

Course Code	TKEE165117											
Course Name	Optimization Techniques											
Course Instructors	Sariyya;											
Course Type	Elective											
Course Classification	Engineering Topics											
Credit / Contact Hour per Week	3 / 150 minutes per Week											
Course Description	This course presents a comprehensive knowledge of various optimization techniques for engineering students. The contents of this course are composed of various library materials and research, covering the development, computing, and application of optimization techniques in various fields, especially in engineering. The optimization concept is presented in an easy-to-understand and real-world-oriented real-estate application format. The scope of this course starts from the basic concept of optimization techniques, followed by various classical optimization techniques and applications, then ends with smart / intelligent optimization techniques.											
Prerequisites Courses	-											
Covered Student Outcome	Development of Engineering Solution (b) Engineering Design (c)											
Learning Outcome	<ol style="list-style-type: none"> 1. Students are able to apply the basic of optimization in to engineering problem 2. Students are able to classify, describe, and apply the optimization techniques for engineering problem 3. Students are able to analyze the optimization techniques for engineering problem 4. Students are able to develop the optimization problem for the complex engineering problem based on the real case 											
Topic	<ol style="list-style-type: none"> 1. Introduction to optimization techniques 2. Classic optimization techniques 3. Linear programming 4. Nonlinear programming 5. Integer Programing 6. Dynamic programming 7. Simulated Annealing 8. Genetic Algorithm 9. Flower Pollination Algorithm 											
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>LO3,LO4</td> </tr> <tr> <td>Mid Exam</td> <td>LO1,LO2,LO3</td> </tr> <tr> <td>Final Exam</td> <td>LO4</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>		Direct Asessment Plan	Measured Learning Outcome	Assignment	LO3,LO4	Mid Exam	LO1,LO2,LO3	Final Exam	LO4		
Direct Asessment Plan	Measured Learning Outcome											
Assignment	LO3,LO4											
Mid Exam	LO1,LO2,LO3											
Final Exam	LO4											
Indirect Assesment	Questionnaire (EDOM)											
References	<ol style="list-style-type: none"> [1] Sangiresu S Rao, 2009, Engineering Optimization: Theory and Practice, John Willey and Son. [2] Steven Chapra, Raymond Canale, 2014, Numerical Methods for Engineers, McGraw-Hill Science_Engineering_Math [3] Yong-Hua Song,1999, Modern Optimization Techniques in Power Systems, Kluwer AcademicPublishers,Boston. [4] Frauendorfer,K., Glovitsch,H., and Bacher,R.,1993,Optimization in Planning and Operation of Electric Power Systems, Physica-Verlag, Bonn [5] Fox,B.,1993, Integrating and Accelerating Tabu Search, Simulated Annealing and Genetic Algorithms, Annals of OR,41:47-67 [6] Wright,S.J.,1996, Primal-Dual Interior –Point Methods, SIAM [7] Chou,V., and Song,A.H.,1997, A Colony-Tabu Search Approach for 											

	combined Heat and Power Economic Dispatch, Proc. 32nd UPFC, 605-608
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