

Telecommunications Certificates

Four 15-credit certificates are offered by the MS in TCOM Program. Students may take these certificates as stand-alone items or as part of their degree program. For the former, they are required to enroll in a certificate program; for the latter, because they are already enrolled in a degree program, they need only apply for the appropriate certificate after they have satisfied requirements. The courses within the certificates are drawn directly from the MS in TCOM Program. If a student initially signs up for only a certificate program, it is possible to apply to the degree program later, if accepted to the program, students may transfer up to 12 credits into the degree program as long as the coursework previously taken doesn't exceed six years. Students must therefore ensure they are admitted to into the degree program prior to starting course work beyond 12 credits in the certificate program to ensure that all credits from the certificate program transfer into the degree program. Students may transfer in one 3-credit course from another program or institution toward their TCOM certificate, provided the course in question was passed with a B grade or higher. Students are permitted to carry one C grade within their certificate program, provided the overall GPA is 3.00 or above.

Advanced Networking Protocols for Telecommunications Graduate Certificate

VS-CERG-ANPT

This certificate provides an in-depth understanding of advanced protocols used in a variety of telecommunications networks.

The graduate certificate may be pursued on a part-time or full-time basis.

Certificate requirements

To obtain the certificate, students must complete the following for a total of 15 credits:

Core Courses Choose 9 credits from the following:

- [TCOM 609 - Interior Gateway Protocols \(IGP\)](#) [1] (3 credits)
- [TCOM 610 - Border Gateway Protocols \(BGP\)](#) [1] (3 credits)

and 3 credits chosen from the following:

- [TCOM 515 - Internet Protocol Routing](#) [1] (3 credits)

or

- [TCOM 535 - The TCP/IP Suite of Internet Protocols](#) [1] (3 credit)

Elective Courses Choose 6 credits from following:

- [TCOM 515 - Internet Protocol Routing: Lecture and Laboratory Course](#) [1] (3 credits)
- [TCOM 535 - The TCP/IP Suite of Internet Protocols](#) [1] (3 credits)
- [TCOM 611 - Multiple Protocol Label Switching \(MPLS\)](#) [1] (3 credits)
- [TCOM 631 - Voice Over IP](#) [1] (3 credits)
- [TCOM 662 - Advanced Secure Networking](#) [1] (3 credits)

Note: [TCOM 515](#) [2] and [TCOM 535](#) [1] cannot be taken twice. If a student takes [TCOM 515](#) [2] and [TCOM 535](#) [1] in the core element, the course(s) may not be taken again in the elective element.

Total: 15 credits

Telecommunications Forensics and Security Graduate Certificate

VS-CERG-TFAS

The objective of this certificate is to provide an in-depth understanding of security and forensics as they apply to networks and digital storage media.

The graduate certificate may be pursued on a part-time or full-time basis.

Certificate Requirements

Students must complete the following for a total of 15 credits:

Core Courses Choose 9 credits from the following:

- [TCOM 562 - Network Security Fundamentals](#) [3](3 credits)

or

- [ISA 562 Information Systems Security](#) [3] (3 credits)
- [TCOM 515 - Internet Protocol Routing: Lecture and Laboratory Course](#) [3] (3 credits)

or

- [TCOM 561 - Security, Privacy, and Applied Cryptography for Telecommunications](#) [3] (3 credits)
- [TCOM 660 - Network Forensics](#) [3] (3 credits)
- [TCOM 661 - Digital Media Forensics](#) [3] (3 credits)
- [TCOM 663 - Operations of Intrusion Detection for Forensics](#) [3] (3 credits)
- [TCOM 664 - Incident Response Forensics](#) [3] (3 credits)

Elective Courses Choose 6 credits from the following:

- [ISA 562 - Information Systems Security Theory and Practice](#) [3](3 credits)
- [TCOM 660 - Network Forensics](#) [3] (3 credits)
- [TCOM 661 - Digital Media Forensics](#) [3] (3 credits)
- [TCOM 662 - Advanced Secure Networking](#) [3] (3 credits)
- [TCOM 663 - Operations of Intrusion Detection for Forensics](#) [3] (3 credits)
- [TCOM 664 - Incident Response Forensics](#) [3] (3 credits)

Note: TCOM 660, 661, 663, and 664 cannot be taken twice for credit. If any of these courses is taken in the core element, it cannot be taken again in the elective element.

Total: 15 credits

Network Technologies and Applications Graduate Certificate

VS-CERG-NETT

The certificate provides a broad understanding of the technologies used in telecommunications networks and the various applications of telecommunications networks.

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To obtain the certificate, students must complete the following, for a total of 15 credits:

Certificate Requirements

Choose 9 credits from the following:

- [TCOM 505 - Networked Multicomputer Systems](#) [4](1.5 credits)
- [TCOM 510 - Client-Server Architectures and Applications](#) [4] (1.5 credits)
- [TCOM 535 - The TCP/IP Suit of Internet Protocols](#) [4] (3 credits)
- [TCOM 555 - Network Management Foundations and Applications](#) [4] (3 credits)
- [TCOM 631 - Voice over IP](#) [4] (3 credits)

Elective Courses (6 credits)

Six credits are required. Students may elect to take any additional 6 credits from [Telecommunications, MS](#) [5] emphasis areas 1, 2, and 3, including those in the mandatory course list that are not part of the 9 credits of core courses for the certificate.

Total: 15 credits

Wireless Communications Graduate Certificate

VS-CERG-WIRE

This certificate provides a broad understanding of the technologies, applications, and systems used in all forms of wireless communications.

The graduate certificate may be pursued on a part-time or full-time basis.

Certificate Requirements

Students must complete the following, for a total of 15 credits:

Core Courses Choose 9 credits from the following:

- [TCOM 551 - Digital Communication Systems](#) [6] Credits: 3
- [TCOM 552 - Introduction to Mobile Communications Systems](#) [6] Credits: 3
- [TCOM 606 - Advanced Mobile Communications Systems](#) [6] Credits: 3
- [TCOM 607 - Satellite Communications](#) [6] Credits: 3
- [TCOM 653 - Global Positioning System \(GPS\)](#) [6] Credits: 3

- [TCOM 707 - Advanced Link Design](#) [6] Credits: 3

Elective Courses

Six credits are required. Students may earn the credits from the [Telecommunications, MS](#) [5] emphasis areas 1, 2, and 3, including those in the mandatory course list that are not part of the 9 credits of core courses for the certificate.

Total: 15 credits

Source URL: <http://telecom.gmu.edu/books/program-descriptions/telecommunications-certificates>

Links:

- [1] https://catalog.gmu.edu/preview_program.php?catoid=29&poid=28165&hl=telecomm&returnto=search
- [2] https://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=306949
- [3] https://catalog.gmu.edu/preview_program.php?catoid=29&poid=28558&hl=telecomm&returnto=search
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