Course Syllabus

Code - Course Title	**SAY523 - Advanced Operations Research I**
Course Type	I. SEMESTER
Laboratory + Practice	3+0
ECTS	**6.0**
Language of Instruction	Türkçe
Course Type	Required Courses
Course Instructor(s)	PROF. DR. ALİ ÖZDEMİR

Mode of Delivery	The mode of delivery of this course is Face to face
Place of Delivery	On Campus
Used Educational Platforms	Face-to-face
Prerequisites	There is no prerequisite or co-requisite for this course.
Courses Recomended	Linear programming
Recommended Resources	* Taha, H.(1997), Operation Research an Intrıduction,Prectice - Hall Inter. Inc.*Winston, W.L., (1994), Operation Research Application and Algorithms, Duxbury Press
Work Placement	Not suitable for this course.
Aims of the Course	The primary objective of the course is to provide students with the ability to transform complex, dynamic, and real-life problems into mathematical models, as well as to optimize these models and make the best decisions using advanced algorithms.

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1	**LO-1**	Introduction to Operation Researh	Lecture, Question & Answer, Discussion
Week - 2	**LO-4**	Mathematical Operations Research Models	Lecture, Case Study, Problem Solving
Week - 3	**LO-1** **LO-4**	The Nature of Linear Programming Models	Lecture, Case Study, Problem Solving
Week - 4	**LO-1** **LO-4**	Construction of the Models Exams	Lecture, Discussion, Case Study
Week - 5	**LO-5**	Simplex Solution	Lecture, Question & Answer, Problem Solving
Week - 6	**LO-6**	Duality and Sensitivity Analysis	Lecture, Question & Answer, Discussion
Week - 7	**LO-6**	Sensitivity Analysis	Lecture, Question & Answer, Discussion

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Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 8	LO-7	Integer Linear Programming	Lecture, Question & Answer, Discussion
Week - 9	LO-7	Integer programming: Branch and Bound Method	Lecture, Question & Answer, Discussion
Week - 10	LO-8	Integer Programming: Gomory' Cutting Plane Method	Lecture, Discussion
Week - 11	LO-6	Parametric Programming	Lecture, Discussion
Week - 12	LO-6	Parametric Linear Programming	Lecture, Question & Answer, Discussion
Week - 13	LO-9	Network Models	Lecture, Question & Answer, Discussion
Week - 14	LO-10	Network Models: CPM, PERT	Lecture, Question & Answer, Discussion, Problem Solving

Learning Outcomes

#	Learning Outcome
1	Describe linear programming problems.
2	Can develop mathematical operations research models.
3	Obtains the simplex solution
4	Performs sensitivity analyses.
5	Develops integer programming models.
6	Obtains the solution of integer programming models.
7	Establishes network models.
8	Implements CPM PERT applications.

Sustainable Development Goals

✓ Quality Education

Course Theme

✓ Entrepreneurship ✓ Logistics and Supply Chain

AKTS Workload

Activity	Duration (Hour)	Count	Workload
Teorik Derse Katılım	42.00	1	42

AKTS Workload

Activity	Duration (Hour)	Count	Workload
Sınıf Dışı Çalışma (Ön Hazırlık & Pekiştirme Amaçlı)	28.00	1	28
Ödevler	4.00	6	24
Proje - Rapor - Sunum Hazırlama	3.00	6	18
Ara Sınav Hazırlığı (sınav süresi dahil)	14.00	1	14
Final Sınavı Hazırlığı (sınav süresi dahil)	18.00	1	18
Uygulama (Laboratuvar, Müzik/Enstrüman Uygulaması, Atölye/Saha Çalışması vb.)	0.00	0	0
Staj Uygulaması	0.00	0	0
		Calculated ECTS	**6.0**

Assessment Method and Passing Requirements

✓ Open-Ended Test ✓ Homework ✓ Presentation