AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title		Science Teaching Laboratory I							
Course Code		FBÖ309		Couse Level		First Cycle (Bachelor's Degree)			
ECTS Credit	4	Workload	103 *(Hours)*	Theory	2	Practice	2	Laboratory	0
Objectives of the Course		To understand importance of laboratory in science education, laboratory types and how scientific process skills would be applied in laboratory, laboratory safety rules							
Course Content		Importance and purpose of the laboratory in science education: teaching the history of the lab, laboratory work place science and technology program. The scientific method and scientific process skills: types of experiments, experimental design and development, science process skills and how they acquired. Measurement and error: reliability, validity, sources of error, the error calculations. Experimental work sheets and test report: kinds of worksheets, worksheets, experiment design and development. Laboratory testing and evaluation: evaluation methods and tools.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Experiment, Discussion, Case Study, Individual Study, Problem Solving					
Name of Lecturer(s)									

Prerequisites & Co-requisities	
Equivalent Course	FBÖ353

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	70

Recommended or Required Reading	
1	Yenice, N. ve Aktamış, H., Eğitim Fakülteleri ve Sınıf Öğretmenleri İçin Fen Bilgisi Laboratuar Deneyleri, Ankara, Anı Yayınları, 2004.
2	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
3	Bingham, Jane, Bilimsel Deneyler, Ankara, TÜBİTAK Yayınları, 2001.
4	Edom, Helen, Deneylerle Bilim, Ankara, TÜBİTAK Yayınları, 1999.
5	Fen Öğretiminde Güvenlik, Öğretmen Eğitimi Dizisi, YÖK/Dünya Bankası Yayınları, 1997.
6	Erbaş, Suzan; Ergül, Remziye; Bulunuz, Nermin, İlköğretim Fen Bilgisi Laboratuvar Etkinlikleri, Bursa, Ekin Kitabevi, 2002.
7	Kesercioğlu, T. (Ed)., Balım, A. G., Öztürk, İ., Çavaş, B., Biyoloji Uygulamaları – I. İzmir: Gema Gelişim Basın Yayın, 2004
8	Özmen, H., Yiğit, N., Teoriden Uygulamaya Fen Bilgisi Laboratuar Kullanımı, 2005
9	Kesercioğlu, T. (Ed)., Günay, F. Y., Balım, A. G., Akpınar, E. Biyoloji Uygulamaları – II. Ankara: Anı Yayıncılık, 2005
10	Altuner, Z., Botanik Laboratuar Kılavuzu. Gaziosmanpaşa Üniversitesi, Fen Edebiyat Fakültesi Yayınları, No:1, Tokat, 1994

Week	Weekly Detailed Course Contents	
1	Theoretical	The importance and purpose of the laboratory in science education
	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
2	Theoretical	The history of education with laboratory
	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
3	Theoretical	Place of laboratory in Science and Technology program
	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
4	Theoretical	Scientific method and scientific process skills
	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
5	Theoretical	How to provide the scientific process steps (problem identification, hypothesis-building and variable setting)
	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.

6	Theoretical	How to provide the scientific process steps (Experimental design, data requirements (table and graphic)
	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
7	Theoretical	How to provide the scientific process steps (Data analysis, evaluation, and interpretation)
	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
8	Theoretical	Measurement and error: reliability, validity
	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
9	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
	Intermediate Exam	Midterm exam
10	Theoretical	Experiment worksheets and test reports: types of work sheets, work sheets
	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
11	Theoretical	Experimental design and development
	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
12	Theoretical	The laboratory, measurement and evaluation: assessment methods and tools
	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
13	Theoretical	Presentation of sample experiment designs prepared by students according to scientific process skill steps
	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
14	Theoretical	Presentation of sample experiment designs prepared by students according to scientific process skill steps
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15	Theoretical	Presentation of sample experiment designs prepared by students according to scientific process skill steps
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16	Preparation Work	Ergin, Ö., Şahin-Pekmez, E. ve Öngel-Erdal, S. (2005). Kuramdan Uygulamaya Deney Yoluyla Fen Öğretimi, Dinazor Kitabevi, İzmir.
	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Lecture - Practice	14	0	2	28
Assignment	7	0	2	14
Reading	14	0	2	28
Midterm Examination	1	1	1	2
Final Examination	1	2	1	3
			Total Workload (Hours)	103
			[Total Workload (Hours) / 25*] = **ECTS**	4

**25 hour workload is accepted as 1 ECTS*

Learning Outcomes

1	To be able to comprehend how to transfer laboratory skills in science courses into education
2	To be able to decide experiment type in laboratory proper to science subjects
3	To be able to interpret, understand and evaluate data obtained from laboratory
4	To be able to obtain new information using scientific process skills and test the accuracy of information
5	To be able to gain the ability to solve the science problems faced in daily life by using scientific process skills
6	To be able to implement a scientific experiment by designing it

Programme Outcomes *(Science Teacher Education)*	
1	To be able to gain subject knowledge of profession in theory and practice in the learning process.
2	To be able to gain the competence of using the appropriate approach, strategy, method and technique for the instructional plans to be prepared in the learning process.
3	To be able to gain the skills of the teaching profession in the learning process.
4	To be able to implement teaching profession knowledge, skills, attitudes and habits related to the subject-matter in a real teaching and learning environment in the learning process.
5	To be able to comprehend contemporary approaches of education and the philosophy they are based on.
6	To be able to gain the basic skills such as comprehending, expressing, commenting, evaluating, being aware and enterprising, communicating, acknowledging the individual related to the subject-matter.
7	To be able to become individuals faithful to the Principles and Revolutions of Ataturk, be modern democratic, secular, protecting and deveoping one's country, being alive to the nation, respecting human rights, preserving the nature, not being discriminatory, giving importance to the traditions and customs, protecting the values
8	To be able to improve oneself in terms of sport, art and culture.
9	To be able to become individuals believing in lifelong learning.
10	To be able to gain the vision of being individuals who keep up with developments in social, economic, technological and scientific areas, who investigate the main reasons of World problems and try to contribute to the solutions of these problems.

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
P1		5				
P2	5	5				
P3	5	5				
P4	5	5				
P6			4			
P9				4		
P10				5	4	5