultation Hours:	**TBA.**
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Mobile:	+8801676367070
Rationale:	Required course in the CSE program.
Pre-requisite:	CSE 210, CSE 312
Course Synopsis:	This lab course is IoT-industry knowledge oriented. It will cover the Interfacing basics. Students will learn about the interfacing components (e.g., Mini systems, sensors, Methodologies etc.). It will discuss the Arduino Environment Programming, Basic I/Os, IoT, HCI, Edge Computing, BCI, Dependable computing.
Course Objective:	The objectives of the course are to 1. introduce peripheral and interfacing basics.

2. explain the real world challenges and their solution related to Peripheral and Interfacing.

3. provide the analogical view of different peripheral methods and techniques.

4. introduce the core of Arduino/Raspberry Pi environment and provide a hands on experience with several sensors.

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	**Describe** different Interfacing tools/component/environment	1	1/Understand	Live/Recorded video Lecture, Group discussion	Lab performance
CO2	Analyze problems (emphasize upon industry & real life problems) and **develop** well designed solution/idea using an IoT environment	3	1/Analyze & 2/Articulation	Live/Recorded video Lecture, Hands on experience with the IoT environment	Presentation
CO3	**Use** of modern and updated sensors of IoT environment	5 & 9	Apply	Hands on experience with the IoT environment	Project submission with the Documentation
CO4	**Implement** updated tools/methods to get themselves familiarize with industry	6,8,10,11, & 12	Apply	Hands on experience with the IoT environment	Project submission with the Documentation

Weighting COs with Assessment methods:

Assessment Type	% weight	CO1	CO2	CO3	CO4
Final Project	**30%**		10	10	10
Mid Term project	**30%**	05	05	10	10

Lab performance, Presentation	**40%**	05	15	10	10
Total	**100%**	10	30	30	30

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

Course Content Outline and mapping with Cos

Weeks	Topic/Content	Course Outcome	Delivery methods and activities	Reading Materials
Week 1	Environment Setup	CO 1	Lecture, Multimedia	Class lecture and slide (If provided)
Week 2	First project on Arduino/Raspberry Pi Environment	CO 1	Lecture, Multimedia	Referred Books, Website- www.Arduino.cc
Week 3	Arduino Programming	CO 2	Lecture, Problem Solving	Class lecture and slide (If provided)
Week 4	Arduino Programming	CO 2	Lecture, Problem Solving	Class lecture and slide (If provided)
Week 5	Project idea development and Present	CO 2	Discussion	Referred Books, Website- www.Arduino.cc
Week 6	Project development	CO 2	Discussion	Referred Books
Week 7	Project Submission	--	--	--
Mid Exam				
Week 8	Introducing sensors	CO 3, CO 4	Lecture, Problem Solving	Class lecture, YouTube videos
Week 9	Introducing sensors	CO 3, CO 4	Lecture, Problem Solving	Class lecture, YouTube videos
Week 10	Introducing sensors	CO 3, CO 4	Lecture, Problem Solving, Group Discussion	Class lecture and Slide (If provided)
Week 11	Project idea development and Presentation	CO 1, CO 2, CO 3, CO 4	Discussion	
Week 12	Project Update- 01	CO 1, CO 2, CO 3, CO 4	Discussion	

Week 13	Project Update- 02	CO 1, CO 2, CO 3, CO 4	Discussion	
Week 14	Project Submission with the documentation	--	--	--

Required Reference(s): **1. Programming Arduino: Getting Started with Sketches** by Simon Monk
2. Arduino: A Technical Reference: A Handbook for Technicians, Engineers, and Makers by J. M. Hughes
3. Arduino Cookbook by Michael Margolis

Recommended Reference(s): www.arduino.cc

Special Instructions:

- **Project submission rules**- If you miss the due date then the full marks will be deducted respectively to the number of days you have missed. (It is maintained very strictly unless any very serious issue arises)
- **Plagiarism** of the assignments/documentation will be checked strictly
- **Attendance-** Minimum Required Attendance 80% to pass the course and to get a higher grade you need to attend all the classes. (**For A+ 100% attendance is a must**)

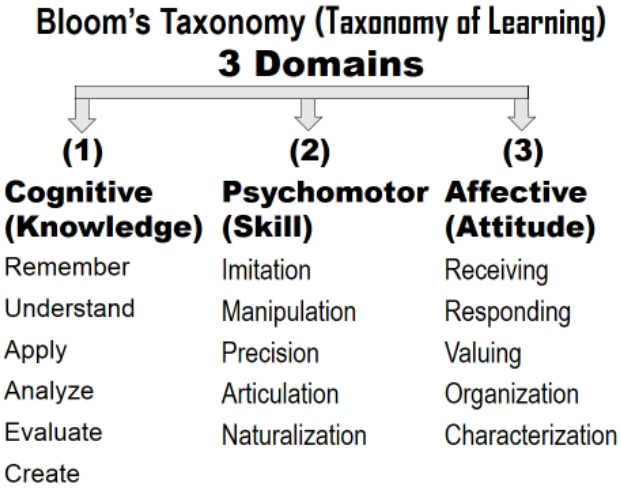
Prepared by (Course Teacher)	**Checked by** (Chairman, PSAC committee)	**Approved by** (Head of the Department)

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