FITCHBURG STATE UNIVERSITY

These top fields will be completed by the SGOCE office.

Academic Year: * 2024-2025 SGOCE#: * 5

New Graduate Course Proposal

Form Procedure
To share the form with others prior to Submitting choose the **Save Progress** option at the bottom.
Create a PDF of the saved form go to Print and choose Save as PDF copy rather than print.
To access the saved form for editing or to finalize submission visit forms.fitchburgstate.edu to log in and view your Pending/Drafts under My Forms.

Course Title

Course Title: * Digital Forensics

Proposed Banner Abbreviation: * Digital Forensics

Banner limit of 30 characters, including punctuation, spaces, and special characters.

Department/Committee Information

The main contact person for the Graduate Curriculum Committee should fill out this form.

Requestor Name: * Xuzhou Chen

Members of the Graduate Curriculum Committee: Brady Chen, Guy Karlebach, Natasha Kurtonina, Nadimpalli Mahadev, Hefei Qiu, Ricky Sethi

Department / Unit Developing: * Computer Science

Department Chair: * Dr. Nadimpalli Mahadev * nmahadev@fitchburgstate.edu

Academic Dean: Dr. Jannette McMenamy jmcmenamy@fitchburgstate.edu

Program Chair: The Program Chair for this request is among the people listed above.
* (•) Yes
( ) No

Graduate Program: * MS CS

The above program would be responsible for scheduling, staffing & assessing this course.

Course Information

Course Description

* This course introduces the fundamental concepts behind the collection and analysis of the digital evidence left behind in a digital crime scene. Topics include Windows, Linux, Macintosh File Systems, forensics tools, the identification, preservation, collection, examination, analysis, and presentation of evidence. Laws and ethics related to computer forensics and challenges in computer forensics will also discussed.

Course Objectives

- Understand the Digital Forensics Profession and Investigations
- Explore Data Acquisition Tools
- Understand Crime and Incident Scenes investigation
- Outline the characteristics of Windows, Linux, and Macintosh File Systems
- Discuss Digital Forensics Tools
- Describe the steps of recovering Deleted and Graphics Files
- Understanding Digital Forensics Analysis and Validation
- Discuss Email and social media forensics technology
- Understand Mobile Device and cloud Forensics
- Report Writing and Expert Testimony for High Tech Investigations
- Outline the Ethics for the Investigator and Expert Witness

Rationale and expected outcomes of offering the Course

* Cybersecurity is becoming increasingly an important area and digital forensics is one of the important part of it. Digital forensics professionals are critical in investigating a cybercrime and determining exactly what was done and how it was

done. They attempt to recover and/or repair stolen or damaged data files, and to work with other information security experts to prevent it from happening again.

Digital Forensics has been offered as a topics course in our MS CS program and received very positive feedback from the students. The department is planning to create a Cybersecurity concentration for its MS CS program and Digital Forensics will be one of the core courses for the concentration.

What are the Learning Outcomes for the Course?

After the completion of the course, students will
- understand the Digital Forensics Profession and Investigations
- be able to explore Data Acquisition Tools
- understand Crime and Incident Scenes investigation
- be able to outline the characteristics of Windows, Linux, and Macintosh File Systems
- be able to use Digital Forensics Tools
- know the steps of recovering Deleted and Graphics Files
- understand Digital Forensics Analysis and Validation
- learn the Email and social media forensics technology
- understand Mobile Device and cloud Forensics
- be able to perform the report writing and expert testimony for High Tech Investigations
- be able to outline the Ethics for the Investigator and Expert Witness

Number of Credits: * 3

Discipline Prefix or Prefixes: * CSC

Brief rationale if more than one prefix:

Level of Course: * 7000 / 8000 / 9000

Brief rationale for level choice:: * This is an advanced course in MS CS

The course will be: Requirement, Elective

Elective or Requirement Note/Special: Will be required for the planned Cybersecurity concentration

Is there a similar undergraduate course? * Yes / No

Does this course affect offerings in any other department or program? * Yes / No

Course Enollment

Expected Average Enrollment: * 20

This course is a replacement for: Course # / Name

Has the course been offered previously as a "Topics" course? * Yes / No

How often / when was it offered as a Topics course? Fall 2024

Is this an Extended Campus Course? * Yes / No

Which semester will this course be offered for the first time?: * Fall 2025

How often thereafter to be offered?: * Every year

Course Requirements

Prerequisite course(s) if any: None

Additional Requirements

Laboratory Hours:

Fieldwork Hours:

Pre-Practicum Hours:

Practicum Hours:

Other Requirements (specify):

Syllabus Upload

New Course Syllabus Upload: CSC8027-Digital Forensics Syllabus Fall24.docx

Signatures

*Click on the **Submit Form** button at the bottom of the page after you have signed the form.*
You should receive an email confirmation that your signature has been completed.

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Xuzhou Chen — 11/17/2024
Requester Signature — Date

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Nadimpalli Mahadev — 11/20/2024
Department Chair Approval — Date

Graduate Council

The Graduate Council Chair Signature indicates that the Council has discussed this proposal and has decided it should move forward.

Approval of the President — Date

Jannette McMenamy — 11/20/2024
Academic Dean Signature — Date

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Becky Cooper Gleng — 11/22/2024
SGOCE Dean Signature — Date

Graduate Council Chair Signature — Date

Notifications

SGOCE Dean Initials — Date

Reviewed by the Registrar: — Date

Fitchburg State University
CSC8027-Digital Forensics
Course Syllabus
Fall 2024

Instructor: Dr. Mohamed Meky
Office: Online
Telephone: 732-443-0282
E-mail: mmeky@fitchburgstate.edu
Office Hours: By appointment

Blackboard: This course will use the Blackboard to distribute course materials, communicate and collaborate online, post grades, and submit assignments. You are responsible for checking the Blackboard course site regularly for classwork and announcements.

Course Description

Digital forensics professionals are critical in investigating a cybercrime and determining exactly what was done and how it was done. They attempt to recover and/or repair stolen or damaged data files, and to work with other information security experts to prevent it from happening again. This course introduces the fundamental concepts behind the collection and analysis of the digital evidence left behind in a digital crime scene. In addition, this course provides intensive hand-on labs that will help students explore and practice several advanced digital forensics tools. Topics include Windows, Linux, Macintosh File Systems, forensics tools, the identification, preservation, collection, examination, analysis, and presentation of evidence. Laws and ethics related to computer forensics and challenges in computer forensics will also discussed.

Course Objectives

- Understand the Digital Forensics Profession and Investigations
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- Report Writing and Expert Testimony for High Tech Investigations
- Outline the Ethics for the Investigator and Expert Witness

Required Textbook: Nelson, B., Phillips, A., Enfinger, F. and Steuart, C. (2019). *Guide to Computer Forensics and Investigations* (6th ed.). Thomson/Course Technology. ISBN: 978-1-337-56894-4. This book may exist in electronic format

Required Virtual Labs

InfoSec Learning Virtual Lab Platform

1- Create an account and get the lab voucher code for "Digital Forensics Fundamentals" course form https://www.infoseclearning.com

2- After getting the access code, link your lab account to the instructor and following section
Instructor Email: mmeky@fitchburgstate.edu
Course Name: Digital Forensics Fundamental
Course ID: CFZJLRVTHO

The final grade will be a weighted average according to the following:

Assignments and quizzes	50%
Hands-on Labs	50%

GRADING SCALE

4.0	95 - 100	A
3.7	92 - 94	A-
3.5	89 - 91	A-/B+
3.3	86 - 88	B+
3.0	83 - 85	B
2.7	80 - 82	B-
2.5	77 - 79	C+
2.3	74 - 76	C+
2.0	71 - 73	C
0.0	0 - 70	F
W	Withdrawn	
IN	Incomplete	
IP	In-Progress	

TENTATIVE OUTLINE/SCHEDULE:

Activity and assignment details will be explained in detail within each week's corresponding learning module. Weekly announcements will confirm the weekly tasks and assignments. When changes are necessary in this schedule, I will post an updated class schedule in Blackboard.

Week	Topics	Chapter Readings	Assignments
1	Understanding the Digital Forensics Profession and Investigations	Chapter 1	Ch1- Quiz Lab 1 Lab 1 Quiz Introduction Discussion
2	The Investigator's Office and Laboratory	Chapter 2	Ch2- Quiz Lab 2 Lab 2 Quiz
3	Linux and Macintosh File Systems	Chapter 7	Ch7- Quiz

			Lab 3 Lab 3 Quiz
4	Data Acquisition	Chapter 3	Ch3- Quiz Lab 5 Lab 5 quiz
5	Processing Crime and Incident Scenes	Chapter 4	Ch4- Quiz Lab 6 Lab 6 Quiz
6	Current Digital Forensics Tools	Chapter 6	Ch6- Quiz Lab 7 Lab 7 Quiz
7	Working with Windows and CLI Systems	Chapter 5	Ch5- Quiz Lab 8 Lab 8 Quiz
8	Recovering Graphics Files	Chapter 8	Ch8- Quiz Assignment 1
9	Digital Forensics Analysis and Validation	Chapter 9	Ch9- Quiz Lab 10 Lab 10 Quiz
10	Virtual Machine Forensics, Live Acquisitions, and Network Forensics	Chapter 10	Ch10- Quiz
11	Email and Social Media Investigation	Chapter 11	Ch11- Quiz Lab 11 Lab 11 Quiz
12	Mobile Device Forensics	Chapter 12	Ch12- Quiz Lab 12 Lab 12 Quiz
13	Cloud Forensics	Chapter 13	Ch13- Quiz Lab 13 Lab 13 Quiz
14	Report Writing for High Tech Investigations	Chapter 14	Ch14- Quiz Lab 14 Lab 14 Quiz
15	Expert Testimony in High Tech Investigations	Chapter 15	Ch15- Quiz
16	Ethics for the Expert Witness	Chapter 16	Ch 16-Quiz

DISCLAIMER

This syllabus is meant to provide a general guidance of what to expect from this course. The instructor reserves the right to change the content or emphasize sections of this syllabus based on the progress of the class.

ACADEMIC INTEGRITY:

Academic integrity is central to the mission of educational excellence at Fitchburg State University. Each student is expected to turn in work completed independently, except when assignments specifically authorize collaborative effort. It is not acceptable to use the words or ideas of another person--be it a world-class philosopher or your lab partner--without proper acknowledgment of that source. This means that you must use footnotes and quotation marks to indicate the source of any phrases, sentences,

paragraphs, or ideas found in published volumes, on the internet, or created by another student. I generally have a zero-tolerance policy for cheating, and all violations will result in substantial penalties. Any form of academic dishonesty will be penalized with a failing grade ("F") in the class . Additionally, any violations of the Code may be referred to the Office of Student Conduct for further disciplinary action. If you have any doubts or questions about what constitutes academic misconduct, please do not hesitate to contact me. For further clarification of university policies regarding academic integrity, please consult the Office of Student Conduct at https://www.fitchburgstate.edu/offices-services-directory/office-of-student-conduct-mediation-education/

STUDENTS WITH DISABILITIES

Fitchburg State University encourages the full participation of individuals with disabilities in all aspects of campus living and learning. To support access and inclusion, Fitchburg State University offers reasonable accommodations to students who have documented disabilities. If you need course adaptations or accommodations because of a disability, if you have emergency medication information, or if you need special arrangements in case the building must be evacuated, please make an appointment at the beginning of the course to talk with me. It is important that the issues relating to disabilities be discussed with me as soon as possible. Disability Services is the primary support system for students with disabilities taking classes in the day and evening divisions.

SYLLABUS REVISIONS

This syllabus may be modified as the course progresses should the instructor deem it necessary. Notice of changes to the syllabus will be made through email and/or class announcements. It is the student's responsibility to check Blackboard for corrections or updates to the syllabus.