

ARTIFICIAL INTELLIGENCE



Certification



Arcitura[®]
CERTIFIED
Artificial Intelligence
Specialist

 Pearson | VUE 



The Next-Gen IT Academy from Arcitura is dedicated to providing an ever-growing variety of training courses and accreditations in contemporary technologies and fields of practice within the IT industry. Important and modern innovations that are redefining the IT landscape and that have reached a sufficient state of maturity are researched and documented into sets of courses that form the basis for formal certifications.

TABLE OF CONTENTS



04

Training & Certification //////////////

05

Exam AI90.01 //////////////

06

Module 1:
Fundamental Artificial Intelligence //////////////

08

Module 2:
Advanced Artificial Intelligence //////////////

10

Module 3:
Artificial Intelligence Lab //////////////

12

Arcitura Certification Programs //////////////



TRAINING & CERTIFICATION

The Artificial Intelligence (AI) track is comprised of three courses that develop skills in AI practices and learning approaches, as well as Neural Network architectures, cell types and activation functions. The final course module consists of a series of lab exercises that require participants to apply their knowledge of the preceding courses in order to fulfill project requirements and solve real world problems. Completion of these courses as part of a virtual or on-site workshop results in each participant receiving an official digital Certificate of Completion, as well as a digital Training Badge from Acclaim/Credly.

To achieve the Artificial Intelligence Specialist Certification, Exam AI90.01 must be completed with a passing grade. A Certified Artificial Intelligence Specialist understands how AI practices can be utilized to perform data analysis and autonomous data processing with unprecedented functionality and business value. In addition to a demonstrated proficiency of AI learning approaches and functional designs, the Certified Artificial Intelligence Specialist has comprehensive knowledge of Neural Network architecture models, associated layers and neuron cell types. Those who achieve this certification receive an official digital Certificate of Excellence, as well as a digital Certification Badge from Acclaim/Credly with an account that supports the online verification of certification status.

For more information, visit: www.arcitura.com/ai





EXAM AI90.01

Exam AI90.01 can be taken worldwide at Pearson VUE testing centers or via Pearson VUE online proctoring. To learn more about scheduling this exam, visit www.pearsonvue.com/arcitura. This exam can also be made available for on-site proctoring as part of eligible public or private workshops. To learn more, visit www.arcitura.com/onsite.

It is recommended that you prepare for Exam AI90.01 by acquiring the AI Specialist Certification eLearning kit bundle or the printed AI Specialist Certification study kit bundle or by attending an instructor-led workshop that includes the Artificial Intelligence Modules 1, 2 and 3. The current public workshop calendar can be viewed at www.arcitura.com/workshops. To learn more about having a private workshop delivered at your location, visit www.arcitura.com/private.



Fundamental Artificial Intelligence

MODULE 01



This course provides essential coverage of artificial intelligence and neural networks in easy-to-understand, plain English. The course provides concrete coverage of the primary parts of AI, including learning approaches, functional areas that AI systems are used for and a thorough introduction to neural networks, how they exist, how they work and how they can be used to process information. The course establishes the five primary business requirements AI systems and neural networks are used for, and then maps individual practices, learning approaches, functionalities and neural network types to these business categories and to each other, so that there is a clear understanding of the purpose and role of each topic covered. The course further establishes a step-by-step process for assembling an AI system, thereby illustrating how and when different practices and components of AI systems with neural networks need to be defined and applied. Finally, the course provides a set of key principles and best practices for AI projects.

The following primary topics are covered:

- AI Business and Technology Drivers, AI Benefits and Challenges
- Business Problem Categories Addressed by AI, AI Types (Narrow, General, Symbolic, Non-Symbolic, etc.)
- Common AI Learning Approaches and Algorithms
- Supervised Learning, Unsupervised Learning, Continuous Learning
- Heuristic Learning, Semi-Supervised Learning, Reinforcement Learning
- Common AI Functional Designs, Computer Vision, Pattern Recognition
- Robotics, Natural Language Processing (NLP)
- Speech Recognition, Natural Language Understanding (NLU)
- Frictionless Integration, Fault Tolerance Model Integration
- Neural Networks, Neurons, Layers, Links, Weights
- Understanding AI Models and Training Models and Neural Networks
- Understanding how Models and Neural Networks Exist
- Loss, Hyperparameters, Learning Rate, Bias, Epoch
- Activation Functions (Sigmoid, Tanh, ReLU, Leaky ReLU, Softmax, Softplus)
- Neuron Cell Types (Input, Backfed, Noisy, Hidden, Probabilistic, Spiking, Recurrent, Memory, Kernel, Convolution, Pool, Output, Match Input, etc.)
- Fundamental and Specialized Neural Network Architectures
- Perceptron, Feedforward, Deep Feedforward, AutoEncoder, Recurrent, Long/Short Term Memory,
- Boltzmann Machine, Restricted Boltzmann Machine, Deep Belief Network
- Deep Convolutional Network, Extreme Learning Machine, Deep Residual Network
- Support Vector Machine, Kohonen Network, Hopfield Network
- Generative Adversarial Network, Liquid State Machine, How to Build an AI System (Step-by-Step)
- Common AI System Design Principles and Common AI Project Best Practices

MORE INFO

For curriculum information, visit:
www.arcitura.com/nextgen.



CONTENTS

This course is available as part of an Arcitura Study Kit in full-color printed and eLearning formats. In addition to the base course materials used during training workshops, additional materials designed for self-study purposes are also included.

- Workbook (1 of 3)
- Exam Preparation Guide (1 of 3)
- Supplement: Neural Networks
- Supplement: Algorithms and Practices
- Symbol Legend Poster
- Mind Map Poster
- Poster: Neural Networks and Neuron Types Mapping
- Poster: Problem Types and Neural Networks Mapping
- Poster: Neural Networks and Practices Mapping
- Poster: Problem Types and Practices Mapping
- Flashcards
- Video Lessons (eLearning only)



eLEARNING

The eLearning kit provides enhanced features for self-study, including custom annotations and commenting, outline-driven navigation, custom bookmarks, multi-document viewing and full-text searching. This environment also enables online and offline access without the need to install any software.



Advanced Artificial Intelligence

MODULE 02



This course covers a series of practices for preparing and working with data for training and running contemporary AI systems and neural networks. It further provides techniques for designing and optimizing neural networks, including approaches for measuring and tuning neural network model performance. The practices and techniques are documented as design patterns that can be applied individually or in different combinations to address a range of common AI system problems and requirements. The patterns are further mapped to the learning approaches, functional areas and neural network types that were introduced in Module 1: Fundamental Artificial Intelligence.

The following primary topics are covered:

- Data Wrangling Patterns for Preparing Data for Neural Network Input
- Feature Encoding for Converting Categorical Features
- Feature Imputation for Inferring Feature Values
- Feature Scaling for Training Datasets with Broad Features
- Text Representation for Converting Data while Preserving Semantic and Syntactic Properties
- Dimensionality Reduction to Reduce Feature Space for Neural Network Input
- Supervised Learning Patterns for Training Neural Network Models
- Supervised Network Configuration for Establishing the Number of Neurons in Network Layers
- Image Identification for using a Convolutional Neural Network
- Sequence Identification for using a Long Short Term Memory Neural Network
- Unsupervised Learning Patterns for Training Neural Network Models
- Pattern Identification for Visually Identifying Patterns via a Self Organizing Map
- Content Filtering for Generating Recommendations
- Model Evaluation Patterns for Measuring Neural Network Performance
- Training Performance Evaluation for Assessing Neural Network Performance
- Prediction Performance Evaluation for Predicting Neural Network Performance in Production
- Baseline Modeling for Assessing and Comparing Complex Neural Networks
- Model Optimization Patterns for Refining and Adapting Neural Networks
- Overfitting Avoidance for Tuning a Neural Network
- Frequent Model Retraining for Keeping a Neural Network in Synch with Current Data
- Transfer Learning for Accelerating Neural Network Training

MORE INFO

For curriculum information, visit:
www.arcitura.com/nextgen.



CONTENTS

This course is available as part of an Arcitura Study Kit in full-color printed and eLearning formats. In addition to the base course materials used during training workshops, additional materials designed for self-study purposes are also included.

- Workbook (2 of 3)
- Exam Preparation Guide (2 of 3)
- Mind Map Poster
- Poster: Neural Networks and Design Patterns Mapping
- Poster: Problem Types and Design Patterns Mapping
- Poster: Practices and Design Patterns Mapping
- Flashcards
- Video Lessons (eLearning only)



eLEARNING

The eLearning kit provides enhanced features for self-study, including custom annotations and commenting, outline-driven navigation, custom bookmarks, multi-document viewing and full-text searching. This environment also enables online and offline access without the need to install any software.



Artificial Intelligence Lab

MODULE 03



//////

This course module presents participants with a series of exercises and problems that are designed to test their ability to apply their knowledge of topics covered in previous courses. Completing this lab will further improve proficiency in AI systems, neural network architectures and related learning and functional practices and patterns, as they are applied and combined to solve a series of real-world problems.

For instructor-led delivery of this lab course, the Certified Trainer works closely with participants to ensure that all exercises are carried out completely and accurately. Attendees can voluntarily have exercises reviewed and graded as part of the class completion. For individual completion of this course as part of a study kit, a number of supplements are provided to help participants carry out exercises with guidance.

//////

MORE INFO

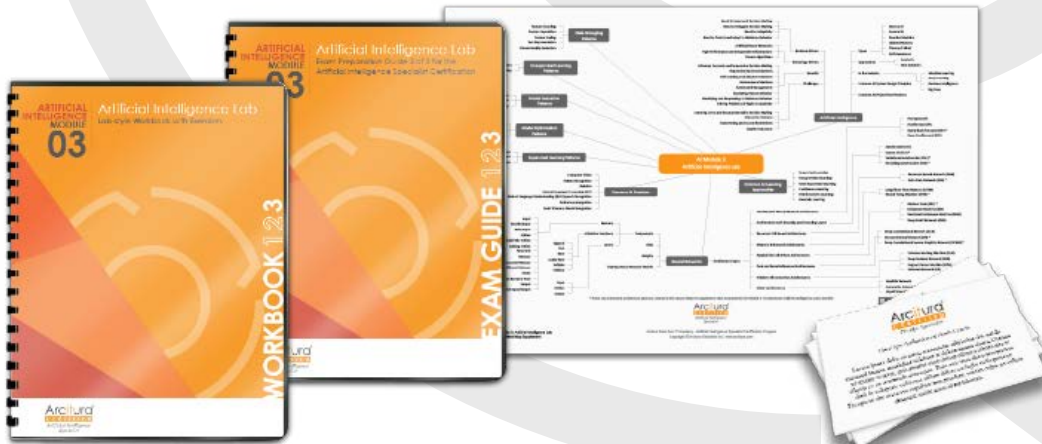
For curriculum information, visit:
www.arcitura.com/nextgen.



CONTENTS

This course is available as part of an Arcitura Study Kit in full-color printed and eLearning formats. In addition to the base course materials used during training workshops, additional materials designed for self-study purposes are also included.

- Workbook (3 of 3)
- Exam Preparation Guide (3 of 3)
- Mind Map Poster
- Flashcards



eLEARNING

The eLearning kit provides enhanced features for self-study, including custom annotations and commenting, outline-driven navigation, custom bookmarks, multi-document viewing and full-text searching. This environment also enables online and offline access without the need to install any software.



DIGITAL TRANSFORMATION CERTIFICATIONS

DIGITAL TRANSFORMATION PROFESSIONAL ACADEMY



	Digital Transformation Specialist	Digital Transformation Technology Professional	Digital Transformation Technology Architect	Digital Transformation Data Science Professional	Digital Transformation Data Scientist	Digital Transformation Security Professional	Digital Transformation Security Specialist	Digital Transformation IA Professional	Digital Transformation IA Specialist
MODULE 01 Fundamental Digital Transformation	●	●	●	●	●	●	●	●	●
MODULE 02 Digital Transformation in Practice	●	●	●	●	●	●	●	●	●
MODULE 03 Fundamental Cloud Computing		●	●						
MODULE 04 Fundamental Blockchain		●	●			●	●		
MODULE 05 Fundamental IoT		●	●						
MODULE 06 Cloud Architecture			●						
MODULE 07 Blockchain Architecture			●				●		
MODULE 08 IoT Architecture			●						
MODULE 09 Fundamental Big Data Analysis & Analytics				●	●				
MODULE 10 Fundamental Machine Learning				●	●				
MODULE 11 Fundamental AI				●	●			●	●
MODULE 12 Advanced Big Data Analysis & Analytics					●				
MODULE 13 Advanced Machine Learning					●				
MODULE 14 Advanced AI					●				●
MODULE 15 Fundamental Cybersecurity						●	●		
MODULE 16 Advanced Cybersecurity							●		
MODULE 17 Fundamental RPA								●	●
MODULE 18 Advanced RPA & Intelligent Automation									●

////// To learn more, visit:
www.arcitura.com/digitaltransformation



		Certified DevOps Specialist	Certified Blockchain Architect	Certified Machine Learning Specialist	Certified Artificial Intelligence Specialist	Certified IoT Architect	Certified Cybersecurity Specialist	Certified RPA Specialist	Certified Business Technology Professional	Certified Containerization Architect
DevOps	MODULE 01	●								
	MODULE 02	●								
	MODULE 03	●								
Blockchain	MODULE 01		●							
	MODULE 02		●							
	MODULE 03		●							
Machine Learning	MODULE 01			●						
	MODULE 02			●						
	MODULE 03			●						
Artificial Intelligence	MODULE 01				●					
	MODULE 02				●					
	MODULE 03				●					
Internet of Things	MODULE 01					●				
	MODULE 02					●				
	MODULE 03					●				
Cybersecurity	MODULE 01						●			
	MODULE 02						●			
	MODULE 03						●			
RPA	MODULE 01							●		
	MODULE 02							●		
	MODULE 03							●		
Business Technology	MODULE 01								●	
	MODULE 02								●	
	MODULE 03								●	
Containerization	MODULE 01									●
	MODULE 02									●
	MODULE 03									●

DIGITAL TRANSFORMATION

DIGITAL TRANSFORMATION PROFESSIONAL ACADEMY

MODULE 01 | Fundamental Digital Transformation

MODULE 02 | Digital Transformation in Practice

MODULE 03 | Fundamental Cloud Computing

MODULE 04 | Fundamental Blockchain

MODULE 05 | Fundamental IoT

MODULE 06 | Cloud Architecture

MODULE 07 | Blockchain Architecture

MODULE 08 | IoT Architecture

MODULE 09 | Fundamental Big Data Analysis & Analytics

MODULE 10 | Fundamental Machine Learning

MODULE 11 | Fundamental AI

MODULE 12 | Advanced Big Data Analysis & Analytics

MODULE 13 | Advanced Machine Learning

MODULE 14 | Advanced AI

MODULE 15 | Fundamental Cybersecurity

MODULE 16 | Advanced Cybersecurity

MODULE 17 | Fundamental RPA

MODULE 18 | Advanced RPA & Intelligent Automation

CURRICULUM MAPPING

The following diagram highlights the course modules from the Digital Transformation curriculum that correspond to course modules from the Artificial Intelligence Specialist program. Completing Artificial Intelligence Modules 1 and 2 automatically advances you in Digital Transformation certification tracks.

MODULE 01 Fundamental Cloud Computing	CCP
MODULE 02 Cloud Technology Concepts	CCP
MODULE 01 Fundamental Blockchain	NEXT-GEN
MODULE 01 Fundamental IoT	NEXT-GEN
MODULE 04 Cloud Architecture	CCP
MODULE 02 Blockchain Technology & Architecture	NEXT-GEN
MODULE 02 IoT Technology & Architecture	NEXT-GEN
MODULE 01 Fundamental Big Data	BDSCP
MODULE 01 Fundamental Machine Learning	NEXT-GEN
MODULE 01 Fundamental AI	NEXT-GEN
MODULE 02 Big Data Analysis & Technology Concepts	BDSCP
MODULE 02 Advanced Machine Learning	NEXT-GEN
MODULE 02 Advanced AI	NEXT-GEN
MODULE 01 Fundamental Cybersecurity	NEXT-GEN
MODULE 02 Advanced Cybersecurity	NEXT-GEN
MODULE 01 Fundamental RPA	NEXT-GEN
MODULE 02 Advanced RPA & Intelligent Automation	NEXT-GEN

CLOUD CERTIFIED PROFESSIONAL (CCP)

CLOUD SCHOOL



	Certified Cloud Professional*	Certified Cloud Technology Professional	Certified Cloud Architect	Certified Cloud Security Specialist	Certified Cloud Governance Specialist	Certified Cloud Storage Specialist	Certified Cloud Virtualization Specialist
MODULE 01 Fundamental Cloud Computing	●	●	●	●	●	●	●
MODULE 02 Cloud Technology Concepts	●	●	●	●	●	●	●
MODULE 03 Cloud Technology Lab		●					
MODULE 04 Fundamental Cloud Architecture			●				
MODULE 05 Advanced Cloud Architecture			●				
MODULE 06 Cloud Architecture Lab			●				
MODULE 07 Fundamental Cloud Security				●			
MODULE 08 Advanced Cloud Security				●			
MODULE 09 Cloud Security Lab				●			
MODULE 10 Fundamental Cloud Governance					●		
MODULE 11 Advanced Cloud Governance					●		
MODULE 12 Cloud Governance Lab					●		
MODULE 13 Fundamental Cloud Storage						●	
MODULE 14 Advanced Cloud Storage						●	
MODULE 15 Cloud Storage Lab						●	
MODULE 16 Fundamental Cloud Virtualization							●
MODULE 17 Advanced Cloud Virtualization							●
MODULE 18 Cloud Virtualization Lab							●

*The Certified Cloud Professional designation is automatically issued when achieving any other CCP certification. It can also be achieved by receiving passing grades on Exams C90.01 + C90.02.

	Certified Big Data Professional*	Certified Big Data Science Professional	Certified Big Data Scientist	Certified Big Data Consultant	Certified Big Data Engineer	Certified Big Data Architect	Certified Big Data Governance Specialist
MODULE 01 Fundamental Big Data	●	●	●	●	●	●	●
MODULE 02 Big Data Analysis & Technology Concepts	●	●	●	●	●	●	●
MODULE 03 Big Data Analysis & Technology Lab		●		●			
MODULE 04 Fundamental Big Data Analysis & Science			●	●			
MODULE 05 Advanced Big Data Analysis & Science			●				
MODULE 06 Big Data Analysis & Science Lab			●				
MODULE 07 Fundamental Big Data Engineering				●	●		
MODULE 08 Advanced Big Data Engineering					●		
MODULE 09 Big Data Engineering Lab					●		
MODULE 10 Fundamental Big Data Architecture						●	
MODULE 11 Advanced Big Data Architecture						●	
MODULE 12 Big Data Architecture Lab						●	
MODULE 13 Fundamental Big Data Governance							●
MODULE 14 Advanced Big Data Governance							●
MODULE 15 Big Data Governance Lab							●

* The Certified Big Data Professional designation is automatically issued when achieving any other BDSCP certification. It can also be achieved by receiving passing grades on Exams B90.01 + B90.02.

SOA CERTIFIED PROFESSIONAL (SOACP)

SOA SCHOOL



		Certified SOA Professional*	Certified SOA Analyst	Certified SOA Architect	Certified Microservice Architect	Certified Service Tech Consultant	Certified Service API Specialist	Certified Service Governance Specialist	Certified Service Security Specialist
MODULE 01	Fundamental SOA, Services & Microservices	●	●	●	●	●	●	●	●
MODULE 02	Service Technology Concepts	○		●	●	●	●		●
MODULE 03	Design & Architecture w/ SOA, Services & Microservices	○	●	●				●	
MODULE 04	Fundamental SOA Analysis & Modeling w/ Services & Microservices		●						
MODULE 05	Advanced SOA Analysis & Modeling w/ Services & Microservices		●						
MODULE 06	SOA Analysis & Modeling Lab w/ Services & Microservices		●						
MODULE 07	Advanced SOA Design & Architecture w/ Services & Microservices			●					
MODULE 08	SOA Design & Architecture Lab w/ Services & Microservices			●					
MODULE 09	Fundamental Microservice Architecture & Containerization				●	●			
MODULE 10	Advanced Microservice Architecture & Containerization				●				
MODULE 11	Microservice Architecture & Containerization Lab				●				
MODULE 12	Fundamental Service API Design & Management					●	●		
MODULE 13	Advanced Service API Design & Management						●		
MODULE 14	Service API Design & Management Lab						●		
MODULE 15	Fundamental Service Governance & Project Delivery							●	
MODULE 16	Advanced Service Governance & Project Delivery							●	
MODULE 17	Service Governance & Project Delivery Lab							●	
MODULE 18	Fundamental Security for Services, Microservices & SOA					●			●
MODULE 19	Advanced Security for Services, Microservices & SOA								●
MODULE 20	Security Lab for Services, Microservices & SOA								●

*The Certified SOA Professional designation is automatically issued when achieving any other SOACP certification. It can also be achieved by receiving passing grades on Exams S90.01B + S90.02B or S90.01B + S90.03B.

To learn more, visit:
www.arcitura.com/soacp





Arcitura®

Copyright © Arcitura Education Inc.
www.arcitura.com