SYLLABUS

Date/ Revision	April 2017
Faculty	Engineering
Approval	Head of Program Study

SUBJECT : INTERFACING & DATA COMMUNICATION - 1

1. Identification of Subject:

Name of Subject	: INTERFACING & DATA COMMUNICATION - 1
Code of Subject	:
SKS / ECTS	:
Semester	: 3
Study Program	: CSE
Lecturer	:

2. Competency

After having the course, students are expected to:

a) familiarise with the use of microprocessors/microcontrollers for simple control and interfacing applications.
b) Understand the programming and operation of the Intel UART, single chip microcontroller, ARM family processor.
c) understanding how hardware and software interact in the solution of interfacing problems.

3. Description of Subject:

To study the basic concepts and techniques used in interfacing a CPU to other system devices and components, using a lab-oriented approach. The Intel, Arm and Atmelmicrocontroller and Pentium PC are used for laboratory experiments. Students are required to work individually or in teams.

4. Learning Approach

Approach	: Practicalbased learning
Method	: Discussion, question answer, group work
Student Task	: Practices and homework
Media	: Power Point Presentation, Video, Modulo

5. Evaluation

a)	Absence maximum	: 25%
b)	Participation and Quiz	: 5 points
c)	Practical Experiment	: 25 points
d)	Final Examination	: 60 points
	Total	: 100 points

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6. Contents/ Topics of Lecturing:

Week	Topics	Content	Remark
1-2	Basic Microprocessor Architecture	• Introduction • Components of a Microprocessor • Bus Lines and Bus Signals • Signal Flow During Data Transfers • Input/Output Transfer Methods • Interrupts • Direct Memory Access	
3-4	Principles of Data Transfer	• Device Addressing • Memory-mapped Input/Output • Input/Output Package Design • Combined Interface Packages • Counter/Timer Packages • Serial Input/Output	
5-7	Input/Output Packages	• Parallel I/O Packages Programming • Flag Testing • Interrupt Handling • The Intel 8255 PPI Programming • Serial Interfaces - 8251A USART • Synchronous Serial Data Adapter • Counter/Timer Packages • DMA Controllers • Priority Interrupt Controllers • Other Input/Output Packages	
8	Mid Term Break		
9-10	Microcomputer Buses	• The Development of Standard Buses • The S-100 Bus • The IEEE-488 or IEC 625 Bus • The E78 Europa Bus • The IEEE-796 Bus • Other Bus & Serial Standards	
11-12	Single-chip Microprocessors	• Applications of Single-chip Systems • One-chip Devices- 8048 Family • The Intel 8021 and 8022 • Other Intel Family • Arm Family	
13-14		• Practical Interface using Arduino	
15	Final Examination		

7. Book Reference:

a) Interfacing To Microprocessors, J. C. Cluley, The Macmillan Press Ltd, 1983
b) Single- and Multi-Chip Microcontroller Interfacing For the Motorola 68HC12, G. Jack Lipovski, Academic Press, 1999

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