THEORETICAL FOUNDATIONS AND APPLICATIONS OF STEAM EDUCATION IN PRE-SCHOOL PERIOD

1	Course Title:	THEORETICAL FOUNDATIONS AND APPLICATIONS OF STEAM EDUCATION IN PRE-SCHOOL PERIOD	
2	Course Code:	OKU6122	
3	Type of Course:	Optional	
4	Level of Course:	Third Cycle	
5	Year of Study:	1	
6	Semester:	2	
7	ECTS Credits Allocated:	4.00	
8	Theoretical (hour/week):	2.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:		
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Dr. Ögr. Üyesi SEMA NUR GÜNGÖR	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	Dr. Öğr. Üyesi Sema Nur GÜNGÖR sgungor@uludag.edu.tr Bursa Uludağ Üniversitesi, Eğitim Fak. Temel Eğitim Bölümü, Okul Öncesi Öğretmenliği Anabilim Dalı, A Blok Görükle / BURSA İş Tel: 0 224 2955058	
17	Website:		
18	Objective of the Course:	It is to teach pre-school teachers the STEM practices that will provide them with the knowledge and skills they have learned in the fields of science, technology, engineering and mathematics to help them gain 21st century skills such as critical thinking, creativity, innovation, problem solving, productivity and taking responsibility.	
19	Contribution of the Course to Professional Development:	Teachers will gain knowledge and skills related to STEM, STEAM and E-STEM education, which have an important place in the field of pre-school education.	
20	Learning Outcomes:		
		1	It uses a variety of idea generation techniques. (Brainstorming, question-answer, discussion, etc.)
		2	It uses various technologies to design components.
		3	Evaluates the benefits and risks of a design.
		4	It explains the basic processes needed for a project.
		5	Clarifying different perspectives and leading to better solutions identifies important problems.
		6	Demonstrates the ability to select, use and troubleshoot available technologies.
		7	Ideas and theories by actively exploring real-world problems develops.
		8	It explains the basic processes needed for a project. (design and prototype development)
		9	Applies design concepts related to physical and mechanical system problems.

		10	Uses various types of reasoning (induction, deduction, etc.) appropriate to a situation.
21	Course Content:		
	Course Content:		
Week	Theoretical		Practice
1	Theoretical Foundations of STEAM Education		
2	STEAM Education and 21st Century Skills		
3	Reviewing STEM Education Reports		
4	Entrepreneurship and STEAM Training		
5	Engineering Applications in STEAM Education		
6	Technology in STEAM Education		
7	Science Centers and STEAM Education		
8	Preschool STEAM Education		
9	STEAM Learning Models		
10	Designing and Implementing a STEAM-Based Preschool Activity		
11	Designing and Implementing a STEAM-Based Preschool Activity		
12	Designing and Implementing a STEAM-Based Preschool Activity		
13	Measurement and Evaluation in STEAM Education		
14	Measurement and Evaluation in STEAM Education		
22	Textbooks, References and/or Other Materials:		Çepni, S. (2018). STEM Education from Theory to Practice. Pegem Akademi yayıncılık, Ankara. Yıldırım, B. (2021). STEM Education from Theory to Practice - Practice Book. Nobel Akademik Yayıncılık. Ankara. Akarsu, M. ve Okur, N. (2022). STEM Education Approach. Pegem Yayınları, Ankara.
23	Assesment		
TERM LEARNING ACTIVITIES		**NUMBER**	**WEIGHT**
Midterm Exam		0	0.00
Quiz		0	0.00
Home work-project		0	0.00
Final Exam		1	100.00
Total		1	100.00
Contribution of Term (Year) Learning Activities to Success Grade			0.00
Contribution of Final Exam to Success Grade			100.00
Total			100.00
Measurement and Evaluation Techniques Used in the Course			Final examination
24	**ECTS / WORK LOAD TABLE**		

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	5.00	70.00
Homeworks	1	20.00	20.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	0	1.00	0.00
Others	0	0.00	0.00
Final Exams	1	1.00	1.00
Total Work Load			119.00
Total work load/ 30 hr			4.00
ECTS Credit of the Course			4.00

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	2	0	4	0	0	0	0	0	4	0	0	0	0	4	0	0
ÖK2	0	0	0	4	0	0	0	4	0	0	0	5	0	0	0	0
ÖK3	3	0	0	0	0	4	0	0	0	0	0	0	2	0	0	3
ÖK4	0	3	2	0	0	0	3	0	0	0	0	4	0	0	2	0
ÖK5	2	0	3	0	0	0	0	0	0	0	5	0	0	2	0	0
ÖK6	0	2	0	0	0	0	0	5	0	0	0	0	0	0	0	0
ÖK7	4	0	0	5	0	0	0	0	0	4	0	0	0	0	0	0
ÖK8	0	3	0	0	3	0	0	4	0	0	0	0	0	5	0	0
ÖK9	4	0	0	0	1	0	0	0	3	0	0	0	4	0	0	0
ÖK10	0	0	4	0	0	0	3	0	0	0	0	5	0	3	0	4
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	**1 very low**		**2 low**		**3 Medium**		**4 High**			**5 Very High**						