

<b>RESEARCH METHODOLOGIES FOR STEAM (MASTED-01-10)</b>				
<b>DEGREE PROGRAM:</b>		Master in integrated STEAM Education (MASTED)		
<b>SEMESTER:</b> First	<b>TYPE:</b> Basic	<b>CREDITS:</b> 3 ECTS	<b>WORKLOAD:</b> 75 hours	<b>MENTORING:</b> 4 hours/week
<b>LANGUAGE:</b> Portuguese/English				

<b>OBJECTIVES</b>	
<b>General</b>	<ul style="list-style-type: none"> <li>Assimilate processes, methodologies and practices related to scientific research;</li> <li>Develop scientific-critical spirit</li> </ul>
<b>Specific</b>	<ul style="list-style-type: none"> <li>Understand the major research methodologies;</li> <li>Be able to identify a research problem and conduct a literature review associated;</li> <li>Define a scientific methodology and work plan;</li> <li>Develop scientific articles.</li> </ul>
<b>SUBJECT MATTER</b>	
<p>This subject is intended to develop a critical attitude towards the scientific process, the choice of scientific methodologies, ways of disseminating and communicating research, the preparation of research proposals and the management of scientific data. In this way, it is intended that students acquire knowledge about advanced research methodologies and the ability to structure a work plan.</p>	
<b>COMPETENCES</b>	
<ul style="list-style-type: none"> <li>C3: Developing of plans and organising and innovating the teaching/learning process, as well as to apply the plan and to assess its application.</li> <li>C4: Developing and using of a wide range of strategies to organise the classroom/learning space and foster learning.</li> <li>C8: Professional development and self-reflection.</li> <li>C12: Developing critical literacy competence.</li> <li>C13: Developing citizenship competence.</li> </ul>	
<b>LEARNING OUTCOMES</b>	
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>Curricular knowledge.</li> <li>Knowledge of contextual, institutional, organizational aspects of non-formal educational settings.</li> </ul>
<b>Skills</b>	<ul style="list-style-type: none"> <li>Ability to adapt researches to the development of disciplines and practices.</li> <li>Researcher skills development.</li> <li>Design, development and evaluation of basic and advanced research processes that can be applied to different socio-educational contexts through different methodologies.</li> <li>Ability to solve problems in new environments within multidisciplinary contexts related to Education.</li> </ul>
<b>Attitudes/values</b>	<ul style="list-style-type: none"> <li>Commitment for promoting the learning of all students.</li> <li>Disposition to examining, discussing, questioning one's own practices.</li> <li>Improvement of attitudes of research, innovation, collaboration, autonomous learning.</li> <li>Commitment to safeguard students' wellbeing according to the legal regulations.</li> <li>Coherent intervention according to the ethical values of the country and the school in which he/she teaches.</li> <li>Disposition to flexibility and ongoing learning.</li> <li>Disposition to being critical, self-critical and reflecting on the ethical and professional aspects of the profession, as well as on the own practice.</li> </ul>
<b>TEACHING METHODS</b>	

The contents are presented in order to explore a sustained manner necessary to supplement the training of students in the field of research methodologies seeking to deepen concepts related to areas of most importance to the activities of demand and scientific research materials. The content of the proposed programme addresses the various essential aspects of meeting these targets, particularly with regard to current topics and recent developments.

This teaching methodology and assessment meets the objectives set for this Course given that students will research and develop research on content. The classes are not limited to only exhibition but rather collaborative. A review in contemplating the presentations of the requested work meets the objectives of the course and of the Bologna process that point to a methodology that allows a collaborative teaching and learning, the development of interpersonal skills, greater transparency of content and collaboration effective for students in the teaching learning process. The programme is addressed in practical classes following the explanation of each of them with examples that allow a better understanding of the issues. In class are also presented case studies that allow students develop the ability to understand the problems associated with it.

#### **EVALUATION**

For the final grade of the student is considered continuous assessment (carrying out research / practical work report and / or tests). If the student wishes to obtain approval or make improvement evaluation, this may be obtained in the normal examination period or appeal.

The final rating is calculated according to the expression:  $0.2 * (\text{review article}) + 0.3 * (\text{Article writing}) + 0.5 * (\text{Project working plan})$ .

#### **PRECONDITIONS**

None

<b>DEPARTMENT</b>	Computer Graphics and Multimedia Electronics and instrumentation
<b>LECTURERS</b>	Vitor Carvalho
<b>LITERATURE</b>	<ul style="list-style-type: none"> <li>• Yin, R.K. (2014), Case Study Research. Design and Methods, 5th edition, Newbury Park: SAGE Publication, California.</li> <li>• Hair, Joseph F, Jr., Rolph E. Anderson, Ronald L. Tatham e William C. Black (2010) Multivariate Data Analysis (7th Ed.); Upper Saddle River, US: Prentice Hall.</li> <li>• Patrick F. Dunn (2018), Measurement and Data Analysis for Engineering and Science, 4th edition, CRC Press, New York.</li> <li>• <a href="http://www.b-on.pt">www.b-on.pt</a></li> </ul>