

Course Title	STEAM Approaches in Early Childhood Education				
Course Code	EDE620				
Course Type	Compulsory				
Level	Master (2 nd Cycle)				
Year / Semester	1 st / 2 nd				
Teacher's Name	TBA				
ECTS	10	Lectures / week	3 Hours/ 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	<p>The purpose of this course is to provide students a deep understating to STEAM Education, its basic principles and its current trends as well as the ways STEAM Education is connected with early childhood education as it appears in the current research and publications and how it can be applied in pre-school and lower elementary school teaching and learning. Additionally, the course purpose includes (a) the critical study of contemporary applications of STEAM education for the development of children's 21st century abilities, and (b) redefining the role of the teachers as professionals and researchers.</p>				
Learning Outcomes	<p>Upon successful completion of the course, students will be able to:</p> <ul style="list-style-type: none"> • Dialectically describe the current trends in STEAM education, learning in early childhood education and the use of emerging digital technologies as tools for teaching and learning in STEAM education. • Dialectically and reflectively redefine the main purpose of early childhood education and education in general as well as the rile of role of the teachers as professionals and researchers in the context of STEAM education • Identify and justify the common ground between the contemporary approaches of learning and STEAM education, as well as the close relationship between the traditional approaches of early childhood education and the basic principles of STEAM education • Identify STEAM education within the general international discussion concerning learning and playing in early childhood education • Design, apply and evaluation teaching and learning programs in STEAM education in early childhood education following an interdisciplinary approach, having in mind the current epistemological and methodological issues for each of the subject areas in STEAM education (science, technology, engineering, arts, mathematics) as well as more specific fields of sciences such as astronomy, biology, biochemistry and statistics • Use their cognitive, reflective and critical skills to manage the theoretical knowledge and their daily practices within the context of STEAM education • Use their cognitive abilities for designing, evaluating, applying and analyzing teaching and learning approaches of STEAM education and making connections with the theory and literature in the area. 				
Prerequisites	None	Co-requisites	None		
Course Content	<ul style="list-style-type: none"> • Basic principles of STEAM education • Theories of teaching and learning in STEAM education • Creative learning and play in STEAM education • Contemporary approaches and models STEAM education • Digital tools as the main pillar in STEAM education • Leaning in science education (physics, chemistry, biology, astronomy and various combination among them) in STEAM education • Learning in Engineering in STEAM education 				

	<ul style="list-style-type: none"> • Learning in Mathematics in STEAM education • The role of representations and learning through modeling-based learning in science • Differentiation in STEAM education • Interdisciplinarity in STEAM education • The role of reflection and documentation in STEAM Education • Additional STEAM fields (e.g. astronomy, biology, biochemistry, anthropology, atatics)Μια διευρυμένη αντίληψη της εκπαίδευσης STEAM (π.χ. επαφή με θέματα αστρονομίας, βιολογίας, βιοχημείας, ανθρωπολογίας, στατιστικής) • Recognition of the demands of the 21st century in identifying the importance of STEAM Education • Inquiry based learning in STEAM education • Curriculum development in STEAM education • Social and communicative learning and STEAM education 						
Teaching Methodology	Face- to- face						
Bibliography	<ul style="list-style-type: none"> • Martinez, S. L., & Stager, G. (2013). Invent to learn: Making, Triggering and Engineering in the Classroom. Constructing Modern Knowledge Press. • Maslyk, J. (2016). STEAM Makers: Fostering Creativity and Innovation in the Elementary Classroom. Corwin Press. • Resnick, M., & Robinson, K. (2017). Lifelong kindergarten: Cultivating creativity through projects, passion, peers, and play. MIT Press. • Riley, S. M. (2014). No permission required: Bringing STEAM to life in K-12 schools. Visionyst Press.Sousa, D. A., & Pilecki, T. (2018). From STEM to STEAM: Brain-compatible strategies and lessons that integrate the arts. Corwin Press. 						
Assessment	<table border="1"> <tr> <td>Exams</td> <td>50%</td> </tr> <tr> <td>Assignments</td> <td>40%</td> </tr> <tr> <td>Class Participation and Attendance</td> <td>10%</td> </tr> </table>	Exams	50%	Assignments	40%	Class Participation and Attendance	10%
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Language	English						