

COURSE APPROVAL DOCUMENT
Southeast Missouri State University

Department: Computer Science

Course No. CY 450

Title of Course: Introduction to Cyber Operations

Date: 09/14/2018

Please check: New
 Revision

I. Catalog Description (Credit Hours of Course):

Cyberspace and Cyber warfare. Tools, techniques of cyber offense and defensive tactics. Foot printing and monitoring techniques. (3)

II. Prerequisite(s): CY 310, CY 320.

III. Purposes or Objectives of the Course (optional):

- A. Students will be able to demonstrate understanding of Cyberspace and persistent attacks on it.
- B. Students will be able to demonstrate understanding of cyber warfare and defense techniques
- C. Students will be able to demonstrate understanding of and evaluate the connected nature of cyberspace and security techniques that can be employed in such a space.
- D. Students will be able to demonstrate understanding of and experiment with tools for cyber offense within critical infrastructure to craft defense techniques
- E. Students will be able to demonstrate understanding of cyber weapons and tactics used for attacks on cyberspace focused on critical infrastructure
- F. Students will be able to Identify evolution of cyber attacks.

IV. Course Learning Outcomes (Minimum of 3):

- A. Students will be able to demonstrate understanding of Cyberspace and persistent attacks on it.
- B. Students will be able to demonstrate understanding of cyber warfare and defense techniques
- C. Students will be able to demonstrate understanding of and evaluate the connected nature of cyberspace and security techniques that can be employed in such a space.
- D. Students will be able to demonstrate understanding of and experiment with tools for cyber offense within critical infrastructure to craft defense techniques
- E. Students will be able to demonstrate understanding of cyber weapons and tactics used for attacks on cyberspace focused on critical infrastructure
- F. Students will be able to Identify evolution of cyber attacks.

V. Names of Faculty Qualified to Teach the Proposed Course:

- A. Vijay Anand
- B. Nick Rahimi

VI. Course Content or Outline (Indicate number of class hours per unit or section):

Topics	Hours
A. Cyberspace and cyber warfare	6
B. Cyber Defense and Cyber Attacks	6
C. Cyberspace: Connected Architecture & Complexity of Security	6
D. Cyberspace: Offensive Security Techniques	6
E. Midterm	2
F. Cyberspace: Cyber Weapons and Tactics	6
G. Cyberspace: Monitoring, Foot printing	4
H. Cyberspace: Security Operations Center	4
I. Evolution of Cyber Operations	3
J. Final Examination	2
	<hr/> 45 Hours

Attach the following:

- copy of example class syllabus and course schedule.
- memo from Library Dean assessing available and needed library holdings and resources.
- memo(s) from Department Chairs in affected departments stating possible issues and/or conflicts are resolved.

Signature: _____
Chair

Date: 11/12/18

Signature: _____
Dean

Date: 11/13/18

**COURSE APPROVAL
DOCUMENT**

Refer
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Sheet

Department: Proposing Department
Course No.: Proposed course number (two-letter pre-fix + three-digit number)
Title of Course: Proposed course title

I. Catalog Description (Credit Hours of Course):

Major Artificial Intelligence areas are covered in details along with specific methods and algorithms involved with the covered topics. (3)

II. Prerequisite(s):

No Specific requirements for this course as long as the students satisfy the MS enrolment requirements.

Co-requisite(s):

N/A

III. Purposes or Objectives of the Course (optional):

This is a required course for MS in Computer Applications due to its important roles in the today's world for graduate students in Computer Science, especially in computer applications..

IV. Course Learning Outcomes (Minimum of 3):

- A. Understand the major application areas of Artificial Intelligence
- B. Get familiar with the major methods and algorithms involved with each covered application area
- C. Be able to use proper algorithms to solve practical problems by writing practical computer Programs

V. Names of Faculty Qualified to Teach the Proposed Course:

List qualified faculty. It is preferable new courses are not dependent on an individual faculty member.

VI. Course Content or Outline (Indicate number of class hours per unit or section):

Brief listing of class content or outline.

Attach copy of example class syllabus and schedule:

Must include (in no specific order):

1. *Catalog description including descriptive statement; prerequisites; credit hours and course number, section and title.*
2. *Semester*
3. *Contact hours of course (if different from credit hours)*
4. *Instructor name and contact information, including office phone, office location, and email address.*
5. *Statement of whom to contact with concerns (use required wording)*
6. *Office hours and location if different from office location.*
7. *Course Objectives (optional; include if listed in Course Approval Document)*
8. *Course Learning Outcomes*
9. *Accessibility statement (the official statement and/or a link/URL to the official statement)*
10. *Civility statement (the official statement and/or a link/URL to the official statement)*
11. *Academic honesty statement (the official statement and/or a link/URL to the official statement)*
12. *Grading scale and policies*
13. *Course specific required materials (textbook, supplies, subscriptions, safety items, etc.)*
14. *Class meeting times and places (if applicable the delivery medium such as lab, online, blended, ITV, webinar, etc.)*
15. *Final exam date/time/place*
16. *Class content outline or schedule*

Attach Memo from the Library Dean:

Since library resources are crucial to successful instruction, new course and course revision proposals must include an assessment of available and needed library holdings and resources. A memo from the Library Dean providing this assessment for the proposed course must be attached.

Attach Memo from All Affected Departments:

If the proposed course impacts programs or courses offered through other departments in any way (i.e. enrollment, duplication of offerings, etc.), a memo from the Chair of all affected departments stating issues have been discussed and resolved must be attached to the new course proposal.

Course Syllabus
Southeast Missouri State University

Department:	<u>Computer Science</u>	Course No	<u>CY- 450</u>
Title of Course:	<u>Introduction to Cyber Operations</u>	Revision:	<u>Fall 2018</u>
Instructor Information:	Vijay Anand Email: vanand@semo.edu Office: DH 021E Office Hours: M - 12.00pm – 1.00pm, TR - 1pm – 2pm Phone: 573-651-2653	Location:	DH 026
		Day, Time:	MW 10.00am – 11.15 am

I. Catalog Description and Credit Hours of Course:

Cyberspace and Cyber warfare. Tools, techniques of cyber offense and defensive tactics. Foot printing and monitoring techniques. 3 Credit Hours (2 hours lecture and 2 hours lab)

II. Prerequisite: CY 310, CY 320.

III. Course Learning Outcomes:

- A. Students will be able to demonstrate understanding of Cyberspace and persistent attacks on it.
- B. Students will be able to demonstrate understanding of cyber warfare and defense techniques
- C. Students will be able to demonstrate understanding of and evaluate the connected nature of cyberspace and security techniques that can be employed in such a space.
- D. Students will be able to demonstrate understanding of and experiment with tools for cyber offense within critical infrastructure to craft defense techniques
- E. Students will be able to demonstrate understanding of cyber weapons and tactics used for attacks on cyberspace focused on critical infrastructure
- F. Students will be able to Identify evolution of cyber attacks

IV. Expectation of Students:

- A. Students are expected read assigned materials.
- B. Students are expected to complete all assignments. Assignments will ONLY be accepted on the due dates provided, unless previous arrangements are made or student provides a written medical doctor's excuse.
- C. Students are expected to participate in class and group discussions
- D. Student work will be completed in accordance with Code of Student Conduct (<http://www.semo.edu/pdf/stuconduct-code-conduct.pdf>)

- E. In a professional environment, work areas are kept clean. In keeping with a professional attitude towards fellow students, always clean your area before leaving.
- F. All laboratory work must be completed during the regularly scheduled lab time.

V. Course content:

K. Cyberspace and cyber warfare	6 Hours
L. Cyber Defense and Cyber Attacks	6 Hours
M. Cyberspace: Connected Architecture & Complexity of Security	6 Hours
N. Cyberspace: Offensive Security Techniques	6 Hours
O. Midterm	2 Hours
P. Cyberspace: Cyber Weapons and Tactics	6 Hours
Q. Cyberspace: Monitoring, Foot printing	4 Hours
R. Cyberspace: Security Operations Center	4 Hours
S. Evolution of Cyber Operations	3 Hours
T. Final Examination	2 Hours
	45 Hours

VI. Textbook and Other Required Materials or Equipment:

Cyber Warfare: Techniques, Tactics and Tools for Security Practitioners 2nd Edition by Jason Andress (Author), Steve Winterfeld

Student Evaluation:		Grading Policy:	
• Homework:	15%	90-100	A
• Labs:	10%	80-89.9999	B
• Class Participation: *	5%	68-79.9999	C
• Mid-term Exam:	25%	<68	F
• Final Exam:	30%		
• Project:	15%		

The weight of evaluation criteria may vary at the discretion of the instructor and will be indicated at the beginning of each course.

*: Active Participation in class discussions. The instructor reserves the right, acting within the policies and procedures of the university, to make changes in course content or instructional techniques without notice or obligation. No late assignments will be accepted. **“Emergencies”** require that YOU contact the instructor ASAP. Request for a late submission after the due time will not be granted.

VII. Lab Rules and Safety Agreement:

Students must read, sign and follow the Laboratory Rules and Safety Agreement provided by the instructor.

VIII. Academic Honesty Statement:

Academic honesty is one of the most important qualities influencing the character and vitality of Southeast Missouri State University. Academic misconduct or dishonesty is inconsistent with membership in an academic community and cannot be accepted. Violations of academic honesty represent a serious breach of discipline and may be considered grounds for disciplinary action, including dismissal from the University. Academic dishonesty is defined to include those acts which would deceive, cheat, or defraud so as to promote or enhance one's scholastic record. Knowingly or actively assisting any person in the commission of an above-mentioned act is also academic dishonesty. Students are responsible for upholding the principles of academic honesty in accordance with the "University Statement of Student Rights" found in the STUDENT HANDBOOK. The University requires that all assignments submitted to faculty members by students be the work of the individual student submitting the work. An exception would be group projects assigned by the instructor. In this situation, the work must be that of the group. Academic dishonesty includes: Plagiarism and Cheating.

Plagiarism: In speaking or writing, plagiarism is the act of passing someone else's work off as one's own. In addition, plagiarism is defined as using the essential style and manner of expression of a source as if it were one's own. If there is any doubt, the student should consult his/her instructor or any manual of term paper or report writing. Violations of academic honesty include:

- Presenting the exact words of a source without quotation marks;
- Using another student's computer source code or algorithm or copying a laboratory report; or
- Presenting information, judgments, ideas, or facts summarized from a source without giving credit.

Cheating: Cheating includes using or relying on the work of someone else in an inappropriate manner. It includes, but is not limited to, those activities where a student:

- Obtains or attempts to obtain unauthorized knowledge of an examination's contents prior to the time of that examination.
- Copies another student's work or intentionally allows others to copy assignments, examinations, source codes or designs;
- Works in a group when she/he has been told to work individually;
- Uses unauthorized reference material during an examination; or
- Have someone else take an examination or takes the examination for another.

IX. Accessibility Statement:

Southeast Missouri State University and Disability Services remain committed to making every possible educational accommodation for students with exceptionalities. Many services and accommodations which aid a student's

educational experience are available for students with various types of exceptionalities. It is the student's responsibility to contact Disability Services to become registered as a student with an exceptionality. Accommodations are implemented on a case by case basis. For more information visit the following site: <http://www.semo.edu/ds/>.

X. Civility and Harassment

The University strives to offer learning experiences and opportunities designed to help students think effectively, develop the capacity to communicate, discriminate among values, and make relevant judgments. A major determinant of a successful educational experience is a shared sense of respect among and between the students and their instructor. Mutual respect for all as well as a no tolerance policy on harassment of any kind is expected. Every student at Southeast is obligated at all times to assume responsibility for his/her actions, to respect constituted authority, to be truthful, and to respect the rights of others, as well as to respect private and public property.

XI. Whom to Contact to Address Concerns:

Questions, comments or requests regarding this course or program should be taken to your instructor, Vijay Anand (Email: vanand@semo.edu, Ph: 573-651-2653). Unanswered questions or unresolved issues involving this class may be taken to the department chair Dr. Sumanth Yenduri (Email: syenduri@semo.edu, Ph: 573-651-2368).

XII. Final Examination:

Location: DH 026
Time: 10.00am – 11.30am
Date: 12/13/2017