

Course Code	TKEE165123											
Course Name	Robotics											
Course Instructors	Igi Ardiyanto; Adha Imam Cahyadi; Priyatmadi											
Course Type	Elective											
Course Classification	Engineering Topics											
Credit / Contact Hour per Week	3 / 150 minutes per Week											
Course Description	The course discusses robotics that include robotic elements, various robot structures, robot drives and their controls, kinematics and robot dynamics, trajectory generation, robot programming, and the introduction of intelligent robots.											
Prerequisites Courses	-											
<b>Covered Student Outcome</b>	<b>Development of Engineering Solution (b)</b> <b>Engineering Design (c)</b> <b>Modern Tools Utilization (e)</b>											
Learning Outcome	<ol style="list-style-type: none"> <li>1. Students are able to apply problems in the field of robotics</li> <li>2. Students are able to apply kinematic forward and inverse</li> <li>3. Students are able to apply mobile robots and manipulator</li> <li>4. Students are able to design robotic simulation</li> </ol>											
Topic	<ol style="list-style-type: none"> <li>1. Robotics concept and problems</li> <li>2. Forward and invers kinematic</li> <li>3. Robotics manipulator</li> <li>4. Dynamics and control</li> <li>5. Trajectory generation</li> <li>6. Mobile robotics</li> <li>7. Bayesian inference for robotics perception</li> <li>8. Localization and Mapping</li> <li>9. Path planning</li> <li>10. Simulation and robotic middleware frameworks</li> </ol>											
Direct Asessment	<table border="1"> <thead> <tr> <th>Direct Asessment Plan</th> <th>Measured Learning Outcome</th> </tr> </thead> <tbody> <tr> <td>Assignment</td> <td>LO1</td> </tr> <tr> <td>Mid Exam</td> <td>LO3</td> </tr> <tr> <td>Final Exam</td> <td>LO2</td> </tr> <tr> <td>Project</td> <td>LO4</td> </tr> </tbody> </table>		Direct Asessment Plan	Measured Learning Outcome	Assignment	LO1	Mid Exam	LO3	Final Exam	LO2	Project	LO4
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Assignment	LO1											
Mid Exam	LO3											
Final Exam	LO2											
Project	LO4											
Indirect Assesment	Questionnaire (EDOM)											
References	<p>[1] Craig, J.J. 1989, Introduction to Robotics: Mechanics and Control, Addison-Wesley Pub Co,</p> <p>[2] KoivoJ., 1989, Fundamentals for Control of Robotic Manipulators, John Wiley &amp; Sons.</p> <p>[3] Martin F.G., 2001, Robotic Explorations: A Hands-on Introduction to Engineering, Prentice-Hall</p> <p>[4] Rehg, J. A., 2000, Introduction to Robotics in CIM Systems, Prentice Hall</p> <p>[5] Saeed B. Niku, 2002, Introduction to Robotics: Analysis, Systems, Applications, Prentice-Hall</p> <p>[6]Fu, K. S. Gonzalez, R.C. Lee, C.S.G, 1989, Robotics, Control, Sensing, Vision, and Intellegence, McGraw-Hill</p> <p>[7] Groover M.P.dkk, 1987, Industrial Robotic, McGraw-Hill</p> <p>[8] Nourbakksh, Autonomous Mobile Robots, MIT Press</p> <p>[9] Thrun, S., Burgard, W., Probabilistic Robotics, MIT Press</p>											