CURRICULUM T&LS5
DIDACTICS & STEM

Doctoral scholarship for a restricted research topic (M.D. 629/2024)	**1**
Doctoral scholarship for a restricted research topic (M.D. 630/2024)	**4**
Doctoral scholarships provided and funded by partner Institutions or Universities	**0**
Doctoral positions without scholarship	**1**

Available positions	Research topic	Details
n. 1 doctoral scholarship D.M. n. 629/2024 Inv. 3.4 Digital and environmental transitions	**[DM629-TDA]** *Educational models and new experimental digital technologies* (Main centre of activities: Cagliari)	***Description of the activities*** The research activities will be based on the study of application models based on paradigms, even not consolidated, teaching based on conversational agents and applied artificial intelligence and similar features. The project will focus on the possible limitations and advantages in the applications to STEM teaching, also analyzing the experimental results. ***Obligations of PhD students*** Periods of study and research in companies or research centres for at least **six (6) months.** Study and research period of **six (6) months abroad**.
n. 1 doctoral scholarship D.M. n. 630/2024 Inv. 3.3 From Research to Enterprise	**[DM630]** *Generative artificial intelligence methodologies and tools for a new science of learning* (Main centre of activities: Cagliari)	***Description of the activities*** The research activity aims to define new methodologies and new tools that exploit the potential of AI in the field of teaching and learning sciences. Artificial intelligence promises an educational revolution, where teaching will fully adapt to the previous abilities of learners, assessed objectively, defining truly personalized, inclusive and engaging training paths. The issues also affect companies, which have always been interested in updating employees' knowledge and skills, overcoming the growing cultural and linguistic barriers. Research will therefore have to face significant technological and educational challenges, exploiting AI for example to: effectively and objectively evaluate existing skills and those to be developed; create ad hoc teaching material as a combination of existing materials or generating them from scratch; reduce the learner's cognitive load with the use of tools such as extended reality, the metaverse, gamification. All this, without ever losing sight of an ethical, inclusive vision centered on the human being rather than on technology. ***Obligations of PhD students*** Periods of study and research in companies for at least **six (6) months**. Study and research period **of six (6) months abroad**.

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n. 1 doctoral scholarship D.M. n. 630/2024 Inv. 3.3 From Research to Enterprise	**[DM630]** *Innovative and enabling technologies for digital transformation in teaching* (Main centre of activities: Cagliari)	***Description of the activities*** The activity planned for the doctoral program aims to study computational models and methods for the digital transition of teaching activities. It will cover the thematic areas related to the topics and research groups of the doctoral program, such as artificial intelligence in general and its more specific applications for decision support in education. This also includes research in cloud computing, data mining, and machine/deep learning, as well as the development of techniques for analyzing large amounts of data, including time series, human-machine interactions, and the interfaces through which these interactions occur ***Obligations of PhD students*** Periods of study and research in companies for at least **six (6) months**. Study and research period of **six (6) months abroad**.
n. 1 doctoral scholarship D.M. n. 630/2024 Inv. 3.3 From Research to Enterprise	**[DM630]** *Applications of Artificial Intelligence to distance learning* (Main centre of activities: Cagliari)	***Description of the activities*** The activities include an initial state-of-the-art study on new technologies for distance learning within the specific STEM disciplines, in particular artificial intelligence (AI) and, in part, Blockchain technology. The path will continue with the identification of specific applications for AI supported-elearning, mentoring and evaluation of learning, with particular reference to personalized learning through "AI-enabled Web-app and mobile applications" and "adaptive e-learning". We will analyze algorithms of automatic adaptation of content to the learning level guided by data (data driven) based on the learning performance of the individual. It will analyze the problem of data privacy and security related to remote learning. Finally, possible applications of blockchain technology for the certification of learning outcomes will be studied. ***Obligations of PhD students*** Periods of study and research in companies for at least **six (6) months**. Study and research period of **six (6) months abroad**.

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n. 1 doctoral scholarship **D.M. n. 630/2024** **Inv. 3.3** From Research to Enterprise.	**[DM630]** *STEAM Skills, Learning, and Digital Marketing* (Main centre of activities: Università Degli Studi di Salerno, Dipartimento di Matematica)	***Description of the activities*** The P.H.D. student will be involved in research activities related to the following topics: - Literature analysis on the use of AI in Long Life Learning. - Literature analysis on STEM skills and their application in Digital Marketing. - Development of algorithms for Digital Marketing. - Design and implementation of teaching strategies and models to support the development of STEM skills in a Long Life Learning perspective. - Analysis and use of big data. - Analysis and fine-tuning of AI models for Digital Marketing. - Data analysis. - Design and development of web systems for digital publishing. ***Obligations of PhD students*** Periods of study and research in companies for at least **twelve (12) months.** Study and research period of **six (6) months abroad**.
n. 1 posto senza borsa di studio	**[OSB]** *The STEM educational approach for the promotion of wellbeing and empowerment in highly complex contexts* (Sede prevalente delle attività: University of Messina)	***Descrizione delle attività*** The research project, which is based on the opportunities offered by the STEM disciplines, in the context of the challenges that the current landscape imposes, aims to identify action models and strategies aimed at increasing the growth, skills and personal well-being of learners in highly complex contexts as well as ensuring, in the light of teaching practices oriented towards the use of inclusive technologies and Universal Design for Learning, the full culture of accessibility, in the plurality of learning experiences. ***Eventuale*** Periodi di studio e ricerca all'estero fino a un massimo di **sei (6) mesi**.