



**AYDIN ADNAN MENDERES UNIVERSITY**  
**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**  
**MATHEMATICS AND SCIENCE EDUCATION**  
**SCIENCE EDUCATION**  
**SCIENCE EDUCATION MASTER**  
**COURSE INFORMATION FORM**

Course Title	Teachers', Pre-Service Teachers' and Students' Cognitive Ecology								
Course Code	İFB524		Course Level		Second Cycle (Master's Degree)				
ECTS Credit	8	Workload	200 (Hours)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	Examining of teachers', pre-service teachers' and students' conceptual components								
Course Content	Teachers', pre-service teachers' and students' cognitive ecology about science learning, science teaching, assessment and evaluation, laboratory, science curriculum and the reform movements on curriculum. Likert-type scales, metaphors, concept maps and interviews about instances techniques in assessing cognitive ecology.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Individual Study								
Name of Lecturer(s)	Assoc. Prof. Eylem YILDIZ FEYZİOĞLU								

#### Assessment Methods and Criteria

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

#### Recommended or Required Reading

1	Van Driel, J., Beijaard, D., & Verloop, N. (2001). Professional development and reform in science education: The role of teachers' practical knowledge. <i>Journal of Research in Science Teaching</i> , 38(2), 137–158.
2	Kagan, D.M. (1990) Ways of evaluating teacher cognition: inferences concerning the goldilocks principle, <i>Review of Educational Research</i> , 60 (3), pp. 419 – 469.
3	Prawat, R. S. (1992). Teachers' beliefs about teaching and learning: A constructivist perspective. <i>American Journal of Education</i> , 100(3), 354-395.

Week	Weekly Detailed Course Contents	
1	Theoretical	Components of cognitive ecology (beliefs, learning approaches, and self-efficacy): Basic definitions
2	Theoretical	Cognitive ecology of teachers', pre-service teachers' and students about science learning
3	Theoretical	Cognitive ecology of teachers', pre-service teachers' and students about science teaching
4	Theoretical	Cognitive ecology of teachers', pre-service teachers' and students about science assessment
5	Theoretical	Cognitive ecology of teachers', pre-service teachers' and students about science laboratory
6	Theoretical	Cognitive ecology of teachers', pre-service teachers' and students about science curriculum and innovations in science curriculum
7	Theoretical	Ways of evaluating cognitive ecology: self-reflection
8	Intermediate Exam	MIDTERM EXAM
9	Theoretical	Ways of evaluating cognitive ecology: metaphors
10	Theoretical	Ways of evaluating cognitive ecology: Concept maps and critical incidents
11	Theoretical	Identifying of the research methodology
12	Theoretical	Conducting the research and reporting the results
13	Theoretical	Conducting the research and reporting the results
14	Theoretical	Assessment of the research results
15	Theoretical	Assessment of the research results
16	Final Exam	TERM

#### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	2	3	70
Assignment	5	10	0	50
Reading	5	9	0	45
Midterm Examination	1	10	2	12



Final Examination	1	20	3	23
	Total Workload (Hours)			200
	[Total Workload (Hours) / 25*] = ECTS			8
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	To be able to define the basic dimensions of cognitive ecology (belief, approaches to learning, and self-efficacy)
2	To be able to define teachers', pre-service teachers' and students' cognitive ecology about science learning.
3	To be able to define teachers', pre-service teachers' and students' cognitive ecology about science teaching.
4	To be able to define teachers', pre-service teachers' and students' cognitive ecology about assessment and evaluation.
5	To be able to define teachers', pre-service teachers' and students' cognitive ecology about laboratory.
6	To be able to define teachers', pre-service teachers' and students' cognitive ecology about science curriculum and the reform movements on curriculum.
7	To be able to use the likert-type scales in assessing cognitive ecology.
8	To be able to use the metaphors in assessing cognitive ecology.
9	To be able to use the concept maps and interview about instances in assessing cognitive ecology.
10	To be able to report an inquiry project about cognitive ecologies of the selected target population.

### Programme Outcomes (Science Education Master)

1	To be able to have an expert theoretical knowledge within the field of science education.
2	To be able to transfer expert knowledge gained in science education into various instructional environment.
3	To be able to integrate science education knowledge with the other disciplines and product functional knowledge
4	To be able to use information and communication technologies efficiently in conceptual learning
5	To be able to find scientific solutions to the problems in the field of science education
6	To be able to evaluate the knowledge critically in the field
7	To be able to participate in team projects in the science education field
8	To be able to adopt lifelong learning strategies to his/her studies
9	To be able to use at least one foreign language efficiently in oral and verbal communication
10	To be able to share national and international data in the field of science education
11	To be able to comprehend and evaluate science-technology-society and environment interactions
12	To be able to comprehends science under the ethical values and take account of ethical considerations
13	To be able to use scientific information in the other domains that is gained in the masters field and have the transfer skills
14	To be able to follow the current development in the science education field
15	To be able to develop strategical plans and evaluate them in the context of quality processes

### 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	L9	L10
P1	5	5	5	5	5	5	5	5	5	5
P2										5
P3							3	3	3	4
P5							2	2	2	5
P6							4	4	4	5
P7										4
P8	3	3	3	3	3	3				5
P10										3
P12										3
P13								3	3	4
P14	4	4	4	4	4	4	3	3	3	5
P15										5

