SOLAR AND WIND ENERGY APPLICATIONS IN AGRICULTURE

1	Course Title:	SOLAR AND WIND ENERGY APPLICATIONS IN AGRICULTURE
2	Course Code:	BSM3519-S
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	3
6	Semester:	5
7	ECTS Credits Allocated:	3.00
8	Theoretical (hour/week):	1.00
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. ALİ VARDAR
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	e-posta: dravardar@uludag.edu.tr Telefon: 0 224 2941605 Adres: Uludağ Üniversitesi, Ziraat Fakültesi, Biyosistem Mühendisliği Bölümü, Görükle Kampüsü, 16059, Nilüfer/BURSA
17	Website:	
18	Objective of the Course:	Today, instead of fossil energies are set to become an alternative renewable energy sources, almost all disciplines of people are interested in advancing. The purpose of this course is in this context, climate change, solar energy and wind energy, creating a solid foundation in basic concepts and principles for the student, the information related to solar and wind energy applications, to provide an effective opportunity to benefit.
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	

	1	Understand the importance of the concept of energy and global effects of fossil based energy sources
	2	Analyze the positive and negative aspects of renewable energy sources
	3	Grasp different application areas of solar energy with solar-based energy solutions for a facility to develop
	4	Grasp different application areas of wind energy with wind-based energy solutions for a facility to develop
	5	
	6	
	7	
	8	
	9	
	10	

21	Course Content:	
	Course Content:	
Week	Theoretical	Practice

1	Introduction of the concept and importance of energy	Lectures on the analysis of expectations
2	Energy sources and their classification	Homework topics and information given
3	Energies and the effects of fossil origin	About the impact of fossil-based energy sources and examination of visual and videos
4	Global warming and climate change	Visual, and videos about the impact of global warming and climate change analysis
5	Positive and negative aspects of renewable energy resources and their	Renewable energy resources, and videos describing the visual examination
6	Solar radiation	Solar radiation calculations
7	Solar energy systems	System selection and design of solar energy
8	Solar-drying, greenhouse heating, cooling and electricity generation	Solar-drying, greenhouse heating, cooling and electricity production calculations
9	Repeating courses and midterm exam	Solar-drying, greenhouse heating, cooling and electricity production calculations
10	Solar energy solutions based on	Solar energy-based projects
11	The characteristics and structural parameters of the wind	Calculations regarding the structural parameters of the wind
12	Mechanics and aerodynamics of wind	Calculations of the mechanics and aerodynamics of wind
13	Wind energy-based energy solutions	Wind energy-based projects
14	General Review	Solar and wind energy hybrid systems project

22	Textbooks, References and/or Other Materials:	1. Vardar A. ve Çetin B., 2010. Yenilenebilir Enerji Kaynakları Potansiyeli ve Kullanılabilirliği, 6. Kadir Has Üniversitesi Yayınları, İstanbul. 2. Ackermann T., 2005. Wind Power in Power Systems, John Wiley & Sons, Ltd, England. 3. Hau E., 2006. Wind Turbines: Fundamentals, Technologies, Application, Economics, Springer, Berlin, Germany. 4. Gasch R. und Windenergie Werkbuch, Franzis Verlag GmbH, Poing, Germany. Klimaschutz, Carl Hanser Verlag, München, Germany. 5. Öztürk, H.H., 2008. Güneş Enerjisi ve Uygulamaları. 6. Yiğit, A. ve Atmaca İ., 2010. Güneş Enerjisi, Alfa Aktüel, Bursa. okobuch, Staufen bei Freiburg, Germany. 8. Acaroğlu, M., 2003. Alternatif Enerji Kaynakları, Atlas

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	1.00	14.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	14	1.00	14.00
Homeworks	1	12.00	12.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	8.00	8.00
Others	0	0.00	0.00
Final Exams	1	12.00	12.00
Total Work Load			96.00
Total work load/ 30 hr			2.93
ECTS Credit of the Course			3.00

23	Assesment	
TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Quiz	1	10.00
Home work-project	1	20.00
Final Exam	1	60.00
Total	4	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

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	3	4	4	3	3	4	0	4	4	4	0	3	0	0	0	0
ÖK2	4	5	4	3	3	5	3	4	4	4	0	3	0	0	0	0
ÖK3	5	4	4	4	5	3	0	4	3	4	3	5	0	0	0	0
ÖK4	5	4	4	4	5	3	0	4	3	4	3	5	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**