

Request for Graduate Course Addition

1. Prepare one paper copy with all signatures and supporting material and forward to the Graduate Council Chair.
2. E-mail one identical PDF copy to the Graduate Council Chair. If attachments included, please merge into a single file.
3. **The Graduate Council cannot process this application until it has received both the PDF copy and the signed hard copy.**

College: CITE Dept/Division: Computer Science Alpha Designator/Number: CYBR/542 Graded CR/NC

Contact Person: Dr. Wook-Sung Yoo Phone: x5452

NEW COURSE DATA:

New Course Title: Cyber Operations

Alpha Designator/Number: C Y B R / 5 4 2

Title Abbreviation: C y b e r O p e r a t i o n s

(Limit of 25 characters and spaces)

Course Catalog Description: Study of various concepts and aspects in choosing, deploying, supporting, troubleshooting, and securing various local and distributed components of a cyber operation.
(Limit of 30 words)

Co-requisite(s): None First Term to be Offered: Fall 2019

Prerequisite(s): CYBR 530 Credit Hours: 3

Course(s) being deleted in place of this addition (must submit course deletion form): NA

Signatures: if disapproved at any level, do not sign. Return to previous signer with recommendation attached.

Dept. Chair/Division Head <i>you, wook</i>	Date <i>9/17/18</i>
Registrar <i>Adrian J. Hillier</i> 110101	Date <i>9/21/18</i>
College Curriculum Chair <i>Marko</i>	Date <i>9/26/18</i>
Graduate Council Chair _____	Date _____

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College: CITE

Department/Division: Computer Science

Alpha Designator/Number: CYBR/542

Provide complete information regarding the new course addition for each topic listed below. Before routing this form, a complete syllabus also must be attached addressing the items listed on the first page of this form.

1. FACULTY: Identify by name the faculty in your department/division who may teach this course.

Paulus Wahjudi, Ph.D.

Husnu Narman, Ph.D

2. DUPLICATION: If a question of possible duplication occurs, attach a copy of the correspondence sent to the appropriate department(s) describing the proposal. Enter "**Not Applicable**" if not applicable.

Not Applicable

3. REQUIRED COURSE: If this course will be required by another department(s), identify it/them by name. Enter "**Not Applicable**" if not applicable.

Not Applicable

4. AGREEMENTS: If there are any agreements required to provide clinical experiences, attach the details and the signed agreement. Enter "**Not Applicable**" if not applicable.

Not Applicable

5. ADDITIONAL RESOURCE REQUIREMENTS: If your department requires additional faculty, equipment, or specialized materials to teach this course, attach an estimate of the time and money required to secure these items. (Note: Approval of this form does not imply approval for additional resources.) Enter "**Not Applicable**" if not applicable.

Not Applicable

6. COURSE OBJECTIVES: (May be submitted as a separate document)

Please see attached document

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7. COURSE OUTLINE (May be submitted as a separate document)

Please see attached document

8. SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATES (May be submitted as a separate document)

Please see attached document

9. EXAMPLE OF INSTRUCTIONAL METHODS (Lecture, lab, internship)

Please see attached document

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10. EXAMPLE EVALUATION METHODS (CHAPTER, MIDTERM, FINAL, PROJECTS, ETC.)

Exam, Homework Assignments and Projects

11. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE/GRADUATE COURSE

Not applicable

12. PROVIDE COMPLETE BIBLIOGRAPHY (May be submitted as a separate document)

Please see attached document

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Please insert in the text box below your course summary information for the Graduate Council agenda. Please enter the information exactly in this way (including headings):

Department:
Course Number and Title:
Catalog Description:
Prerequisites:
First Term Offered:
Credit Hours:

Department: Computer Science
Course Number and Title: CYBR 542 Cyber Operations
Catalog Description: Study of various concepts and aspects in choosing, deploying, supporting, troubleshooting, and securing various local and distributed components of a cyber operation .
Prerequisites: CYBR 530
First Term Offered: Fall 2019
Credit Hours: 3

BIBLIOGRAPHY

"Cyber Operations: Building, Defending, and Attacking Modern Computer Networks," Mike O'Leary, ISBN-10: 1484204581, ISBN-13: 978-1484204580

"Cyber Operations and the Warfighting Functions," U.S. Government, Department of Defense, U.S . Army, ISBN-13: 978-1520763095, ISBN-10: 1520763093

"Evolution of Cyber Technologies and Operations to 2035 (Advances in Information Security)," Misty Blowers, ISBN-10: 3319235842, ISBN-13: 978-3319235844

CYBR 542 Cyber Operations

Course Title/Number	Cyber Operations/542
Semester/Year	Fall/2019
Days/Time	TBD
Location	TBD
Instructor	TBD
Office	TBD
Phone	TBD
E-Mail	TBD
Office Hours	TBD
University Policies	<p>By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to www.marshall.edu/academic-affairs and clicking on "Marshall University Policies." Or, you can access the policies directly by going to www.marshall.edu/academic-affairs/policies/. Academic Dishonesty/Excused Absence Policy for Undergraduates/Computing Services Acceptable Use/Inclement Weather/Dead Week/Students with Disabilities/Academic Forgiveness/Academic Probation and Suspension/Academic Rights and Responsibilities of Students/Affirmative Action/Sexual Harassment</p>

Course Description

Study of various concepts and aspects in choosing, deploying, supporting, troubleshooting, and securing various local and distributed components of a cyber operation (PR: CYBR 530).

Course Student Learning Outcomes

Course Student Learning Outcomes	How students will practice each outcome in this Course	How student achievement of each outcome will be assessed in this Course
Think strategically about managing offensive and defense cyberattacks and information operations	Homework assignments, In class examples, Group discussions	Graded exam problems Graded homework assignments
Professional skills that allow students to effectively communicate through crisp policy recommendation memos and oral briefings	Homework Assignments, In class examples , Group discussions	Graded exam problems Graded homework assignments
Be able to describe the hardware components of modern computing environments and their individual functions	Homework, In class examples	Graded exam problems Graded homework assignments

Required Texts, Additional Reading, and Other Materials

Required Text

"Cyber Operations: Building, Defending, and Attacking Modern Computer Networks," Mike O'Leary, ISBN-10: 1484204581, ISBN-13: 978-1484204580

"Cyber Operations and the Warfighting Functions," U.S. Government, Department of Defense, U.S. Army, ISBN-13: 978-1520763095, ISBN-10: 1520763093

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Course Requirements / Due Dates

Midterm Examinations

Midterm exam is during regular class hours in Week 8.

Homework Assignments

Homework problems will be assigned bi-weekly (starting from week 2)

Attendance Policy

Missing more than 3 classes will result in a 10 points reduction from your final grade.

Grading Policy

Activity	Points
Attendance	10
Midterm Exam	30
Homework Assignments	30
Final Exam	30
Total	100

Course grades are awarded based on the following scheme:

Score	Letter Grade
≥ 90	A
$\geq 80 \ \& \ < 90$	B
$\geq 70 \ \& \ < 80$	C
$\geq 60 \ \& \ < 70$	D
< 60	F

Course Schedule

This is the list of topics. This could be adjusted as the semester progresses at the discretion of the instructor. Lecture slides will be posted to MUOnline.

Week	Schedule
1	System setup
2	Basic offense
3	Operational awareness
4	DNS and BIND
5	Scanning the network
6	Active directory
7	Attacking the Domain and Logging
8	Midterm Exam
9	Network Services
10	Malware and Persistence
11	Apache and ModSecurity
12	IIS and ModSecurity
13	Web Attack
14	Firewalls
15	Case study and simulation