

SECURITY FOR MICROSERVICES & SOA

Training & Certification Guide



Arcitura[®]
DIGITAL

About the Service Technology School

/// The Service Technology School from Arcitura provides formal education and accreditation programs dedicated to the fields of Microservices, Service APIs and SOA, including analysis, modeling, design, architecture, security and governance.

The Service Technology School curriculum is comprised of 20 course modules and 9 certification tracks. Exams are available worldwide via Pearson VUE testing centers, as well as via Pearson VUE OnVue online proctoring and on-site delivery by Certified Trainers. Achieving a passing grade on the required exam(s) achieves a certification for which a digital accreditation certificate is automatically issued by Arcitura and a digital certification badge is issued by Acclaim/Credly.

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HOW TO TAKE THIS COURSE



ARCITURA ELEARNING OPTIONS

To give you the most flexibility to achieve your learning goals and accommodate your preferences, this course is made available via two Arcitura eLearning solutions: An interactive environment with graded exercises and a graded self-test, as well as a study kit account that supports online/offline access and custom annotations.

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

To enroll, visit: digital.arcitura.com/courses



ONSITE WORKSHOPS

Private onsite workshops can be delivered by Certified Trainers from Arcitura and authorized training partners for both small and large groups. Each workshop participant can receive access to the full Arcitura Digital eLearning course materials. Each workshop agenda, format and schedule can be tailored to client requirements.

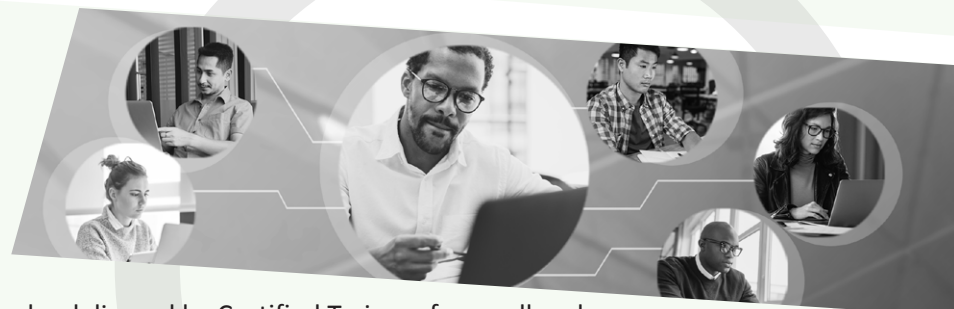
To learn more, visit: www.arcitura.com/workshops



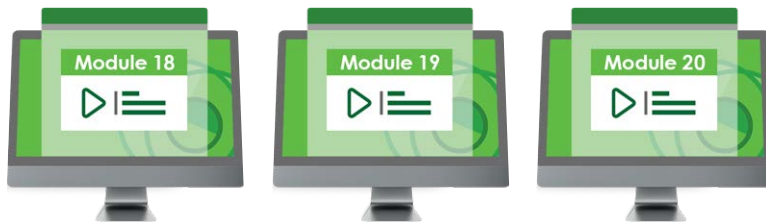
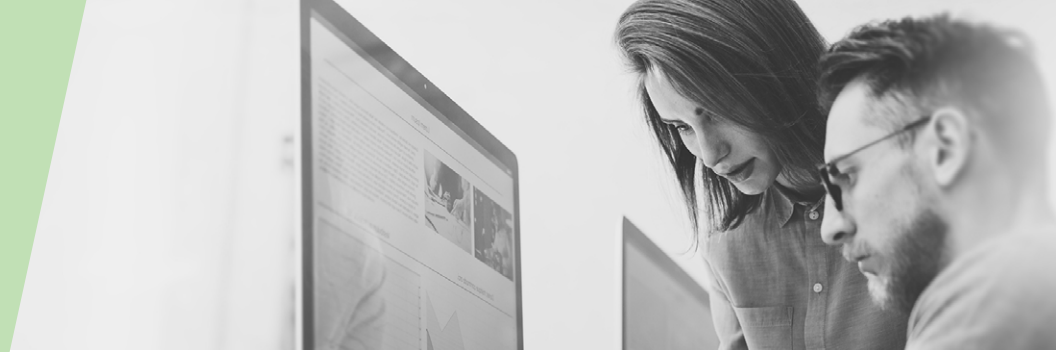
VIRTUAL WORKSHOPS

Private virtual workshops can be delivered by Certified Trainers for small and large groups, as well as individual participants. Workshop participants receive access to the course materials via the Arcitura Digital eLearning platform. Virtual workshop agendas can be tailored with greater flexibility to accommodate more distributed and fragmented training schedules.

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



Several additional learning and exam preparation products and services are available, including coaching, exam prep kits and digital downloads. See the Training and Exam Preparation Resources page for details.



HOW TO GET STARTED

Welcome to the Security for Microservices & SOA course! This course is comprised of a set of modules. Each module has a set of lessons and is further supplemented with exercises to help reinforce your understanding of key topics. Upon completing the course, you can optionally proceed to prepare yourself for the certification exam (as explained on the *How to get Certified* page).

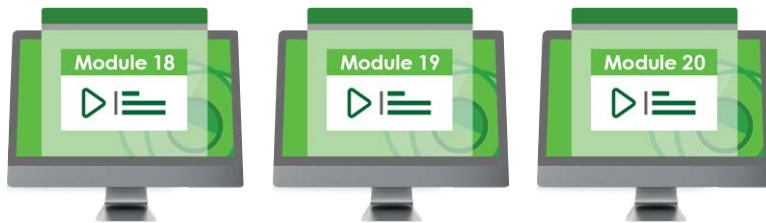
Additional resources are available to assist you with completing this course, including downloadable digital course files, printed course materials, coaching hours and instructor-led training services (as explained on the *Training and Exam Preparation Resources* page.)

PREREQUISITE

The prerequisite for this course is the completion of the Fundamental Microservices & Service Technology course. It is recommended that you complete the Fundamental Microservices & Service Technology course prior to starting the Security for Microservices & SOA course.

MORE INFO

To enroll in this course, visit:
digital.arcitura.com/courses



HOW TO GET CERTIFIED

You can become a Certified Service Security Specialist! This course can prepare you for the official Service Security Specialist Certification exam, which can be taken worldwide at Pearson VUE testing centers, via Pearson VUE online proctoring and/or Arcitura direct proctoring.

Upon attaining a passing grade on the certification exam (and fulfilling any other prerequisite exam requirements) you will achieve the Service Security Specialist Certification, after which you will automatically receive an official digital Accreditation Certificate and a digital Certification Badge from Acclaim/Credly with an account that supports the online verification of your certification status. Digital accreditation certificates and badges are free of charge.

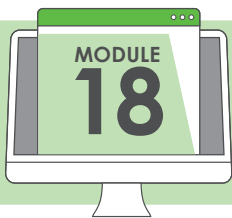
Additional resources are available to assist you with preparing for the certification exam, including practice exam questions, downloadable digital course files, printed course materials, coaching hours and instructor-led training services (as explained on the *Training and Exam Preparation Resources* page.)

MORE INFO

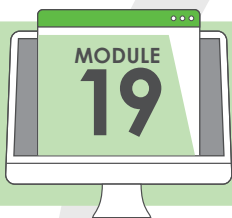
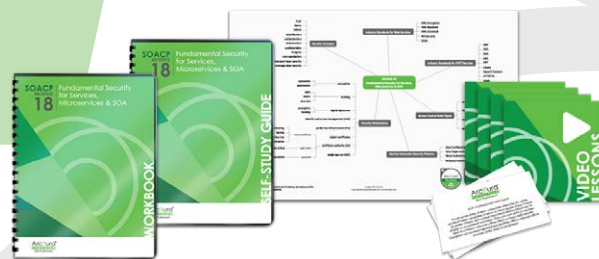
To learn more about this certification and exam, visit:
www.arcitura.com/certifications

COURSE MODULE OUTLINES

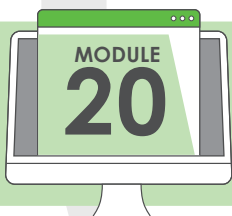
The Security for Microservices & SOA course is comprised of the following course modules. Outlines for these course modules are provided on the subsequent pages.



Fundamental Security for Services, Microservices & SOA



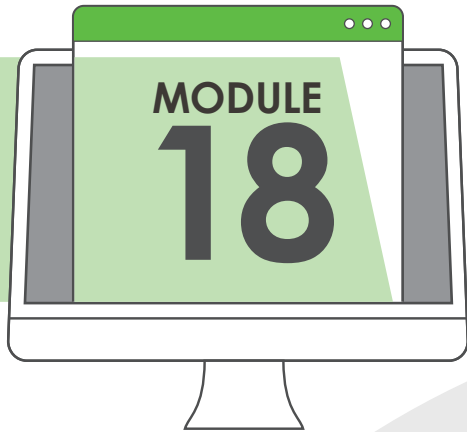
Advanced Security for Services, Microservices & SOA



Security Lab for Services, Microservices & SOA



Fundamental Security for Services, Microservices & SOA

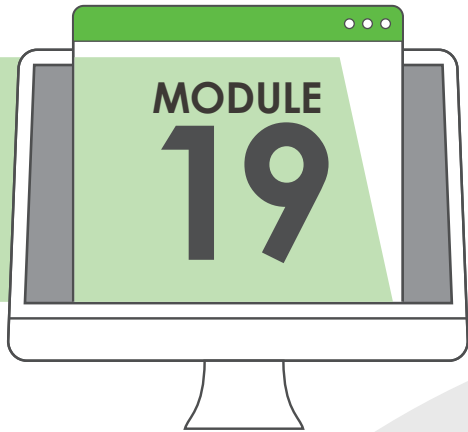


This course module provides essential techniques, patterns and industry technologies that pertain to establishing security controls and security architectures for services, microservices and service-oriented solutions.

The following primary topics are covered:

- Security and the Service-Oriented Architectural Model
- SOA Security Considerations for Service and Composition Architectures
- Security Implications of Service-Oriented Principles
- Trust, Claims, Tokens, Identity, Authentication, Authorization, Transport and Message Layer Security
- Encryption, Hashing, Digital Signatures, Identity and Access Management (IAM)
- Public Key Infrastructure (PKI), Digital Certificates, Certificate Authorities, Single Sign-On (SSO)
- REST Services and JSON Industry Standards
- JavaScript Object Signing and Encryption (JOSE) Framework, OAuth2
- HTTP Basic and Digest Authentication, API Key, JWT with X.509 certificates
- Service Interaction Security Patterns (Data Confidentiality, Data Origin Authentication, Direct Authentication, Brokered Authentication)
- Web Services and XML Industry Standards
- XML Encryption, XML Signature, WS-Security, Token Profiles, SAML
- Microservice Security Considerations
- Implementing SOA Security and Service-Oriented Security

Advanced Security for Services, Microservices & SOA



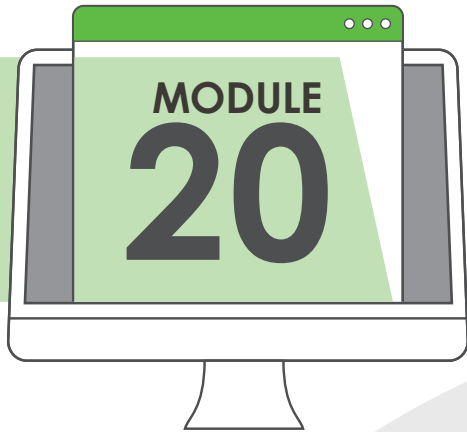
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This course module covers a series of technical and complex security topics pertaining to contemporary service-oriented solution design, infrastructure, microservices, API gateways and modern service technologies.

The following primary topics are covered:

- Understanding SOA Security Threats
- STRIDE (Spoofing, Tampering, Repudiation, Information Disclosure, Denial-of-Service, Elevation of Privilege)
- SOA Security Patterns for Internal Service Architecture (Exception Shielding, Message Screening, Trusted Subsystem, Service Perimeter Guard)
- Security Token Structures and Issuance (JWT, Username, X.509, SAML)
- Authentication Sessions and Secure Conversations
- Federation and Trust Brokering Security
- Policy Design and Governance
- REST Security Controls and Designs
- Open API Specification (OAS v 3.0), Open ID Connect
- Web service Security Controls and Designs
- WS-Policy, WS-SecurityPolicy, WS-Trust and WS-Secure Conversation with SAML
- Microservices and Containerization Security Considerations
- Security Extensions and Controls for API Gateways and ESBs
- Security Risks and Considerations for Cloud-based Services and Service Compositions
- Preparing for Common SOA Security Threats

Security Lab for Services, Microservices & SOA



As a continuation of course modules 18 and 19, this hands-on workshop allows attendees to apply the security concepts, techniques, patterns and technologies previously covered in order to complete a set of exercises.

Participants are required to analyze case study backgrounds and carry out a series of exercises to solve a number of inter-related problems, with the goal of producing a range of security solutions.

The following exercises are provided:

- Reading Exercise 20.1: Cutit Saws Mini Case Study Background
- Lab Exercise 20.2: Ordering Service Security Architecture Redesign
- Lab Exercise 20.3: Ordering Service Security Architecture Hardening for Threat Protection
- Lab Exercise 20.4: Aggregate Report Service Security Architecture
- Lab Exercise 20.5: REST Inventory Service Security Architecture
- Lab Exercise 20.6: Three-Party Permit Service Security Architecture
- Lab Exercise 20.7: Auction Solution Security Architecture
- Reading Exercise 20.8: YouSave Automotive Parts Mini Case Study Background
- Lab Exercise 20.9: ProcessOrder Service Security Architecture
- Lab Exercise 20.10: ProcessOrder Service Security Architecture Redesign



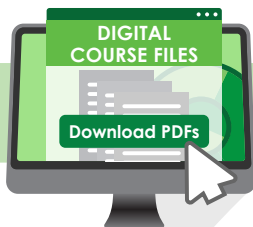
TRAINING AND EXAM PREPARATION RESOURCES

You can supplement this course with a number of available resources to assist with both learning and exam preparation. Contact info@arcitura.com with any questions.



Certification Exam Prep Kit

A set of additional practice questions is available to support exam preparation.



Digital Course Files

For each course you can order a set of downloadable digital course materials comprised of printable, watermarked workbook and poster PDF files.



Printed Course Materials

The printed workbooks and posters for each course can be ordered in B&W and full-color, and can be shipped worldwide.



One-on-One Coaching

Certified Trainers are available to provide online coaching on an hourly basis and in all time zones.



Instructor-Led Training

Certified Trainers are available to provide virtual and onsite training workshops for this and other Arcitura courses.

| COURSES | | Digital Transformation | Digital Transformation: Fundamental Technology | Digital Transformation: Advanced Technology & Architecture | Digital Transformation: Fundamental Data Science | Digital Transformation: Advanced Data Science | Digital Transformation: Fundamental Security | Digital Transformation: Advanced Security | Digital Transformation: Fundamental Intelligent Automation | Digital Transformation: Advanced Intelligent Automation |
|----------------|---|-----------------------------------|--|--|--|---|--|--|--|--|
| CERTIFICATIONS | | 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 Intelligent Automation Professional | Digital Transformation Intelligent Automation 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 | | | | | | | | | ● |
| MODULE 19 | Fundamental AI Decisioning | | | | | | | | ● | ● |
| MODULE 20 | Advanced AI Decisioning | | | | | | | | | ● |

Gray circles indicate prerequisite modules.

| COURSES | | DevOps | Blockchain Architecture | IoT Architecture | Cybersecurity | Robotic Process Automation | Digital Business Technology | Containerization Architecture | Quantum Computing |
|-----------------------------|--|-------------------|-------------------------|------------------|--------------------------|----------------------------|--|-------------------------------|------------------------------|
| CERTIFICATIONS | | DevOps Specialist | Blockchain Architect | IoT Architect | Cybersecurity Specialist | RPA Specialist | Digital Business Technology Professional | Containerization Architect | Quantum Computing Specialist |
| DevOps | MODULE 01 Fundamental DevOps | ● | | | | | | | |
| | MODULE 02 DevOps in Practice | ● | | | | | | | |
| | MODULE 03 DevOps Lab | ● | | | | | | | |
| Blockchain | MODULE 01 Fundamental Blockchain | | ● | | | | | | |
| | MODULE 02 Blockchain Technology & Architecture | | ● | | | | | | |
| | MODULE 03 Blockchain Technology & Architecture Lab | | ● | | | | | | |
| Internet of Things | MODULE 01 Fundamental IoT | | | ● | | | | | |
| | MODULE 02 IoT Technology & Architecture | | | ● | | | | | |
| | MODULE 03 IoT Technology & Architecture Lab | | | ● | | | | | |
| Cybersecurity | MODULE 01 Fundamental Cybersecurity | | | | ● | | | | |
| | MODULE 02 Advanced Cybersecurity | | | | ● | | | | |
| | MODULE 03 Cybersecurity Lab | | | | ● | | | | |
| Robotic Process Automation | MODULE 01 Fundamental RPA | | | | | ● | | | |
| | MODULE 02 Advanced RPA & Intelligent Automation | | | | | ● | | | |
| | MODULE 03 RPA Lab | | | | | ● | | | |
| Digital Business Technology | MODULE 01 Business Automation Technology Overview | | | | | | ● | | |
| | MODULE 02 Data Science Technology Overview | | | | | | ● | | |
| | MODULE 03 Digital & Security Technology Overview | | | | | | ● | | |
| Containerization | MODULE 01 Fundamental Containerization | | | | | | | ● | |
| | MODULE 02 Containerization Technology & Architecture | | | | | | | ● | |
| | MODULE 03 Containerization Technology & Architecture Lab | | | | | | | ● | |
| Quantum Computing | MODULE 01 Fundamental Quantum Computing | | | | | | | | ● |
| | MODULE 02 Advanced Quantum Computing | | | | | | | | ● |
| | MODULE 03 Quantum Computing Lab | | | | | | | | ● |

| COURSES | | Big Data Analytics & Fundamental Data Science | Big Data Analysis & Advanced Data Science | Data Science Professional Consulting | Machine Learning | Artificial Intelligence | Big Data Engineering | Big Data Architecture | Data Science Governance | AI Decisioning |
|----------------|---|---|---|--------------------------------------|-----------------------------|------------------------------------|----------------------|-----------------------|------------------------------------|---------------------------|
| CERTIFICATIONS | | Big Data Science Professional | Big Data Scientist | Data Science Consultant | Machine Learning Specialist | Artificial Intelligence Specialist | Big Data Engineer | Big Data Architect | Data Science Governance Specialist | AI Decisioning Specialist |
| MODULE 01 | Fundamental Big Data Science & Analytics | ● | ● | ● | | | ● | ● | ● | ● |
| MODULE 02 | Big Data Analysis & Technology Concepts | ● | ● | ● | | | ● | ● | ● | ● |
| MODULE 03 | Big Data Analysis & Technology Lab | ● | | ● | | | | | | |
| MODULE 04 | Big Data Analysis & Science | | ● | | | | | | | |
| MODULE 05 | Advanced Big Data Analysis & Science | | ● | | | | | | | |
| MODULE 06 | Big Data Analysis & Science Lab | | ● | | | | | | | |
| MODULE 07 | Fundamental Machine Learning | | | ● | ● | | | | | |
| MODULE 08 | Advanced Machine Learning | | | | ● | | | | | |
| MODULE 09 | Machine Learning Lab | | | | ● | | | | | |
| MODULE 10 | Fundamental Artificial Intelligence | | | ● | | ● | | | | |
| MODULE 11 | Advanced Artificial Intelligence | | | | | ● | | | | |
| MODULE 12 | Artificial Intelligence Lab | | | | | ● | | | | |
| MODULE 13 | Fundamental Big Data Engineering | | | | | | ● | | | |
| MODULE 14 | Advanced Big Data Engineering | | | | | | ● | | | |
| MODULE 15 | Big Data Engineering Lab | | | | | | ● | | | |
| MODULE 16 | Fundamental Big Data Architecture | | | | | | | ● | | |
| MODULE 17 | Advanced Big Data Architecture | | | | | | | ● | | |
| MODULE 18 | Big Data Architecture Lab | | | | | | | ● | | |
| MODULE 19 | Fundamental Data Science Governance for Big Data, Machine Learning & AI | | | | | | | | ● | |
| MODULE 20 | Advanced Data Science Governance for Big Data, Machine Learning & AI | | | | | | | | ● | |
| MODULE 21 | Data Science Governance Lab for Big Data, Machine Learning & AI | | | | | | | | ● | |
| MODULE 22 | Fundamental AI Decisioning | | | | | | | | | ● |
| MODULE 23 | Advanced AI Decisioning | | | | | | | | | ● |
| MODULE 24 | AI Decisioning Lab | | | | | | | | | ● |

Gray circles indicate prerequisite modules.

| COURSES | | Cloud Computing | Cloud Computing Professional Consulting | Cloud Architecture | Cloud Security | Cloud Governance | Cloud Storage | Cloud Virtualization |
|----------------|----------------------------------|-------------------------------|---|--------------------|---------------------------|-----------------------------|--------------------------|---------------------------------|
| CERTIFICATIONS | | Cloud Technology Professional | Cloud Computing Consultant | Cloud Architect | Cloud Security Specialist | Cloud Governance Specialist | Cloud Storage Specialist | 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 | | | | | | | ● |

Gray circles indicate prerequisite modules.

| COURSES | | Fundamental Microservices & Service Technology | Fundamental SOA Design with Services & Microservices | SOA Analysis & Modeling with Services & Microservices | SOA Design & Architecture with Services & Microservices | Microservice Design & Architecture | Microservice Professional Consulting | Service API Design & Management | Service Governance & Project Delivery | Security for Microservices & SOA |
|----------------|---|---|--|---|---|--|--|---------------------------------------|--|--|
| CERTIFICATIONS | | Microservice Professional | SOA Professional | SOA Analyst | SOA Architect | Microservice Architect | Microservice Consultant | Service API Specialist | Service Governance Specialist | Service Security Specialist |
| MODULE 01 | Fundamental SOA, Services & Microservices | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| MODULE 02 | Microservice Technology Concepts | ● | | | ● | ● | ● | ● | | ● |
| MODULE 03 | Design & Architecture with SOA, Services & Microservices | | ● | ● | ● | | | | ● | |
| MODULE 04 | Fundamental SOA Analysis & Modeling with Services & Microservices | | | ● | | | | | | |
| MODULE 05 | Advanced SOA Analysis & Modeling with Services & Microservices | | | ● | | | | | | |
| MODULE 06 | SOA Analysis & Modeling Lab with Services & Microservices | | | ● | | | | | | |
| MODULE 07 | Advanced SOA Design & Architecture with Services & Microservices | | | | ● | | | | | |
| MODULE 08 | SOA Design & Architecture Lab with 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 | | | | | | | | | ● |

Gray circles indicate prerequisite modules.



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