



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Construction of Sowing, Husbandry, Fertilizing Machines							
Course Code		ZTM528		Course Level		Second Cycle (Master's Degree)			
ECTS Credit	8	Workload	204 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		The aim of this course is to to give students all information for sowing, managing seed bed condition, hoeing, planting and fertilizing machine with that student should be able to design machines. For this purpose, first agro-technical and second constructive principles of machines are taught.							
Course Content		Seeding Techniques and machines: Biomechanics of germination, Agro-technical fundamentals of drilling, mathematical and statistical fundamentals of different drilling systems, planter systems; seed tube, coulters, press wheel and closing, wheels, disc-coulters, Preparing the stability seeders in tractor, seeder combinations • Arranging biotope- Machines and Techniques of Hoeing: Production techniques of thinning, singling and without thinning; Hoeing techniques and machines; Techniques of undercover production • Transplanting Machines, Drilling Machines, Drilling Techniques: Techniques of transplanting; plant conditioning and sprouting techniques; theory of transplanting techniques and machines, Potato tuber transplanting machines • Fertilizing Machines: physico-mechanical properties of fertilizers and manures, principles of fertilizing and manuring, Construction of fertilizer machines, farm yard manure spreader, slurry and solid mineral fertilizer spreaders • Application of precision farming in drilling, fertilizing and weed control							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual Study, Problem Solving					
Name of Lecturer(s)		Prof. İbrahim YALÇIN							

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading

1	Ekim, Bakım, Gübreleme Makinaları. 1995. Önal, İ., E.Ü. Ziraat Fak. Yayınları, 490, Bornova-İZMİR
2	Ekim ve Dikim Makinaları Tasarımı. Önal, İ., Ders Notu, Bornova-İZMİR.
3	Tarım Makinaları İlkeleri. 2002. Ülger, P., T.Ü.Tekirdağ Ziraat Fakültesi Ders Kitabı, No:29, TEKİRDAĞ

Week	Weekly Detailed Course Contents	
1	Theoretical	Objectives and tasks of seedbed preparation and sowing
	Preparation Work	Research
2	Theoretical	Introducing the class, acquaintance, relation between seed and drilling machines, application of technological operation to the seed, agro technical properties of drilling, biomechanics of germination
	Preparation Work	Research
3	Theoretical	Mathematical and statistical fundamentals of different sowing methods
	Preparation Work	Research
4	Theoretical	Mechanic and pneumatic spacing drills and their design
	Preparation Work	Research
5	Theoretical	Planter systems: seed broadcaster, row drills, dibbling seeders and their design
	Preparation Work	Research
6	Theoretical	Seed tubes, and drill coulters, seed placing device, different connections of drill coulters to the frame, to design drills, closing wheels, disc coulters, markers and tracing markers. Adjusting seeding rate.
	Preparation Work	Research
7	Theoretical	Forming seed bed, hoeing techniques and its machines, thinning, singling and production techniques requiring no thinning, hoeing techniques and machines for grain and row plants
	Preparation Work	Research
8	Intermediate Exam	Midterm
9	Theoretical	Productions of Seedling and shoots and transplanting techniques and machines; design parameters of potatoes planting machines, boring machines and automatic transplanters
	Preparation Work	Research



10	Theoretical	Physicomechanical parameters of solid fertilizers and manures. Manure spreaders, manufacturing principles of manure spreaders; liquid manure spreaders
	Preparation Work	Research
11	Theoretical	Fertilizer machines; box and disc type of fertilizers, types and manufacturing principles, Fertilizing equipments in strip drills
	Preparation Work	Research
12	Preparation Work	Research
13	Theoretical	Application of precision farming in drilling, fertilizing and weed control
	Preparation Work	Research
14	Theoretical	Test principles of sowing and transplanting machines, quality criteria.
	Preparation Work	Research
15	Theoretical	Test principles of fertilizing and manuring machines
	Preparation Work	Research
16	Final Exam	FINAL EXAM

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	4	2	84
Lecture - Practice	14	0	2	28
Assignment	14	0	2	28
Term Project	2	0	20	40
Midterm Examination	1	10	2	12
Final Examination	1	10	2	12
Total Workload (Hours)				204
[Total Workload (Hours) / 25*] = ECTS				8

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Design and construction principles of seeding units fitting on different sowing methods. By considering these principles, examining the performances of current planting mechanisms
2	To learn important parts of row drills, to be able to locate the parts on the machine and to solve the problems on the machine
3	To learn important parts of precision drills, to be able to locate the parts on the machine and to solve the problems on the machine
4	To learn important parts of dibbling seeders, to be able to locate the parts on the machine and to solve the problems on the machine
5	To solve the possible problems during preparing the drills for filed work (i.e. adjusting marker, adjusting seeding rate, tracing marker, stability problems)
6	To be able to solve the problems during determination of managing seed/root bed and application of methods in plant productions
7	To comprehend production techniques of undercover production and productions from seedlings and tubers and to design its machines
8	To design spreading systems of gas, liquid and solid fertilizers
9	To design manure spreading systems

Programme Outcomes (Agricultural Machinery Master)

1	Identification, formulation and solving the problems in the field of Agricultural Machinery
2	The ability to use modern engineering tools and techniques
3	The ability to use the information, which is obtained by following the scientific and technological developments, in the academic life and practice.
4	The ability to evaluate multi-faced relationship between them by understanding interaction among agricultural technology, soil, plants and animals
5	Professionalism and ethical responsibility
6	The ability to work in disciplinary and multi-disciplinary teams
7	The ability to communicate effectively
8	The ability to do research for accessing information and to use data base and other resources
9	The ability to do analyze and interpret the experimental results and the design of experiment
10	The ability to identify and interpret knowledge of current professional issues and events



11	The ability to get aware the universal and social effects of engineering solutions and applications
12	Accordance with the requirements of science and technology, ability to use scientific knowledge creative

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5	L6	L7	L8
P1	5	5	5	5	5	5	5	5
P2	5	5	5	5	5	5	5	5
P3	3	3						
P4	5	5	5	5	5	5	5	5
P8	4	4	3	3	4	4	5	5
P9	3	4	3	3	5	5	4	5
P10	4	4	3	3	5	5	4	5

