

Course Code	TKIE162103													
Course Name	Microprocessor Systems													
Course Instructors	Agus Bejo; Addin Suwastono													
Course Type	Required													
Course Classification	Engineering Topics													
Credit / Contact Hour per Week	3 / 150 minutes per Week													
Course Description	Describes the basic architecture of microprocessor, arithmetic logic unit (ALU), control unit (CU), register, memory, control path, data path, memory addressing modes, input-output (I / O), instruction-set, machine language, assembly, and assembler.													
Prerequisites Courses	Digital Technique													
<b>Covered Student Outcome</b>	<b>Fundamental and Engineering Knowledge (a)</b> <b>Modern Tools Utilization (e)</b>													
Learning Outcome	<ol style="list-style-type: none"> <li>1. Students are able to explain the basic architecture of microprocessors</li> <li>2. Students are able to explain the microarchitecture and how microprocessor works</li> <li>3. Students are able to convert assembly language into machine language</li> <li>4. Students are able to create programs in assembly language, compile them with assembler and run them on a microprocessor</li> </ol>													
Topic	<ol style="list-style-type: none"> <li>1. Introduction, history &amp; development of microprocessor</li> <li>2. Architecture &amp; basic components of microprocessor</li> <li>3. Microarchitecture &amp; how the microprocessor works</li> <li>4. Arithmetic Logic Unit</li> <li>5. Control Unit</li> <li>6. Register</li> <li>7. Memory &amp; memory addressing modes</li> <li>8. Instruction-set</li> <li>9. Machine Language</li> <li>10. Assembly Language</li> <li>11. Assembler</li> </ol>													
Direct Assessment	<table border="1"> <thead> <tr> <th>Direct Assessment Plan</th> <th>Measured Learning Outcome</th> </tr> </thead> <tbody> <tr> <td>Mid Exam</td> <td>LO1, LO2</td> </tr> <tr> <td>Final Exam</td> <td>LO3, LO4</td> </tr> <tr> <td>Quiz and Homework</td> <td>LO4</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>		Direct Assessment Plan	Measured Learning Outcome	Mid Exam	LO1, LO2	Final Exam	LO3, LO4	Quiz and Homework	LO4				
Direct Assessment Plan	Measured Learning Outcome													
Mid Exam	LO1, LO2													
Final Exam	LO3, LO4													
Quiz and Homework	LO4													
Indirect Assesment	Questionnaire and direct communication													
References	<p>[1] Steve Furber, "ARM System-on-Chip Architecture", Pearson Education Limited, 2000.</p> <p>[2] William Hohl, Cristopher Hinds, "ARM Assembly Language, Fundamentals and Techniques", CRC Press Taylor &amp; Francis Group, 2nd edition, 2015.</p> <p>[3] Enoch O. Hwang, "Microprocessor Design Principles and Practices with VHDL", Brooks/Cole, 2004.</p>													