

QUANTITATIVE TECHNIQUES IN AGRICULTURE

1	Course Title:	QUANTITATIVE TECHNIQUES IN AGRICULTURE	
2	Course Code:	TEK4734	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	8	
7	ECTS Credits Allocated:	3.00	
8	Theoretical (hour/week):	2.00	
9	Practice (hour/week):	2.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. Tolga TİPİ	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	ttipi@uludag.edu.tr, Tel:0 (224) 2941590 U.Ü. Ziraat Fakültesi Tarım Ekonomisi Bölümü Görükle/Bursa	
17	Website:		
18	Objective of the Course:	The objective of this course is to enable the students to learn quantitative techniques as a tool for farm management and solving resource use problems.	
19	Contribution of the Course to Professional Development:	Students can solve the problems they will encounter in business management in their professional lives using a mathematical model.	
20	Learning Outcomes:		
		1	Ability to use different mathematical modelling techniques
		2	Ability of problem solving and decision making by using quantitative techniques
		3	Ability to use computer for solving quantitative problems
		4	Ability of systematic approach to issues of economics and management
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21	Course Content:		
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Week	Theoretical	Practice	
1	Introduction to Quantitative Techniques	Needed Basic Mathematical practices	
2	Linear Programming: The Graphical Method	Problem solving	
3	Linear Programming: The Simplex Method; Algebraic properties of the simplex method, the simplex tableau	Problem solving with using LINDO and QSB	

4	Duality and Sensitivity Analysis	Problem solving with using LINDO and QSB and interpretations		
5	Integer programming (Gomory Cutting Plane Algoritim and Brand and Bound Method)	Problem solving		
6	Nonlinear Programming (Concav and Convex Functions)	Problem solving		
7	Nonlinear Programming (The Kuhn-Tucker Conditions and Lagrange Multipliers)	Problem solving		
8	Course Review and Midterm Exam	Solving the exam questions		
9	Dynamic Programming	Problem solving		
10	Inventory Models (The Basic Economic Order Quantity Model)	Problem solving		
11	Markov Chains Analysis	Problem solving		
12	Markov Chains Analysis(Transition Probabilites Matrix)	Problem solving		
13	Project Planning and Control Methods (PERT)	Problem solving		
14	Project Planning and Control Methods (CPM)	Problem solving		
22	Textbooks, References and/or Other Materials:	1. Rehber, E., 2004. Operations Research in Agriculture (Tarımda Yöneylem Araştırması), Unpublished Lecture Notes. (In Turkish) 2. Öztürk, A., 1984. Operations Research (Yöneylem Araştırması), Uludağ University Publications, Publication No: 3-0450-0113, Uludağ University Printing House. (In Turkish)		
Activites		Number	Duration (hour)	Total Work Load (hour)
Theoretical		4	2.00	8.00
Practicals/Labs		14	2.00	28.00
Self study and preperation		Analysis for Management, Pearson Education Inc.,2003.	0.00	0.00
Homeworks		0	0.00	0.00
Projects		0	0.00	0.00
TERM LEARNING ACTIVITIES		NUMBRE	WEIGHT	
Field Studies		0	0.00	0.00
Midterm Exams	1	30	12.00	12.00
Others		0	0.00	0.00
Final Exam	0	0	22.00	22.00
Total Work Load				90.00
Total work load/ 30 hr	3	100.00		3.00
ECTS Credit of the Course				3.00
Success Grade				
Contribution of Final Exam to Success Grade		60.00		
Total		100.00		
Measurement and Evaluation Techniques Used in the Course		During the semester, students will be responsible project tasks. Besides, a final exam with open-ended questions will be conducted at the end of the semester.		
24	ECTS / WORK LOAD TABLE			

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	0	0	3	4	4	5	0	0	0	0	0	0	0	0	0	0
ÖK2	0	0	0	5	5	5	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	5	4	5	0	0	0	0	0	0	0	0	0	0
ÖK4	0	0	5	5	4	5	4	0	0	0	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	1 very low			2 low			3 Medium			4 High			5 Very High			