

Certification Examination Regulations and Course Discription

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	Internet of Things				
Fields of competences	Management	Personality Development	Education Management	Healthcare	Technology
	X				X
Place(s) of implementation	Bengaluru (India)				
Graduation	Diploma of Advanced Studies (DAS)	Certificate of Advanced Studies (CAS)	Diploma of Basic Studies (DBS)	Certificate of Basic Studies (CBS)	
				X	
Qualification aim	Engineering Graduates automobile, electronics communications stream, computer science and Working Professional from instrumentation/communication engineering background. Entry level: IoT Developer / Embedded IoT developer.				
RZLG-Supplementary admission requirement	Aspirants with C# Developer with Azure/ IT Software - Application Programming				
Teaching method	Classroom	Classroom/ Online	Online		
		X			
Language	English				
Workload in hours	Total	Seminar time	Self-study time	Transfer time	
	50	30	10	10	

Type of performance records (LNW)	Examination (K)	Presentation/ oral examination (P)	Case (C)	Transfer papaer (TA)	Project study paper (PSA)
	X				

Contents

Modules	Key topics	Seminar time/h
Introduction- Concepts and Technologies behind Internet of Things	Concepts & Definitions; Myth with IoT; Business with IoT; Carrier in IoT; IoT Applications; IoT system overview; Node, Gateway, Clouds; Why IoT is essential; Machine learning; Artificial Intelligence	2
IoT Architecture	IoT Network Architecture; IoT Device Architecture; IoT Device Architecture; Publish-Subscribe architecture	3
IoT Device Design	Sensors – Classification & selection criteria based on the nature, frequency and amplitude of the signal; Embedded Development Boards – Arduino, Raspberry Pi, Intel Galileo, ESP8266	4
IoT Communication Protocols	Wired Communication Protocols; Wireless Communication Protocols; Application Protocols – MQTT, CoAP, HTTP, AMQP; Transport layer protocols – TCP vs UDP; IP- IPv4 vs IPv6	3
Cloud	Concept & Architecture of Cloud; Public cloud vs Private cloud; Different Services in cloud (IAAS / PAAS / SAAS); Importance of Cloud Computing in IOT; Leveraging different Cloud platforms.	6
Designing the IoT product	Interfacing peripherals & Programming GPIOs – Input/output peripherals, Sensor modules; Design Considerations – Cost, Performance & Power Consumption tradeoffs	7
Programming	Embedded C; python; Arduino	4

<p>Hands-on using Raspberry Pi board</p>	<p>Setting up board; Booting up Raspberry Pi; Running python on Raspberry Pi, GPIO programming; Interfacing sensors and LED (Input and output devices); Making a few projects; Sending data to cloud 2 using Raspberry Pi board; Sending data to cloud 3 using Raspberry Pi board; Making raspberry Pi web server; Making raspberry PI TCP client and server: Making raspberry Pi UDP client and server; Module 9 - Use cases; A cloud-based temperature monitoring system using Arduino and Node MCU; Esp8266 WIFI controlled Home automation; Obstacle detection using IR sensor and Arduino: Remote controlling with Node MCU; Temperature monitoring using a Raspberry Pi as local server: Raspberry Pi controlling Esp8266 using MQTT; weather monitoring system using Raspberry Pi and Microsoft Azure cloud</p>	<p>10</p>
<p>Closer</p>	<p>Existing Product in Market; Barrier in IoT</p>	<p>1</p>