



**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	Conceptual Change Model and Metacognition								
Course Code	İFB521		Course Level		Second Cycle (Master's Degree)				
ECTS Credit	8	Workload	200 (Hours)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	Focuses on conceptual change model and metacognition and their applications in science education								
Course Content	Reasons for science misconceptions, the definition of conceptual change model, the conditions for conceptual change model, to develop a critical thinking about the literature related to conceptual change model. The importance of metacognition in conceptual change model and suggestions to reinforce the connection between metacognition and conceptual change model.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Experiment, Discussion, Case Study, 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	Açıkgöz, K. (2000). Etkili Öğrenme ve Öğretme (Üçüncü Baskı). İzmir: Kanyılmaz Matbaası.
2	Açıkgöz, K. (2002). Aktif Öğrenme (Birinci Baskı). İzmir: Eğitim Dünyası Yayınları.
3	Ayas, A., Çepni, S., Akdeniz, A.R. ve Yiğit, N., Özmen, H. ,ve Ayvaci, H.Ş. (2005). Kuramdan Uygulamaya Fen ve Teknoloji Öğretimi (4. Baskı). Ankara: Pegem Yayınıncılık.
4	Baird, J.R. (1990). Metacognition, Purposeful Enquiry and Conceptual Change. In E. Hegarty-Hazel (Ed.) The Student Laboratory and the Science Curriculum (sayfa. 183-200). London: Routledge.
5	Brown, A.L. (1987). Metacognition, Executive Control, Self-Regulation, and Other Mysterious Mechanisms. In F. E. Weinert and R. H. Kluwe (Eds) Metacognition, Motivation, and Understanding (s. 65–116). Hillsdale, NJ: Lawrence Erlbaum.

Week	Weekly Detailed Course Contents	
1	Theoretical	Learning theories (Behaviorism, cognitivism and constructivism)
2	Theoretical	Misconceptions and conceptual ecology
3	Theoretical	Conceptual change model
4	Theoretical	Conditions for conceptual change
5	Theoretical	Critics for conceptual change model
6	Theoretical	The role of metacognition in conceptual change: Basic definitions about metacognition
7	Theoretical	Components of metacognition: Knowledge of Cognition (declarative knowledge, procedural knowledge and conditional knowledge)
8	Intermediate Exam	MIDTERM EXAM
9	Theoretical	Components of metacognition: Regulation of Cognition (planning, self-monitoring, self-checking and self-assessment)
10	Theoretical	Review of the researchs on metacognition in conceptual change model
11	Theoretical	Review of the researchs on metacognition in conceptual change model
12	Theoretical	Examining the research on metacognition in conceptual change model in a critical viewpoint of national studies
13	Theoretical	Preparing a presentation about basic concepts in education and about features of system of education
14	Theoretical	Basic concepts, the characteristics of a system.
15	Theoretical	Review of the topics studied
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 notice the change of the learning theories according to the historical development
2	To be able to explain the basic propositions of the constructivist learning theory
3	To be able to explain the reasons for science misconceptions and offer suggestions about the remediation of these misconceptions
4	To be able to explain the conceptual change model and the conditions of conceptual change in the classroom.
5	To be able to design teaching activities that foster conceptual change
6	To be able to develop a critical thinking about the literature related to conceptual change model.
7	To be able to know the definition of metacognition and distinguish cognition and metacognition. To be able to explain the dimensions of the metacognition and give examples of these dimensions.
8	To be able to make suggestions about why a link should be established between conceptual change model and metacognition.
9	To be able to report the results of the studies metacognition which embedded in conceptual change model.
10	To be able to make suggestions to reinforce the connection between metacognition and conceptual change model.

**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			4	5	4	5	4
P2			2		5					
P3	2		4		4			4		5
P4	5				3					
P5	5		2							4
P6	5	3	4	4	2	5		4		4
P7			2		2					
P8	5	5	5	5		4		4		
P10	2	3							5	
P11	5									
P13	4		4		3	3		3		4



P14	5	4	5	4	3				5	3
P15			5		4					3

