

Certification Examination Regulations and Course Description

This Certification Examination Regulations of the Steinbeis+Academy applies to the following course on the basis of the valid Framework for the Implementation of Certificate Courses (RZLG) in the current version.

Course title	Mastering Data Technology: Digital Infrastructure, Data Analytics, and AI Essentials														
Fields of competences	<table border="1"> <tr> <td>Management</td><td>Personality Development</td><td>Education Management</td><td>Healthcare</td><td>Technology</td></tr> <tr> <td>X</td><td></td><td></td><td></td><td>X</td></tr> </table>					Management	Personality Development	Education Management	Healthcare	Technology	X				X
Management	Personality Development	Education Management	Healthcare	Technology											
X				X											
Place(s) of implementation	Berlin	Munich	Online												
Graduation	Diploma of Advanced Studies (DAS)	Certificate of Advanced Studies (CAS)	Diploma of Basic Studies (DBS)	Certificate of Basic Studies (CBS)											
	X (X) The three components of the DAS can be studied separately and awarded a CAS if passed successfully														
Qualification aim	<p>This course equips students with the practical knowledge and skills to develop and deploy AI solutions in real-world scenarios. By the end of the course, students will be able to design, build, and deploy intelligent systems, leveraging cloud computing, edge computing, and software development principles. They will have the ability to transform ideas into functional AI applications and contribute to solving complex problems across various domains.</p> <hr/>														
RZLG-Supplementary admission requirement	None														
Teaching method	Classroom	Classroom/ Online	Online												
		X													
Language	English														

Workload in hours

Total	Seminar time	Self-study time	Transfer time
450	6	324	120

Type of performance records (LNW)

Examination (K)	Presentation/ oral examination (P)	Case (C)	Transfer paper (TA)	Project study paper (PSA)
			X	

Contents

Modules	Key topics	Seminar time/h
	<p>Cloud Computing</p> <ul style="list-style-type: none"> - Economics, Advantages/Disadvantages - Technology, Architectures, Standards - Cloud Delivery Models: IaaS, PaaS, MaaS, SaaS - Virtualization, Containerization, Managed Services - Cloud Strategy: Make-Or-Buy - Tool / Market Landscape <p>Edge Computing</p> <ul style="list-style-type: none"> - Architectures, Standards - Hardware, Sensors - Runtimes, Cloud Integration - Edge Strategy: Cloud vs. Edge 	

Digital Infrastructure & Principles of Software Development	Principles of Software Development - Agile Development - Team and project structures - Source code management, open source work structures - Licenses, modules, package systems - Introduction to Python - "Software 2.0" - consequences of the shift from traditional software development to Machine Learning IT Service Management (ITSM) - Reference models - DevOps Case studies from the areas of Consumer/Industrial IoT, Content Delivery/Streaming, etc.	2
Data Exploration & Analytics	Basic features of data visualization and information design. Exploration of a data set and development of dashboards with appropriate tools (e.g. Tableau, PowerBI) Types, structure and objectives (descriptive, diagnostic, predictive, prescriptive analytics) of analytical systems Basics of machine learning, data mining and overview of essential methods Essential phases of the data science process Problem definition Data preparation and feature engineering Method selection and model generation Quality assessment, QA and deployment	2

Artificial Intelligence	<p>Overview of history, types and current performance of AI (partly based on selected case studies),</p> <ul style="list-style-type: none">- technical and organizational requirements for the development and deployment of AI in the enterprise,- technical-statistical introduction to neural networks as a core component of AI systems with practical exercises on examples such as handwriting recognition,- quality criteria and characteristic strengths/weaknesses of neural networks in comparison to major alternatives,- Application of neural networks in AI core disciplines: Computer Vision, Speech/Natural Language Processing, Representation Learning, Semantic Reasoning,- model evaluation, Explainable AI and possibilities of quality assurance- Case study based analysis of successful AI systems	2
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