

## SYLLABUS CURRICULUM

<b>COURSE</b>	<b>Course Name : Operational Research</b>
	<b>Course Code : TM184889</b>
	<b>Credit : 3 sks</b>
	<b>Semester : Optional</b>

### COURSE DESCRIPTION

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### LEARNING OUTCOMES

LO8	Able to implement mathematics, science and engineering principles to solve engineering problems in mechanical systems.
LO9	Able to find the source of engineering problems in mechanical system through research that includes identification, formulation, analysis, data interpretation based on engineering principles.
LO10	Able to formulate the solution of engineering problem in mechanical system by considering economy, safety, environment and energy conservation.
LO11	Able to design mechanical system and the necessary components through analytical approach based on science and technology by considering technical standard and reliability.

### COURSE LEARNING OUTCOMES

<p>Students are able to understand quantitative techniques for decision making, identify problematic components in a problem, analyze real world problems and express in mathematical abstraction, solve objective optimization problems under constrains, utilize software for decision making problem solving, model and solve daily real problems examples and making presentation</p>
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### MAIN SUBJECT

<p>The focus of this course are as follows:</p> <ul style="list-style-type: none"> <li>- Decision making theory;</li> <li>- Problematic elements in problems;</li> <li>- Linear Programming Model;</li> <li>- Typical models in Linear Programming;</li> <li>- Graphical solution;</li> <li>- Impact analysis in objective function and constrain parameter change;</li> <li>- Simplex method;</li> <li>- Software introduction;</li> <li>- Integer programming;</li> <li>- Models in integer programming;</li> <li>- Binary Integer Programming;</li> </ul>
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- Multiple objectives and goal programming;
- Dynamic programming;
- Project management modeling; CPM-PERT;
- Resource Leveling;
- Queue theory introduction and simulation.

**PREREQUISITES**

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**REFERENCE**

1. Wayne Winston: Operations Research
2. Hamdy Taha: Operation Research
3. Ronald Rardin :Optimization in Operations Research
4. Bernard W. Taylor: Introduction to Managemet Science
5. Hillier Lieberman: Operations research