Course Title	Technology, Robotics & Construction Play				
Course Code	EDE640				
Course Type	Elective				
Level	Master (2nd Cycle)				
Year / Semester	2nd / 3rd				
Teacher's Name	TBA				
ECTS	10	Lectures / week	3 Hours	Laboratories / week	N/A
Course Purpose and Objectives	The purpose of this course is to study in depth the current approaches and principles of STEAM in relation with the use of digital technologies, robotics, engineering and constructive play in early childhood education. In this framework, an additional purpose of this course is to dialectically and reflectively redefine the main goals of early childhood education, the role of the teachers in the contexts of the tools provided with the emerging technologies for early childhood education.				
Learning Outcomes	Upon successful completion of the course, students will be able to: • Describe, explain and compare the ways in which the current theories determining the design of learning environments with the use of κατασκευαστικού παιχνιδιού and the application of emerging new digital technologies, robotics and engineering in early childhood education. • design of learning activities and learning environments with the application of emerging new digital technologies, robotics and engineering using current approaches of learning in early childhood education. • Identify and describe the commonalities between the contemporary approaches of learning and STEAM early childhood education and the use of digital emerging technologies and its applications (e.g. robotics) in STEAM education • Discuss the contemporary approaches of engineering education in STEAM early childhood education • Redefine reflectively and critically the role of constructive play, digital emerging technologies, robotics and engineering in early childhood education and the role of the teacher • To investigate various types of constructive play, digital emerging technologies, and robotics for young children and the ways they interact can with them • Describe the latest developments in the area of digital technologies and robotics in early childhood STEAM education				
Prerequisites	None		Co-requisites	None	
Course Content	• Examples of constructive play • Main principles of learning and approaches of using digital emerging technologies, robotics and programming in early childhood STEAM education • Theoretical approaches in engineering education in the context of early childhood STEAM education • The use of digital technologies as the main pillar for STEAM education • Constructive play as a tool for early childhood STEAM education • Abilities for programming, children needs and learning and teaching approaches in early childhood STEAM education • Abilities for programming, children needs and learning and teaching approaches in early childhood STEAM engineering education				

	• How robotics, programming and engineering fit in STEAM early childhood education • Designing of learning environments and learning programs, using emerging digital technologies in early childhood STEAM education • Learning and playing in STEAM through robotics and engineering • History and development of robotics education applications and their use in various fields of education • Overview of main education robotics and educational coding and programing • Innovation and entrepreneurial skills as part of the development, use and application of new, emerging technologies in Εκπαίδευση STEAM στην πρώτη αγωγή και εκπαίδευση • Principles for integration of emerging digital technologies, robotics and programming in early childhood STEAM education • Design opportunities for learning and literacy for emerging digital technologies, robotics and programming in early childhood STEAM education • Demonstrate understanding of a body of knowledge that includes recent developments related to STEAM teaching and learning in early childhood education and the use of emerging digital technologies and robotics as tools for learning STEAM. • Demonstrate technical and communication skills to design, evaluate, implement, analyze and theorize about developments that contribute to effective professional practice in the use of emerging digital technologies and robotics as tools for learning STEAM
Teaching Methodology	Face- to- face
Bibliography	Barker, B. (2012). *Robots in K-12 Education: A New Technology for Learning: A New Technology for Learning.* Hershey, PA: IGI Global. Bers, M. U. (2008). *Blocks to robots: learning with technology in the early childhood classroom.* New York, NY: Teachers College Pr. Donohue, C. (2014). *Technology and Digital Media in the Early Years: Tools for Teaching and Learning.* London, England: Routledge. Druin, A. (2009). *Mobile Technology for Children: Designing for Interaction and Learning.* Burlington, MA: Morgan Kaufmann. Gadzikowski, A. (2017). *Robotics for Young Children: Stem Activities and Simple Coding.* Hendler, J. (2000). *Robots for Kids: Exploring New Technologies for Learning. Burlington, MA: Morgan Kaufmann.* Heroman, C. (2017). *Making and Tinkering with STEM: Solving Design Challenges with Young Children.* National Association of Education of Young Children. LaGrandeur, K., & Hughes, J. J. (2017). *Surviving the Machine Age: Intelligent Technology and the Transformation of Human Work. Basingstoke, England: Springer.* Vries, M. J., Gumaelius, L., & Skogh, I. (2016). *Pre-university Engineering Education.* Basingstoke, England: Springer.

Assessment	Exams	50%
	Assignments	40%
	Class Participation and Attendance	10%
Language	English	