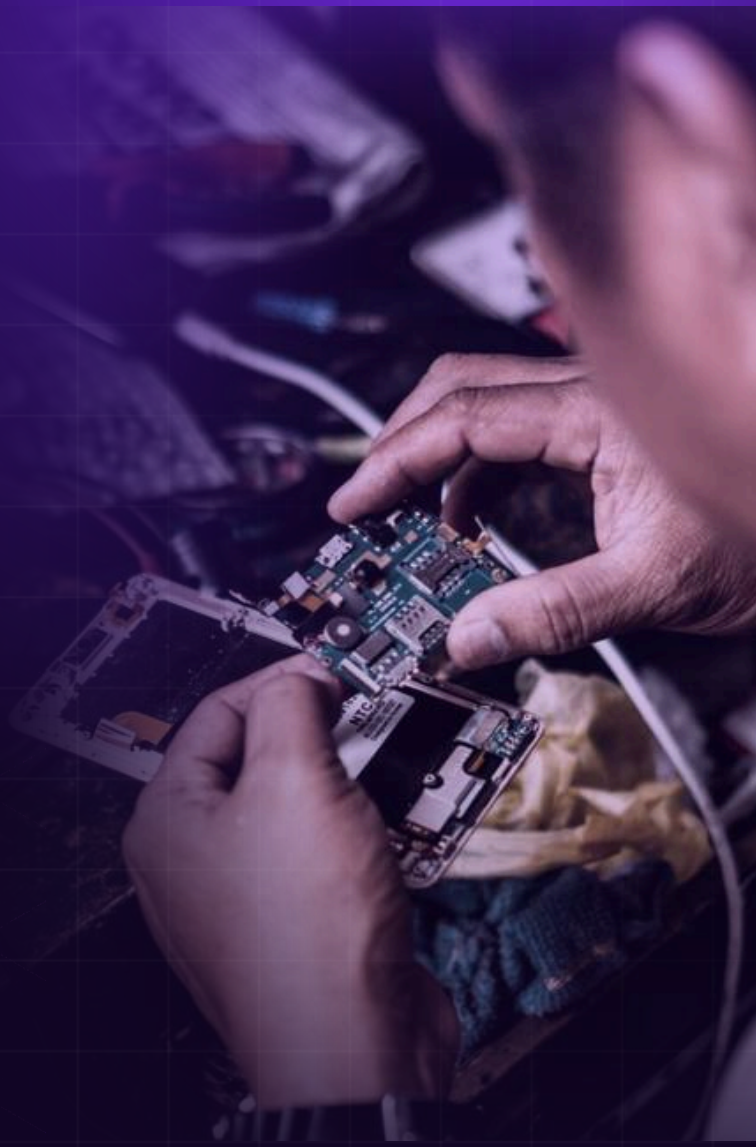
✦ EMERGING TECHNOLOGIES · INTERMEDIATE

5G Network Security

Security for the 5G era.





40	6	SAM-5GSEC
HOURS	MODULES	CERTIFICATION

✦ INSIDE THIS BROCHURE

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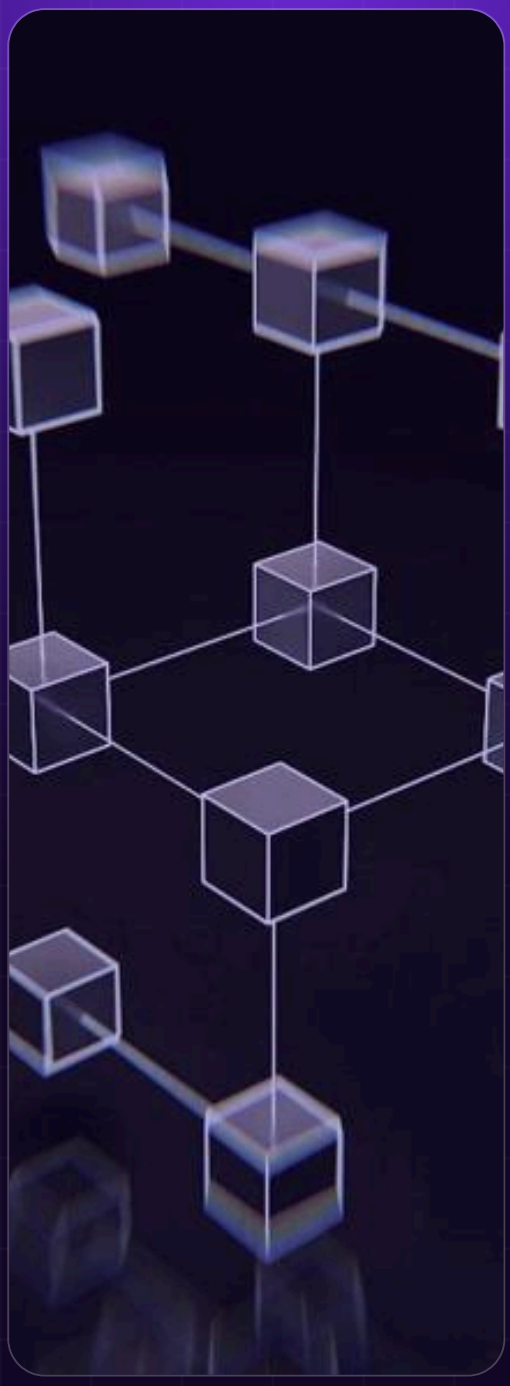
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AT A GLANCE

Level	Intermediate
Duration	40 Hours
Modules	6
Certificate	SAM-5GSEC

✦ PROGRAM OVERVIEW

Security for the 5G era.



5G architecture, threats and security controls for operators and enterprises.

5G powers mobile broadband, private enterprise networks and critical industrial applications, introducing service-based architectures, network slicing and cloud-native cores that bring new security challenges. This intermediate program explains 5G architecture, 3GPP security mechanisms, threats across RAN, core and edge, and practical controls for securing operator and enterprise private 5G deployments.

LEVEL	DURATION	CERTIFICATION	DELIVERY
Intermediate	40 Hours	SAM-5GSEC	Instructor-led · Live virtual · Blended



✦ WHAT YOU'LL PRACTISE

Understand 5G architecture	01
Identify 5G threats	02
Apply 5G security controls	03
Secure enterprise 5G use	04

✦ WHO IT'S FOR

Built for people ready to grow.

01

Curious professionals

Quantum, blockchain, IoT and AR/VR fundamentals

02

Developers

Solidity, XR development, edge AI / TinyML

03

Security teams

Quantum-safe crypto, IoT and 5G security

04

Innovation teams

Digital twins and emerging-tech strategy

PREREQUISITES

Networking fundamentals including IP routing	01
Basic understanding of mobile networks	02
Familiarity with Linux and security concepts	03

ROLES YOU CAN TARGET

- Telecom Security Engineer ↗
- 5G Network Engineer ↗
- Mobile Core Security Analyst ↗
- Private 5G Solutions Engineer ↗
- Security Architect (Telecom) ↗

✦ LEARNING OUTCOMES

What you'll be able to do.

01 Explain 5G RAN, core and service-based architecture components

02 Describe 3GPP 5G authentication and key hierarchy mechanisms

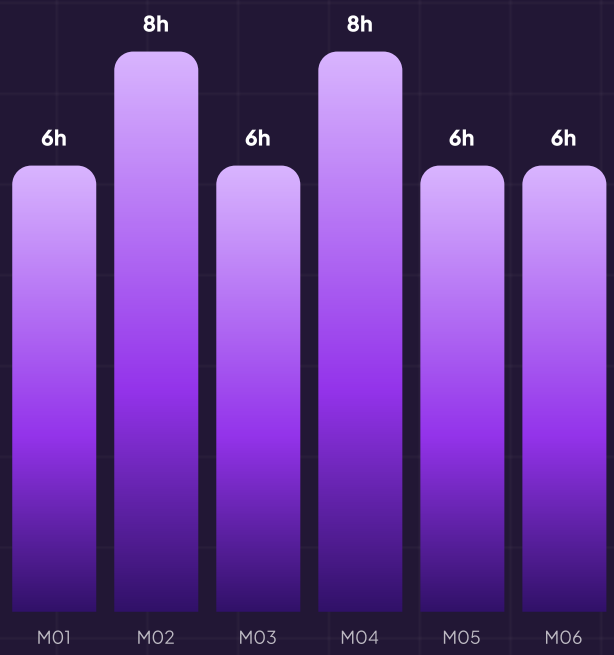
03 Identify threats across radio, core, slicing and edge

04 Apply security controls to cloud-native 5G core functions

05 Analyse 5G signalling traffic using open-source lab tools

06 Design security for enterprise private 5G deployments

HOURS PER MODULE



✦ PROGRAM RUNWAY

Your journey, module by module.

6
MODULES · 40 HRS

01	**5G Architecture Fundamentals** Evolution from 4G LTE to 5G, NG-RAN and gNodeB, 5G core network functions	6 hrs
02	**3GPP 5G Security Architecture** 5G-AKA and EAP-AKA', SUPI and SUCI privacy protection, Key hierarchy and derivation	8 hrs
03	**Threats Across the 5G Stack** Radio interface and jamming threats, Signalling and protocol attacks, Rogue base stations	6 hrs
04	**Securing the Cloud-Native Core** Kubernetes security for network functions, OAuth 2.0 and mTLS on SBI, Network function hardening	8 hrs
05	**Slicing, Edge and Private 5G** Network slicing isolation, Multi-access edge computing security, Enterprise private 5G architectures	6 hrs
06	**Assurance and Compliance** 3GPP SCAS security assurance, GSMA NESAS, NIST and ENISA 5G guidance	6 hrs
★	**Capstone · Secure Private 5G Design** Assessment, capstone review and certification	

✦ DETAILED CURRICULUM

The syllabus.

Modules 01–03

MODULE 01

5G Architecture Fundamentals

6 hours

Hands-on lab
Deploy an Open5GS and UERANSIM lab and register a UE.

TOPICS COVERED

- Evolution from 4G LTE to 5G
- NG-RAN and gNodeB
- 5G core network functions
- Service-based architecture and SBI
- Standalone vs non-standalone

MODULE 02

3GPP 5G Security Architecture

8 hours

Hands-on lab
Capture and analyse a 5G registration and authentication flow in Wireshark.

TOPICS COVERED

- 5G-AKA and EAP-AKA'
- SUPI and SUCI privacy protection
- Key hierarchy and derivation
- NAS and AS security
- SEPP and inter-operator security

Wireshark

MODULE 03

Threats Across the 5G Stack

6 hours

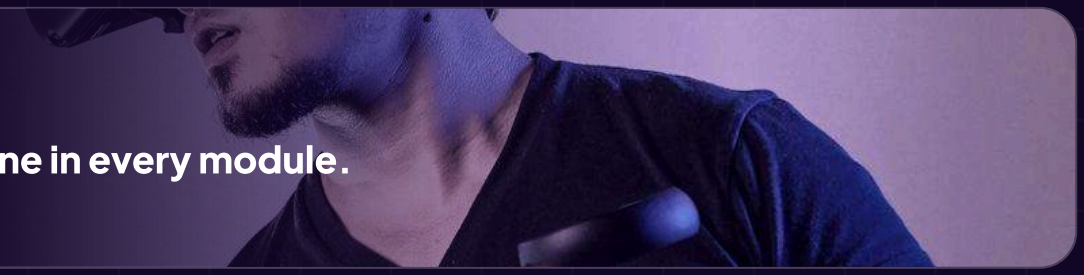
Hands-on lab
Map 5G threats to the MITRE FiGHT framework for a scenario.

TOPICS COVERED

- Radio interface and jamming threats
- Signalling and protocol attacks
- Rogue base stations
- API and SBI threats
- Supply chain and Open RAN risks

LEARN BY DOING

6 guided labs, one in every module.



✦ DETAILED CURRICULUM

Syllabus, continued.

Modules 04–06

MODULE 04

Securing the Cloud-Native Core

8 hours

Hands-on lab
Harden a containerised 5G core and enforce mTLS between functions.

TOPICS COVERED

- Kubernetes security for network functions
- OAuth 2.0 and mTLS on SBI
- Network function hardening
- NFV and container isolation
- Security monitoring of the core

Kubernetes

MODULE 05

Slicing, Edge and Private 5G

6 hours

Hands-on lab
Design slice isolation and security policies for an industrial private network.

TOPICS COVERED

- Network slicing isolation
- Multi-access edge computing security
- Enterprise private 5G architectures
- Integration with enterprise security
- Roaming and interconnect security

MODULE 06

Assurance and Compliance

6 hours

Hands-on lab
Build a security assessment checklist for a private 5G deployment.

TOPICS COVERED

- 3GPP SCAS security assurance
- GSMA NESAS
- NIST and ENISA 5G guidance
- Security testing and audits
- Security monitoring and incident handling

CAPSTONE

Secure Private 5G Design



✦ YOUR STACK

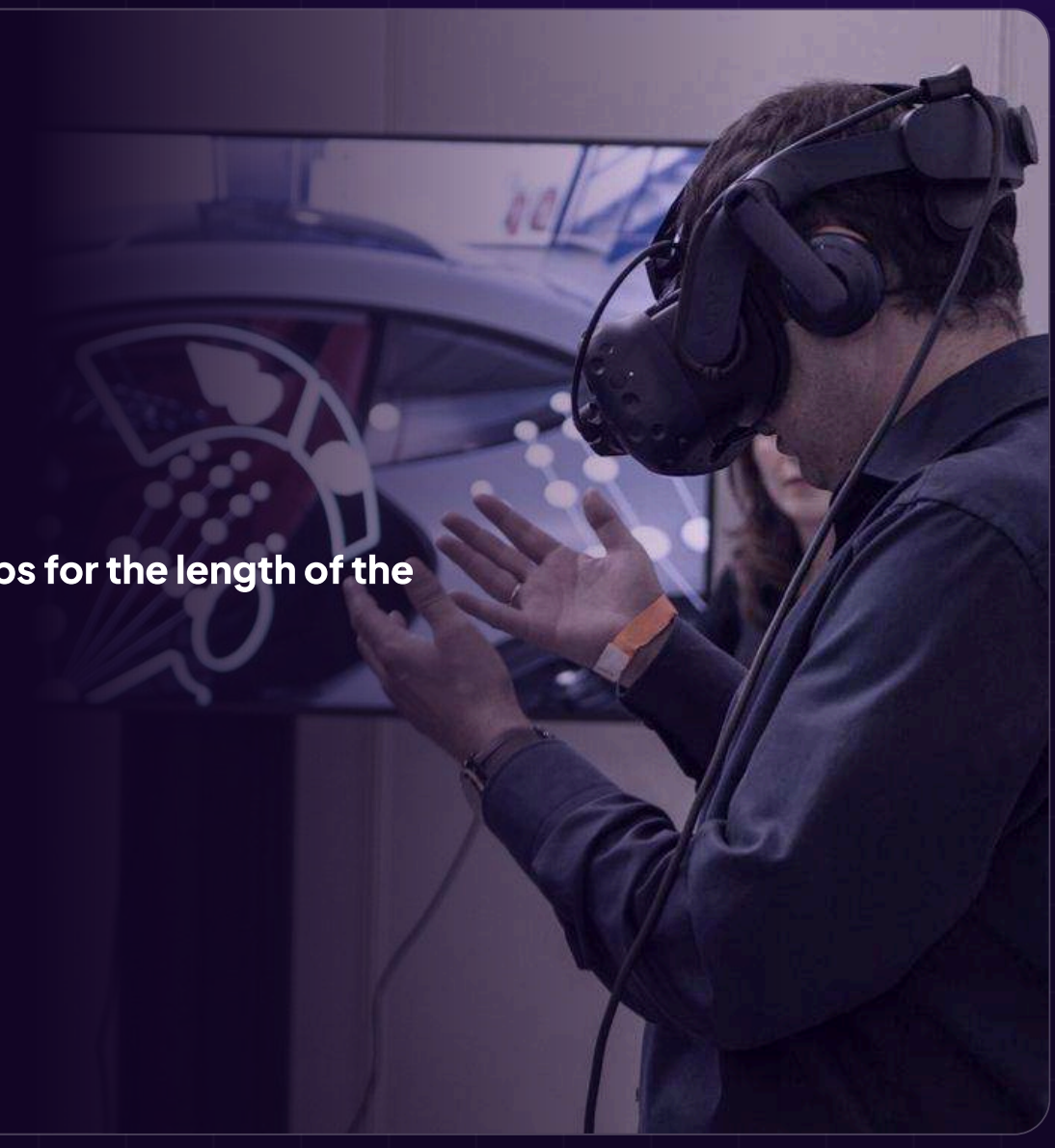
Tools you'll build with.

Real platforms and frameworks — the same stack modern teams ship with, practised in cloud-hosted labs.

Wireshark
Packet capture & traffic analysis

Linux
Server & CLI fundamentals

Kubernetes
Container orchestration



LAB ACCESS

24×7 cloud labs for the length of the program

✦ HANDS-ON WORK

Projects that prove you can do it.

01

5G Lab Traffic Analysis

Build an open-source 5G lab and document registration, authentication and session establishment from captured signalling traffic.

02

5G Threat Assessment

Produce a threat assessment for a 5G deployment covering RAN, core, slicing and edge components.

03

Core Hardening Guide

Create a hardening guide for containerised 5G core functions, including mTLS, access control and monitoring.

CAPSTONE PROJECT

Secure Private 5G Design

Design a secure private 5G network for a manufacturing case study, covering architecture, authentication, core hardening, slicing, edge security, monitoring and compliance, and validate key controls in the open-source lab.

Real-world scenario | Mentor review | Portfolio ready



CERTIFICATION

SAM-5GSEC

Awarded on successful completion of the program assessments.

- MCQ assessments
- Practical lab evaluation
- Project & capstone review
- Final presentation



✦ HOW YOU LEARN

The SAM Learning Framework™

PHASE 01

S

Scenario

Real-world attack and use-case scenarios open every module.

PHASE 02

A

Apply

Hands-on lab work, CTF challenges and live projects.

PHASE 03

M

Master

Assessment, peer review and certification prep.

PHASE 04

M

Mentor

Post-program career guidance and support.

DELIVERY MODELS

- Instructor-Led (ILT)
- Virtual Instructor-Led
- Self-Paced Online
- E-Learning Licensing
- Blended Learning
- Corporate Onsite
- Bootcamp Intensive
- Hackathon / CTF
- Mentorship

✦ LEARNING PATH · EMERGING TECHNOLOGIES

Where this program fits.

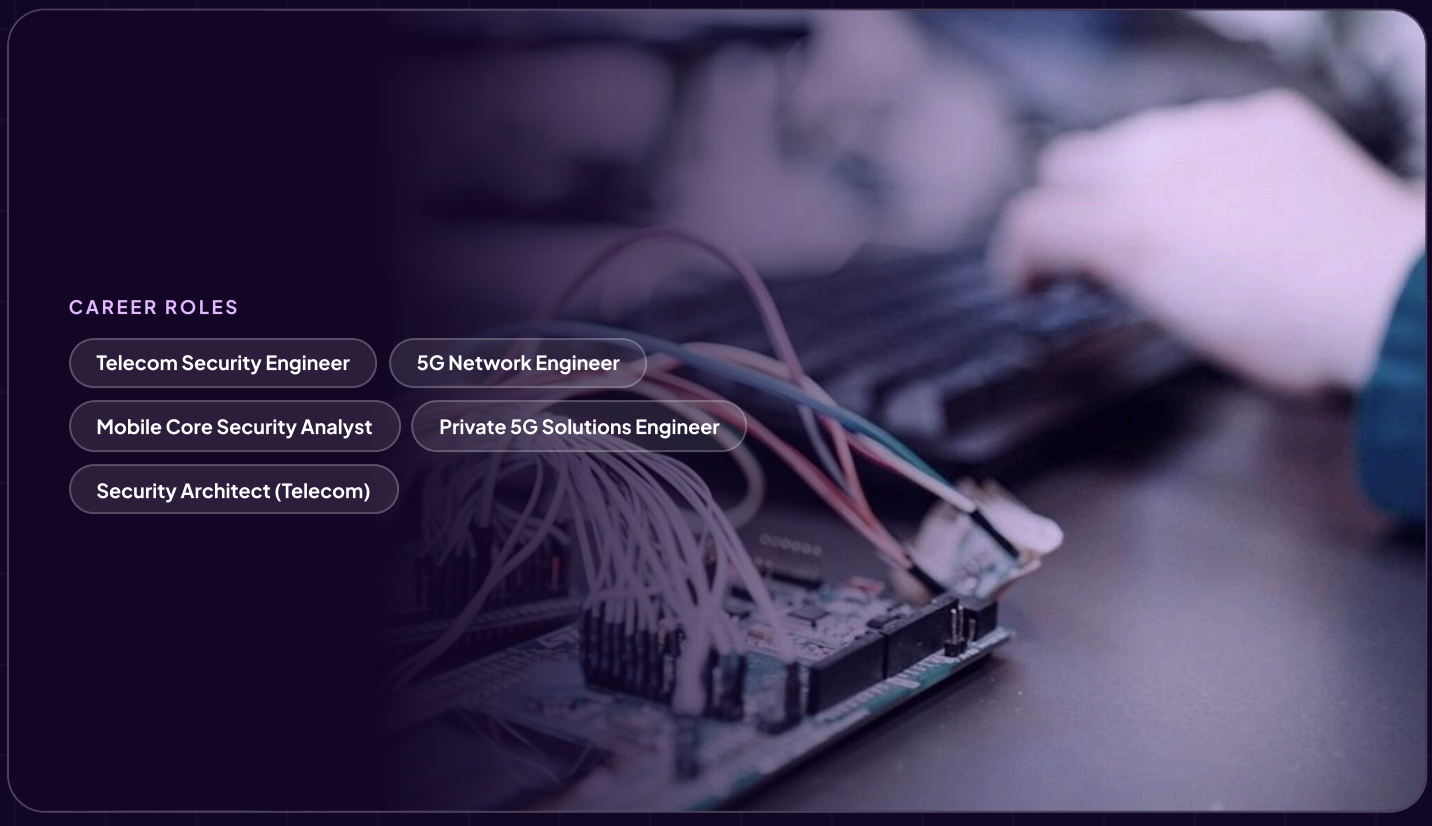
Foundation	Intermediate	Advanced
4 programs	You are here	4 programs

BEFORE THIS

Quantum Computing Fundamentals	32 Hours
Blockchain & Web3 Fundamentals	32 Hours
IoT & Edge Computing Fundamentals	32 Hours
AR/VR & Immersive Technologies	24 Hours

UP NEXT

Smart Contract Auditing	48 Hours
Edge AI & TinyML	48 Hours
Digital Twin Technology	40 Hours
Extended Reality (XR) Development	56 Hours



CAREER ROLES

- Telecom Security Engineer
- 5G Network Engineer
- Mobile Core Security Analyst
- Private 5G Solutions Engineer
- Security Architect (Telecom)

✦ FAQS

Questions, answered.

Q01

Do I need prior experience to join?

You should understand IP networking and basic security concepts and be comfortable with Linux. Prior telecom experience helps but is not required, as mobile network and 5G fundamentals are covered in the early modules.

Q02

How is the program delivered and scheduled?

The 40 hours program is instructor-led and delivered live virtual or blended, combining concept sessions, demonstrations and guided hands-on work. Batch timings and session frequency are confirmed with the academy team at enrollment.

Q03

Will I receive a certificate?

Yes. Participants who attend the required sessions and pass the program assessments, including practical tasks and a capstone review, receive the Samcommunity Academy SAM-5GSEC certificate for 5G Network Security.

Q04

What labs and tools will I have access to?

Labs use open-source 5G tools such as Open5GS and UERANSIM, Wireshark, Kubernetes and Linux in virtual environments. Setup guidance and lab access details are shared before the first hands-on session.

Q05

Is career support provided?

Yes. You receive guidance on building a portfolio from your projects, presenting skills on your resume and preparing for interviews. Career support helps you present yourself well, but job placement, interviews and salaries are not guaranteed.



✦ LET'S TALK

Start 5G Network Security with Samcommunity.

INDIVIDUALS

academy@samcommunity.in

Batches, enrolment & career guidance

CORPORATE & INSTITUTIONS

corporate@samcommunity.in

Team batches & custom programs

Xylyn Samcommunity Private Limited · DPIIT-recognized startup · Surat, Gujarat, India