

**Form (H)**  
**Short course description**

Course title: <a href="#">Linear Programming</a>	Course number and code: <a href="#">OPER 213</a>
Previous course requirement: <a href="#">OPER100</a>	Language of the course: <a href="#">Arabic</a>
Course level: <a href="#">Level 4 / Second Year</a>	Effective hours: <a href="#">4 (3+2+0)</a>

**Course description**

<p>Definitions and formulation of linear programs. Review of linear algebra and convex analysis. Algebra of the simplex method. The simplex method. Sensitivity analysis. Duality theory. The dual simplex method. The revised simplex method. Some applications of linear programming.</p>
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**Course objectives**

<p>Understanding linear programming as one of the most important Operations Research techniques used in planning for utilizing available resources with the best possible manner.</p>
<p>Ability to formulate small linear programming problems. This should lead to the understanding of the nature of some practical applications that can be formulated and solved by linear programming.</p>
<p>Understanding of the geometric and mathematical properties of linear programming models.</p>
<p>Ability to solve linear programming problems by the Simplex method, then performing sensitivity analysis on optimal solution.</p>
<p>Understanding duality theory and the ability to solve problems by the dual simplex method.</p>
<p>Understanding the Revised Simplex Algorithm.</p>

Learning outcomes (understanding, knowledge, and intellectual and scientific skills)  
After studying this course, the student is expected to be able to:

<p>Understanding the optimization concept in linear programs and its uses in different applications of life.</p>
<p>Ability to formulate linear programming problems.</p>
<p>Understanding the mathematical properties of linear program models.</p>
<p>Understanding the duality theorem and relationship between primal and dual problems.</p>
<p>Understanding the sensitivity analysis.</p>

**Textbook adopted and supporting references**

Title of the book	Author's name	Publisher's name	Date of publication
<a href="#">Introduction to Linear Programming</a>	<a href="#">Ibrahim S. Al-olayan</a>	<a href="#">KSU</a>	<a href="#">2007</a>
<a href="#">Mathematical Foundations of Linear Programming</a>	<a href="#">Suliman S. Al-hamdan et al</a>	<a href="#">KSU</a>	<a href="#">2002</a>
<a href="#">Introduction to Linear Optimization</a>	<a href="#">Dimitris Bertsimas</a>	<a href="#">Athena Scientific</a>	<a href="#">1998</a>