



## Academic Software Factory Curriculum

IDENTIFICATION					
ID	Name	Period	Curriculum modality	Prerequisites	Workload (hours)
SFAI	Software Factory for AI-based system development	6º	Presential	Software Engineering, Artificial Intelligence	120

OBJECTIVE/SUMMARY
<p>This course aims to equip students with the skills needed to develop artificial intelligence (AI)-based systems, including (1) identifying the characteristics of AI-based systems according to subfields, (2) defining minimum viable product (MVP) functionalities for AI-based systems, (3) specifying requirements based on the characteristics of AI-based systems, (4) managing AI-based systems, (5) modeling and developing AI-based systems, and (6) conducting tests.</p>

THEME	LEARNING OUTCOMES
<b>(1) Artificial Intelligence:</b> types of AI-based systems, subfields, and their characteristics	<b>RA1.1.</b> Recall the different types of AI-based systems <b>RA1.2.</b> Interpret the different types of problems <b>RA1.3.</b> Differentiate the characteristics of each type of system.
<b>(2) MVP:</b> types of MVP, market and user discovery, functionalities	<b>RA2.1.</b> Recall the different types of MVPs for product development <b>RA2.2.</b> Understand the current state and desired state of the product to be developed. <b>RA2.3.</b> Identify the type of MVP considering the problem and the characteristics of AI-based systems. <b>RA2.4.</b> Identifying proto-personas, what they do, and what they expect



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	<p><b>RA2.5.</b> Identify candidate functionalities for the MVP based on the activities of the proto-personas and characteristics of AI-based systems.</p> <p><b>RA2.6.</b> Desenvolver documentação das funcionalidades utilizando ferramenta(s) CASE.</p>
<b>(3) Requirements:</b> Specification using user stories according to the characteristics of AI-based systems and techniques/models.	<p><b>RA3.1:</b> Structure candidate functionalities into user stories according to the characteristics of AI-based systems.</p> <p><b>RA3.2.</b> Structure candidate functionalities into user stories considering techniques/algorithms to support the development of AI-based systems.</p> <p><b>RA3.3.</b> Develop user story documentation using CASE tool(s).</p>
<b>(4) Management:</b> backlog, prioritization, and deliverables	<p><b>RA4.1:</b> Estimate potential risks related to the development of AI-based systems</p> <p><b>RA4.2.</b> Perform practical activities and decision-making in a software project team.</p> <p><b>RA4.3.</b> Create the product backlog</p> <p><b>RA4.4.</b> Prioritize the items in the backlog and define the deliverables</p> <p><b>RA4.5.</b> Manage the development process using CASE tool(s)</p>
<b>(5) Modeling and Development:</b> modeling and development considering the characteristics of AI-based systems	<p><b>RA5.1.</b> Model the system considering aspects related to data, infrastructure, and techniques/algorithms</p> <p><b>RA5.2.</b> Use tools to assist in modeling the AI-based system</p> <p><b>RA5.3.</b> Develop the AI-based system</p> <p><b>RA5.4.</b> Use tools for project versioning</p>
<b>(6) Testing and Validation:</b> test plan, testing practices	<p><b>RA6.1.</b> Design and structure tests considering the characteristics of AI systems</p> <p><b>RA6.2.</b> Validate the developed techniques/algorithms</p> <p><b>RA6.3.</b> Conduct unit tests</p> <p><b>RA6.4.</b> Conduct non-functional requirements testing</p> <p><b>RA6.5.</b> Use tools to assist in conducting and recording the tests performed</p>