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## SYLLABUS

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

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### SUBJECT : INTERFACING & DATA COMMUNICATION - 2

#### 1. Identification of Subject:

Name of Subject	: INTERFACING & DATA COMMUNICATION - 2
Code of Subject	:
SKS / ECTS	:
Semester	: 3
Study Program	: CSE
Lecturer	:

#### 2. Competency

After having the course, students are expected to:

- familiarise with the use of microprocessors/microcontrollers to control physical devices.
- Understand the programming and operation of the Intel UART, single chip microcontroller, ARM family processor.
- understanding how hardware and software interact in the solution of interfacing problems.

#### 3. Description of Subject:

This course is the extension of the previous course, which is to dig deeper skill and knowledge about concepts and techniques used in interfacing a CPU to other system devices and components, using a lab-oriented approach. The student will be able to enjoy the interfacing of computer system to real physical devices in terms of input and output. 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

## 6. Contents/ Topics of Lecturing:

Week	Topics	Content	Remark
1-2	Transducers and Signal Conversion	<ul style="list-style-type: none"> <li>• Signal Transformations for Input and Output</li> <li>• Digital Inputs</li> <li>• Digital Transducers</li> <li>• Analogue Sensors</li> <li>• Temperature Measurement</li> </ul>	
3-4	Transducers and Signal Conversion	<ul style="list-style-type: none"> <li>• Signal Conditioning</li> <li>• Non-linear Operations</li> <li>• Digital to Analogue Converters</li> <li>• Analogue to Digital Converters</li> <li>• Slew Rate Limitations</li> <li>• Tracking Converters</li> </ul>	
5-7	Transducers and Signal Conversion	<ul style="list-style-type: none"> <li>• Digital Coding of Analogue Signals</li> <li>• ADC Interfacing</li> <li>• Other Types of A/D Converter</li> <li>• Protection from Interference</li> <li>• Output Circuits</li> <li>• Motor Drive Circuits</li> </ul>	
8	Mid Term Break		
9-10	Practical Problems and Applications	<ul style="list-style-type: none"> <li>• Sensing Data from Mechanical Switches</li> <li>• Manual Input Devices</li> <li>• Input from Keyboards</li> <li>• Reverse Scanning</li> <li>• Driving Digital Displays</li> <li>• Waveform Generation</li> </ul>	
11-12	System Testing and Development	<ul style="list-style-type: none"> <li>• System Development</li> <li>• ROM Simulators</li> <li>• Board Testing</li> <li>• In-circuit Emulators</li> <li>• Logic State Analyzers</li> <li>• Asynchronous Display</li> <li>• Graphical Displays</li> <li>• Signature Analysis</li> <li>• Other Fault-finding Aids</li> </ul>	
13-14	Interfacing to Microprocessors	<ul style="list-style-type: none"> <li>• Higher Bit Bus Organization</li> <li>• The Intel 8086 Family</li> <li>• The Arm Family</li> </ul>	
15	Final Examination		

## 7. Book Reference:

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

