Chair: Tracy Christofero | **GC#7: Course Change**

# Request for Graduate Course Change

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: COEPD | Dept/Division: CURR & INST | Current Alpha Designator/Number: CI 630

Contact Person: Tina Allen | Phone: 304-746-8958

**CURRENT COURSE DATA:**

Course Title: Early Childhood Education: Practicum in Early Childhood Education

Alpha Designator/Number: C I 6 3 0

Title Abbreviation: Practicum Kindergarten Ed

1. Complete this **five** page form in its entirety and route through the departments/committees below for changes to a course involving: course title, alpha designator, course number, course content, credit hours, or catalog description.
2. If this change will affect other departments that require this course, please send a memo to the affected department and include it with this packet, as well as the response received from the affected department.
3. If the changes made to this course will make the course similar in title or content to another department's courses, please send a memo to the affected department and include it with this packet as well as the response received from the affected department.
4. List courses, if any, that will be deleted because of this change (*must submit course deletion form).*
5. If the faculty requirements and/or equipment need to be changed upon approval of this proposal, attach a written estimate of additional needs.

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

| | |
|---|---|
| Dept. Chair/Division Head Tina Allen | Date 8/22/18 |
| Registrar Sonya Lyle | Date 9/4/18 |
| College Curriculum Chair | Date 9/24/18 |
| Graduate Council Chair Lori Hamrick | Date 10/27/18 |

# Request for Graduate Course Change - Page 2

College: COEPD | Department/Division: CURR & INST | Alpha Designator/Number: CI 630

Provide complete information regarding the course change for each topic listed below.

**Change in CATALOG TITLE:** ☒ YES ☐ NO

From: Practicum in Kindergarten Ed (limited to 30 characters and spaces)

To: Practicum Early Childhood Ed

If Yes, Rationale: Title changed to reflect the new course description requiring both pre-kindergarten and/or kindergarten experience which are a part of early childhood education.

**Change in COURSE ALPHA DESIGNATOR:**

From: To: ☐ YES ☒ NO

If Yes, Rationale:

**Change in COURSE NUMBER:** ☐ YES ☒ NO

From: To:

If Yes, Rationale:

Change in COURSE GRADING

From ☐ Grade To ☐ Credit/No Credit

Rationale:

**Change in CATALOG DESCRIPTION:** ☒ YES ☐ NO IF YES, fill in below:

From: Supervised experience in teaching kindergarten with a concurrent seminar in organization and administration

To: Supervised experience in teaching pre-kindergarten and/or kindergarten

If Yes Rationale: Course is currently described as a kindegarten practicum, however, it requires both pre-K and K experience. The description should indicate that students are getting experience at the Pre-K level as well. Concurrent seminar is no longer required.

**Change in COURSE CREDIT HOURS:** ☒ YES ☐ NO If YES, fill in below:

NOTE: If credit hours increase/decrease, please provide documentation that specifies the adjusted work requirements.

From 1-4

To 1-3

**Change in COURSE CONTENT:** ☐ YES ☒ NO

From

To

Rationale

# Request for Graduate Course Change-Page 4

College: COEPD

Department: CURR & INST

Course Number/Title CI 630

1. REQUIRED COURSE: If this course is required by another department(s), identify it/them by name and attach the written notification you sent to them announcing to them the proposed change and any response received. Enter NOT APPLICABLE if not applicable.

NOT APPLICABLE

2. COURSE DELETION: List any courses that will be deleted because of this change. A *Course Deletion* form is also required. Enter NOT APPLICABLE if not applicable.

NOT APPLICABLE

3. ADDITIONAL RESOURCE REQUIREMENTS: If your department requires additional faculty, equipment, or specialized materials as a result of this change, attach an estimate of the time and cost etc. 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

# Request for Graduate Course Change - Page 5

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

| COURSE DESCRIPTION CHANGE | COURSE NUMBER CHANGE | COURSE TITLE CHANGE |
|---|---|---|
| Department: | Department: | Department: |
| Course Number and Title: | Current Course Number/Title: | Current Course Number/Title: |
| Rationale: | New Course Number: | New Course Title: |
| Course Description (old) | Rationale: | Rationale: |
| Course Description: (new) | Catalog Description: | Catalog Description: |
| Catalog Description: | Credit hours: | |

COURSE DESCRIPTION CHANGE
Department: Curriculum & Instruction
Course Number and Title: CI 630, Early Childhood Education: Practicum in Early Childhood Education
Rationale: Course is currently described as a kindegarten practicum, however, it requires both pre-K and K experience. The description should indicate that students are getting experience at the Pre-K level as well. Concurrent seminar is no longer required.
Course Description (old): Supervised experience in teaching kindergarten with a concurrent seminar in organization and administration
Course Description: (new): Supervised experience in teaching pre-kindergarten and/or kindergarten
Catalog Description: Supervised experience in teaching pre-kindergarten and/or kindergarten

# Request for Graduate Addition, Deletion, or Change of a Major or Degree

NOTE: Before you submit a request for a new Major or Degree, you must submit an INTENT TO PLAN form. Only after the INTENT TO PLAN goes through the approval process are you ready to submit this request for a new Major or Degree. For detailed information on new programs please see: http://wvhepcdoc.wvnet.edu/resources/133-11.pdf.

1. Prepare one paper copy with all signatures and supporting material and forward to the Graduate Council Chair.
2. E-mail one PDF copy without signatures to the Graduate Council Chair.
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

Contact Person: Wook-Sung Yoo

Phone: x5452

Degree Program: Cybersecurity

Check action requested: ☒ Addition ☐ Deletion ☐ Change

Effective Term/Year: Fall 20 ☐ Spring 20 1c ☐ Summer 20 ☐

***Information on the following pages must be completed before signatures are obtained.***

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

| | |
|---|---|
| Dept. Chair/Division Head | Date 09/17/18 |
| College Curriculum Chair | Date 9/18/18 |
| College Dean | Date 09/20/2018 |
| Graduate Council Chair | Date 10/27/18 |
| Provost/VP Academic Affairs | Date 10/30/18 |
| Presidential Approval | Date 10-31-18 |
| Board of Governors Approval | Date |

# Request for Graduate Addition, Deletion, or Change of a Major or Degree-Page 2

Please provide a rationale for addition, deletion, change: (May attach separate page if needed)

We have seen a huge increase in cyber-related incidents, including big data breaches, physical infrastructure tampering, ransomware, and others. As cybersecurity continues to be a primary challenge, the market and need of cybersecurity professionals are growing at an astonishing rate. According to the Bureau of Labor Statistics, there are currently more than 200,000 unfilled cybersecurity positions in US alone and the rate of growth for jobs is projected at 37 percent from 2012–2022, much faster than the average (7 percent) for all other occupations. At this rate, the United States is on pace to hit a half-million or more unfilled cybersecurity positions by 2021. It is clear that there is a strong need and job market for cybersecurity professions, locally, nationally and internationally. Along with the B.S. in Computer and Information Security program in the Weisberg Division of Computer Science, the proposed program will educate students to better understand, prevent, mitigate and respond to cybersecurity threats and produce graduates who will fill the workforce needs in this growing field. The proposed program will also strengthen existing related programs creating exciting new path in education and research. As attached, the intent to plan of the proposed program was approved by graduate council and Board of Governors in SP 2018.

Please describe any changes in curriculum:
List course number, title, credit hours. Note whether each course is required or optional. Enter NONE if no change. (May attach separate page if needed)
N/A

**1. ADDITIONAL RESOURCE REQUIREMENTS:** If your program requires additional faculty, equipment or specialized materials to ADD or CHANGE this major or degree, 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 NONE if not applicable.

None

**2. NON-DUPLICATION:** If a question of possible duplication occurs, attach a copy of the correspondence sent to the appropriate department(s) describing the request and any response received from them. Enter NONE if not applicable.

None

***For catalog changes as a result of the above actions, please fill in the following pages.***

# Request for Graduate Addition, Deletion, or Change of a Major or Degree-Page 3

**3. *Current* Catalog Description**

Insert the *Current* Catalog Description and page number from the latest catalog for entries you would like to change. (May attach separate page if needed)

N/A

**4. *Edits* to the Current Description**

Attach a PDF copy of the current catalog description prepared in MS WORD with strikethroughs to mark proposed deletions and use the highlight function to indicate proposed new text.

# Request for Graduate Addition, Deletion, or Change of a Major or Degree-Page 4

**5. *New* Catalog Description**

Insert a 'clean' copy of your proposed description, i.e., no strikethroughs or highlighting included. This should be what you are proposing for the new description. (May attach separate page if needed)

See attachment.

# Request for Graduate Addition, Deletion, or Change of a Major or Degree-Page 5

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

Department:
Major or Degree:
Type of Change: *(addition, deletion, change)*
Rationale:

Department: Weisberg Division of Computer Science
New Major or Degree: Master of Science in Cybersecurity
Credit Hours: 30 Credit Hours
Type of Change: Addition
Rationale: We have seen a huge increase in cyber-related incidents, including big data breaches, physical infrastructure tampering, ransomware, and others. As cybersecurity continues to be a primary challenge, the market and need of cybersecurity professionals are growing at an astonishing rate. According to the Bureau of Labor Statistics, there are currently more than 200,000 unfilled cybersecurity positions in US alone and the rate of growth for jobs is projected at 37 percent from 2012–2022, much faster than the average (7 percent) for all other occupations. At this rate, the United States is on pace to hit a half-million or more unfilled cybersecurity positions by 2021. It is clear that there is a strong need and job market for cybersecurity professions, locally, nationally and internationally. Along with the B.S. in Computer and Information Security program in the Weisberg Division of Computer Science, the proposed program will educate students to better understand, prevent, mitigate and respond to cybersecurity threats and produce graduates who will fill the workforce needs in this growing field. The proposed program will also strengthen existing related programs creating exciting new path in education and research. As attached, the intent to plan of the proposed program was approved by graduate council and Board of Governors in SP 2018.

## CYBERSECURITY, M.S.

The Master of Science in Cybersecurity program provides students with the knowledge, skills, and professional practices needed for careers in the cybersecurity fields. The program also prepares students who desire to pursue further graduate work that leads to a Ph.D. degree. The curriculum covers several advanced topics in cybersecurity, such as; advanced cryptography, cybersecurity policy, cyber risk and vulnerability, cyber operation, wireless network security, web/mobile security, software security, security in Internet of Things (IoT), etc. These courses will be taught using the very latest, state-of-the-art security tools and technologies.

### Admission and Transfer Criteria

Applicants should follow the admissions process stated in the graduate catalog or the graduate admissions web site. Minimum requirements for admission is a four-year Bachelor's degree with GPA of 2.75 or higher out of 4.0 in Cybersecurity or computer science related programs.
Whether a student meets the above requirements will be determined by the Chair or designee of the Weisberg Division of Computer Science, based on the information provided in the admission application and transcripts. Applicants with a four-year bachelor degree in a major other than cybersecurity or computer science related program may be admitted to the program with a condition of successful completion of the following three bridge courses with a grade B or above in the first two semesters of the program:

- Data Structure and Algorithms (CS 210)
- Internetworking (CS 320)
- Statistics (STA 225, STA 346, or STA 345)

Foreign nationals must provide proof of English proficiency with a minimum score 6.5 in IELTS or 80 on TOEFL IBT (or 550 paper based) and must have met all other admission criteria prior to registering for the first semester of courses.

### M.S. Degree Requirements

The MS degree requires 30 credit hours (CR) of graduate work. At least 15 credit hours should be taken from 600 level courses.

- Core Required (12 CR):
  CYBR 510 Introduction to Cybersecurity (**New Course**)
  CYBR 530 Cybersecurity Policies and Management (**New Course**)
  CYBR 615 Cybersecurity Vulnerability Assessment (**New Course**)
  CYBR 620 Cyberwarfare (**New Course**)

- Concentration (6 CR)
  Student must choose two courses from ONE concentration area below:

  *Network Security*
  CYBR 535 Cyber Risk (cross-listed with CYBR 435)
  CYBR 542 Cyber Operations (cross-listed with CYBR 442)
  CYBR 625 Applied Cryptography (**New Course**)
  IS 656 Communication and Network Technologies

*Application Security*

| | |
|---|---|
| CYBR 500 | Computer Security Design (cross-listed with CYBR 400) |
| CYBR 535 | Cyber Risk (cross-listed with CYBR 435) |
| CYBR 625 | Applied Cryptography (Also listed in the Network Security Concentration) |
| IS 646 | Computer Systems Security |

*Security Management*

| | |
|---|---|
| CYBR 500 | Computer Security Design (cross-listed with CYBR 400) |
| CYBR 542 | Cyber Operations (cross-listed with CYBR 442) |
| IS 631 | Information Security |
| IS 647 | IT Disaster Planning & Recovery |

- Thesis option or Core Electives Option (6 CR)
  The Thesis option offers a student an opportunity for serious investigation into an area of interest by completing a 3 credit research course (CYBR 680) and a 3 credit thesis (CYBR 681) course. Students must summarize their thesis work in the form of a formal written document and deliver an oral presentation. Thesis work is typically conducted over two semesters. A thesis option can be taken after the completion of 12 credit hours. The 6 CR of the thesis option courses cannot be combined in a semester.
  For the Core Electives Option, student may choose any two 600 level CYBR courses.

- Free electives (6 CR)
  Students may choose any two from following CYBR/CS/IS courses.

| | |
|---|---|
| CYBR 500 | Computer Security Design (cross-listed with CYBR 400) |
| CYBR 535 | Cyber Risk (cross-listed with CYBR 435) |
| CYBR 542 | Cyber Operations (cross-listed with CYBR 442) |
| CYBR 625 | Applied Cryptography (Also listed in the Network Security Concentration) |
| CYBR 685 | Independent Study |
| CYBR 698 | Internship |
| | |
| CS 504 | High Performance Computing |
| CS 542 | Communication Networks and Distributed Systems |
| CS 579 | Software Engineering |
| CS 620 | Applied Algorithms. |
| CS 625 | AI Principles and Methods. |
| CS 630 | Machine Learning. |
| CS 660 | Big Data Systems. |
| | |
| IS 624 | Data Warehousing. |
| IS 625 | Software Engineering |
| IS 692 | Image Processing for Forensics |
| IS 631 | Information Security |
| IS 646 | Computer Systems Security |
| IS 647 | IT Disaster Planning & Recovery |
| IS 656 | Communication and Network Technologies |

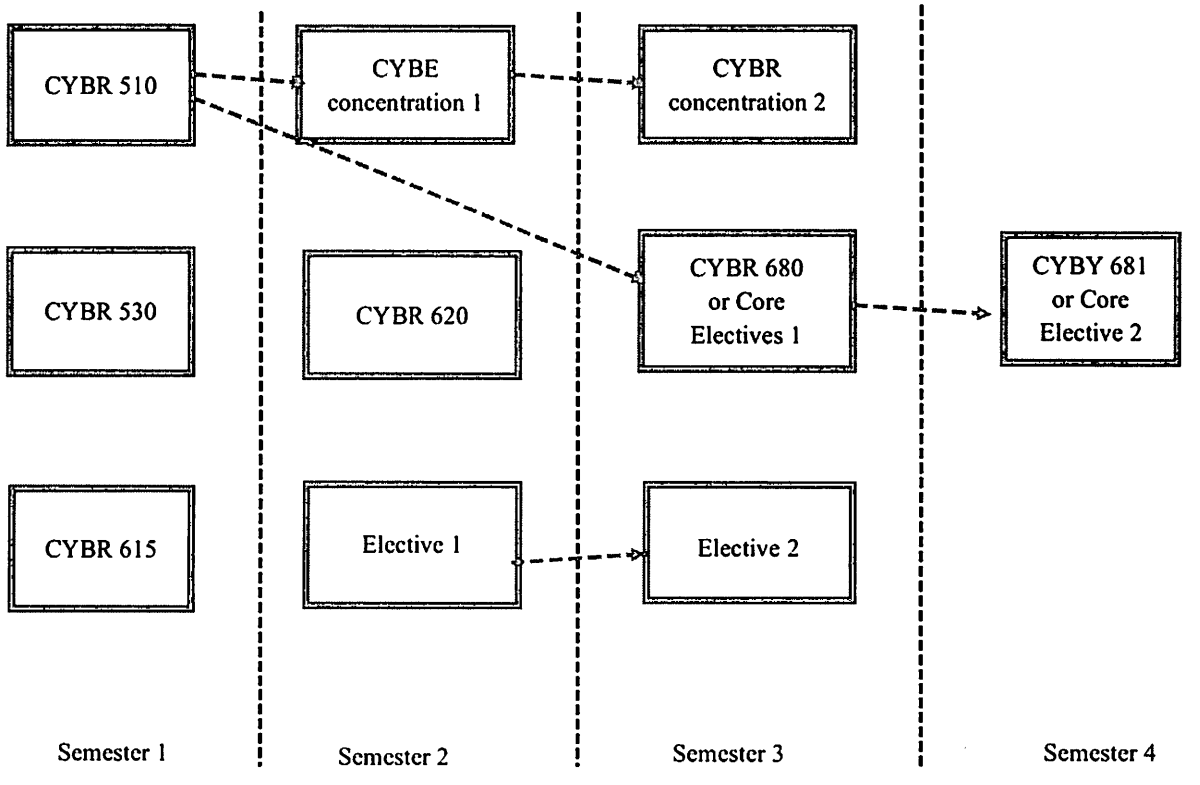
**Plan of Study**

Below is a typical two-year study plan for a full time (9 credit hours a semester) students:

| Year | Term | Course | Hr | Pre-requisite | Note |
|---|---|---|---|---|---|
| 1 | FA | CYBR 510: Introduction to Cybersecurity | 3 | None | New |
| | | CYBR 530: Cybersecurity Policies and Management | | None | New |
| | | CYBR 615: Cybersecurity Vulnerability Assessment | | None | New |
| | SP | CYBR 620: Cyberwarfare | | None | New |
| | | Concentration Course 1 | | | |
| | | Elective Course 1 | | | |
| 2 | FA | CYBR 680 (Research) or Core Elective 1 | 3 | CYBR 510 | New |
| | | Concentration Course 2 | | | |
| | | Elective Course 2 | | | |
| | SP | CYBR 681 (Thesis) or Core Elective 2 | | CYBR 680 (thesis option) | |

*Note: All four Core Required courses will be offered every semester. However, some elective courses may be offered in one semester a year. Students should work closely with advisor in developing a study plan.*

*Some courses may have pre-requisite as indicated with ----▸*




COMPUTER SCIENCE

# MARSHALL UNIVERSITY

## College of Information Technology and Engineering

## Weisberg Division of Computer Science

September 15, 2018

## Master of Science in Cybersecurity

**Effective Date:** Spring 2019

By: Wael Zatar, Dean

College of Information Technology and Engineering

and

Wook-Sung Yoo, Ph.D.

Chair, Weisberg Division of Computer Science

## Summary Statement

The Weisberg Division of Computer Science in the College of Information Technology and Engineering (CITE) proposes the establishment of the Master of Science (M.S.) in Cybersecurity degree program at Marshall University.

Cybersecurity is a computing-based discipline in which technology, computer science, people, and multiple processes are aligned to assure the continued operations of computer systems in the presence of risks and adversaries in cyber space. Two existing graduate programs offered at the Weisberg Division of Computer Science by CITE, M.S. in Computer Science and M.S. in Information Systems, cover various cybersecurity-related courses on an annual basis. The M.S. in Cybersecurity program, however, will focus on educating and training students to better understand, prevent, mitigate, and respond to cybersecurity threats at an advanced level. The program will raise awareness and garner interest in closely-related programs at Marshall University. Graduates of the program will contribute to West Virginia's economic development and advance its competitiveness regionally, nationally and globally.

Faculty members in the Weisberg Division of Computer Science have demonstrated expertise in the area of cybersecurity addressing cybersecurity challenges including computer security, network and web security, mobile and wireless network security, and security in Internet of Things (IoT) and cloud computing.

The proposed program does not anticipate the need for additional faculty lines, major funding, or other resources to establish the program. The College of Information Technology and Engineering plans on leveraging available resources in the Weisberg Division of Computer Science to offer this timely program. The M.S. in Cybersecurity degree program will not only create exciting and productive new pathways for research and development, but will increase educational opportunities and inter-departmental collaborations across the campus.

The program will become viable from its first year and will grow each year. The College of Information Technology and Engineering aims at enrolling 70 students and graduating 28 students with a M.S. in Cybersecurity degree in the fifth year of the program. The projected net revenue in the fifth year is estimated at $657,315. The program will generate close to $2 million in new revenues during its first five years.

## 1. Program Description

Cybersecurity is an evolving discipline that encompasses several elements: the study of strategy, policy, and standards regarding the security of and operations in cyber space, the full range of threat reduction, vulnerability reduction, deterrence, international engagement, incident response, resiliency, and recovery policies and activities as they relate to the security and stability of the global information and communications infrastructure.

In addition to the newly developed Bachelor of Science (B.S.) in Computer and Information Security program in the Weisberg Division of Computer Science, the proposed M.S. in Cybersecurity degree program offers cybersecurity education with existing related graduate programs offered by the College of Information Technology and Engineering (M.S. in Computer Science, M.S. in Information Systems, and M.S. in Technology Management). The M.S. in Cybersecurity degree program prepares graduates to succeed in professional careers in very rapidly growing cybersecurity fields. The graduates will lead much-needed technological changes in the industry and research fields. The following sections provide additional details about the proposed M.S. in Cybersecurity degree program.

### *1.1 Program Mission*

Marshall University provides innovative undergraduate and graduate education programs that contribute to the development of the individuals and their role in society. An important goal of the M.S. in Cybersecurity degree program is to equip students with a strong foundation in the theory and practice of cybersecurity. This foundation builds on Marshall's mission, where it is stated "to actively facilitate learning through the preservation, discovery, synthesis, and dissemination of knowledge". The proposed program will cover the fundamental concepts of cybersecurity and provide opportunities to apply the technical knowledge and skills to produce viable solutions for protecting and defending cyber space. Graduates from the M.S. in Cybersecurity degree program will achieve competency in the following four Program Educational Objectives (PEO): *After graduation, students will be able to:*

***PEO 1**: be employed in Cybersecurity or related technical areas*
***PEO 2**: be engaged in life-long learning and professional development through self-study, continuing education or graduate and professional studies*
***PEO 3**: become effective communicators, collaborators and innovators*
***PEO 4**: practice professional ethics with social responsibility addressing social, technical and business challenges*

The M.S. in Cybersecurity program will strive to ensure that its graduates are placed in cybersecurity jobs or closely related fields within the professional practice. The graduates are trained to contribute to the evolving technology at their work place, identify opportunities for breakthrough research, and assume reasonable responsibilities in the decision-making process. The M.S. in Cybersecurity degree program aligns well with the mission of the College of Information Technology and Engineering (CITE):

- CITE will be a recognized leader in practice-oriented teaching and applied research.
- CITE is committed to serve the lifelong educational needs of students, new graduates, working professionals, and employees.
- CITE builds on combined traditions of student-focused education, entrepreneurship, and funded research and service emphasis.
- CITE provides education when and where needed, incorporating technology-enhanced methods, by full-time, dedicated faculty complemented by expert adjunct faculty from industry and government.

### *1.2 Program Features*

The M.S. in Cybersecurity degree program will make Marshall University a recognized leader in education, research and practice in cybersecurity fields. The program will attract traditional and non-traditional students from West Virginia, the Tri-State Region and the surrounding states. The M.S. in Cybersecurity degree program will promote collaboration with industries, government agencies, and educational institutions by:

- developing partnerships and alliances with external corporate and industry organizations for pursuing joint educational and research opportunities in cybersecurity
- pursuing research and grant opportunities in cybersecurity-related areas
- coordinating availability of cybersecurity coursework to assist not only West Virginia, but the rest of the nation to meet the demand for cybersecurity professionals
- providing outreach opportunities to interested parties and organizations

The catalog description of the proposed M.S. in Cybersecurity degree program is shown in the following two pages.

## CYBERSECURITY, M.S.

The Master of Science in Cybersecurity program provides students with the knowledge, skills, and professional practices needed for careers in cybersecurity fields. The program prepares students who desire to pursue further graduate work that leads to a Ph.D. degree. The curriculum covers several advanced topics in cybersecurity, such as; advanced cryptography, cybersecurity policy, cyber risk and vulnerability, cyber operation, wireless network security, web/mobile security, software security, security in Internet of Things (IoT), etc. These courses will be taught using the latest and state-of-the-art security tools and technologies.

### Admission and Transfer Criteria

Applicants should follow the admissions process stated in the graduate catalog or the graduate admissions web site. Minimum requirements for admission is a four-year Bachelor's degree with GPA of 2.75 or higher out of 4.0 in Cybersecurity or computer science related programs.
Whether a student meets the above requirements will be determined by the Chair or designee of the Weisberg Division of Computer Science, based on the information provided in the admission application and transcripts. Applicants with a four-year bachelor degree in a major other than cybersecurity or computer science related program may be admitted to the program with a condition of successful completion of the following three bridge courses with a grade B or above in the first two semesters of the program:

- Data Structure and Algorithms (CS 210)
- Internetworking (CS 320)
- Statistics (STA 225, STA 346, or STA 345)

Foreign nationals must provide proof of English proficiency with a minimum score 6.5 in IELTS or 80 on TOEFL IBT (or 550 paper based) and must have met all other admission criteria prior to registering for the first semester of courses.

### M.S. Degree Requirements

The M.S. degree requires 30 credit hours (CR) of graduate work. At least 15 credit hours should be taken from 600 level courses.

- Core Required (12 CR):

  CYBR 510 Introduction to Cybersecurity (**New Course**)

  CYBR 530 Cybersecurity Policies and Management (**New Course**)

  CYBR 615 Cybersecurity Vulnerability Assessment (**New Course**)

  CYBR 620 Cyberwarfare (**New Course**)

- Concentration (6 CR)

  Student must choose two courses from ONE concentration area below:

  *Network Security*

  CYBR 535 Cyber Risk (cross-listed with CYBR 435)

  CYBR 542 Cyber Operations (cross-listed with CYBR 442)

  CYBR 625 Applied Cryptography (**New Course**)

  IS 656 Communication and Network Technologies

  *Application Security*

  CYBR 500 Computer Security Design (cross-listed with CYBR 400)

  CYBR 535 Cyber Risk (cross-listed with CYBR 435)

  CYBR 625 Applied Cryptography (Also listed in the Network Security Concentration)

  IS 646 Computer Systems Security

  *Security Management*

  CYBR 500 Computer Security Design (cross-listed with CYBR 400)

  CYBR 542 Cyber Operations (cross-listed with CYBR 442)

  IS 631 Information Security

  IS 647 IT Disaster Planning & Recovery

- Thesis option or Core Electives Option (6 CR)

  The Thesis option offers a student an opportunity for serious investigation into an area of interest by completing a 3 credit research course (CYBR 680) and a 3 credit thesis (CYBR 681) course. Students must summarize their thesis work in the form of a formal written document and deliver an oral presentation. Thesis work is typically conducted over two semesters. A thesis option can

be taken after the completion of 12 credit hours. The 6 CR of the thesis option courses cannot be combined in a semester.

For the Core Electives Option, student may choose any two 600 level CYBR courses.

- Free electives (6 CR)

  Students may choose any two from following CYBR/CS/IS courses.

| | |
|---|---|
| CYBR 500 | Computer Security Design (cross-listed with CYBR 400) |
| CYBR 535 | Cyber Risk (cross-listed with CYBR 435) |
| CYBR 542 | Cyber Operations (cross-listed with CYBR 442) |
| CYBR 625 | Applied Cryptography (Also listed in the Network Security Concentration) |
| CYBR 682-84 | Special Topics in Cybersecurity |
| CYBR 685-89 | Independent Study |
| CYBR 698 | Internship |

| | |
|---|---|
| CS 504 | High Performance Computing |
| CS 542 | Communication Networks and Distributed Systems |
| CS 579 | Software Engineering |
| CS 620 | Applied Algorithms. |
| CS 625 | AI Principles and Methods |
| CS 630 | Machine Learning |
| CS 660 | Big Data Systems |

| | |
|---|---|
| IS 624 | Data Warehousing. |
| IS 625 | Software Engineering |
| IS 692 | Image Processing for Forensics |
| IS 631 | Information Security |
| IS 646 | Computer Systems Security |
| IS 647 | IT Disaster Planning & Recovery |
| IS 656 | Communication and Network Technologies |

The Weisberg Division of Computer Science plans on offering the five new courses (four core and one concentration courses) in the curriculum of the M.S. in Cybersecurity once a year:

| | |
|---|---|
| CYBR 510 | Introduction to Cybersecurity |
| CYBR 530 | Cybersecurity Policies and Management |
| CYBR 615 | Cyber Vulnerability Assessment (pre-requisite: CYBR 510) |
| CYBR 620 | Cyberwarfare (pre-requisite: CYBR 615) |
| CYBR 625 | Applied Cryptography (pre-requisite: CYBR 510) |

Appendix A includes brief description of five new cyber security courses. Additional elective courses could be added should there be a demonstrated growth of the program and an ability to teach them following a cost-effective mechanism.

### 1.3 Program Delivery

The delivery of the M.S. in Cybersecurity program will be following classical instructional mechanisms. The Cybersecurity lab, housed in the Arthur Weisberg Family Applied Engineering Complex, provides a first class hands-on experience to students in the M.S. Cybersecurity degree program. Effective utilization of the Cybersecurity lab will enable designing, implementing, and administering the security of computer systems by embracing the concepts learned.

## 2. Program Needs and Justification

### 2.1 Existing Programs

#### 2.1.1 M.S. in Cybersecurity Degree Programs in West Virginia

The University of Charleston offers a M.S. in Cybersecurity program and West Virginia University recently started a graduate program in Business Cybersecurity Management (Table 1).

**Table 1: Cybersecurity or Related Graduate Programs in West Virginia**

| Institution | Degree | Public College | Distance from MU |
|---|---|---|---|
| University of Charleston | M.S. in Cybersecurity | No | 53 miles |
| West Virginia University | Master degree in Business Cybersecurity Management | Yes | 207 miles |

#### 2.1.2 B.S. in Cybersecurity Degree Programs in West Virginia

Three B.S. in Cybersecurity degree programs are offered by private institutions and colleges in West Virginia. Salem International University, a small, for-profit college, is about 157 miles away from Marshall University, and offers a *Bachelor of Science in Information Technology - Cyber Security*. The University of Charleston, a private university located in Charleston, offers a *Bachelor of Science in Cyber Security*. The American Public University System, a private, for-profit online learning institution located about 370 miles away from Marshall University, offers a *Bachelor of Science in Cybersecurity* and other related degree programs. Two public universities in West Virginia offer Cybersecurity-related degree programs: Marshall University offers a B.S. in Computer and Information Security degree program in CITE and Digital Forensics and an Information Assurance degree program in the College of Science. West Virginia University has started a new bachelor's degree program in Cybersecurity (CYBE) from fall 2018.

**Table 2: Cybersecurity or Related BS programs in the State of West Virginia**

| Institution | Degree | Public College | Distance from MU |
|---|---|---|---|
| Salem International University | B.S. in Information Technology - Cybersecurity | No | 157 miles |
| University of Charleston | B.S. in Cyber Security | No | 53 miles |
| American Public University System | B.S. in Cyber Security | No | 370 miles |

| | | | |
|---|---|---|---|
| Marshall University | B.S. in Computer and Information Security<br>B.S. in Digital Forensics and Information Assurance | Yes | 0 miles |
| West Virginia University | Bachelor's degree program in Cybersecurity (CYBE) | Yes | 207 miles |

### 2.1.3 Cybersecurity Degree Programs in the Surrounding States

Few educational institutions within the surrounding 200 miles of Marshall University offer cybersecurity-related degrees or certificates (Table 3).

**Table 3: Cybersecurity or related program in Tri-state Area within 200 miles**

| Institution | B.S. | M.S. | Distance from MU | Type |
|---|---|---|---|---|
| **Kentucky** | | | | |
| Eastern Kentucky University | B.S. in Network Security and Electronics | BS/MS 3+2 Program in Network Security and Electronics | 130 miles | Public |
| Kentucky State University | B.S. in Computer Science<br>(Computer Information Security Option)<br>Cyber Security Certificate | M.S. in Computer Science Technology (Cybersecurity Option) | 148 miles | Public |
| Northern Kentucky University | Certificate in Corporate Information Security<br>Cybersecurity Certificate<br>Secure Software Engineering Certificate | | 141 miles | Public |
| **Ohio** | | | | |
| Franklin University | B.S. in Cybersecurity | | 135 miles | Private |
| Ohio State University | B.S. in Computer Science and Engineering (focus on Information Security)<br>B.S. in Computer and Information Science (focus on Information Security) | | 136 miles | Public |
| University of Cincinnati | Cyber Operations Certificate | | 151 miles | Public |
| Wright State University | Cybersecurity Analytic Certificate | M.S. in Cyber Security | 164 miles | Public |

Most of these cybersecurity-related programs are relatively new although the national demand for a cybersecurity workforce is extremely high. As cybersecurity threats constitute a universal challenge that affects modern business and society, the proposed M.S. in Cybersecurity degree program will be attractive to a diverse student population including West Virginia residents, non-residents, and international students.

## 2.2 Program Planning & Development

### 2.2.1 Clientele and Need

The need for cybersecurity expertise is clearly evident.

Within the last few years, we have seen a substantial increase in cyber-related incidents including big data breaches, physical infrastructure tampering, and ransomware. The security breach associated with more than one billion Yahoo user accounts in 2013, and another 500 million accounts were illegally obtained in 2016. The dominant web services provider suffered yet another cyber-attack in 2017.

As cybersecurity continues to be a primary challenge, the need for trained experts continues to grow at an astonishing rate. More than 200,000 cybersecurity positions are currently unfilled. The Bureau of Labor Statistics predicts employment growth of 37 percent within the information security industry over the next 10 years, with four out of every five cybersecurity jobs requiring a degree. At this rate, the United States is predicted to reach an astounding half-million or more unfilled cybersecurity positions by 2021.

IBM's Chairman, President and CEO Ginni Rometty stated, "Cyber-crime is the greatest threat to every company in the world". Over 60 percent of the United States' companies and numerous governmental agencies have been victims of cyber-attacks. The World Economic Forum recently reported that: (1) Cyber-crime damage costs will hit $6 trillion annually by 2021, (2) Cybersecurity spending will exceed $1 trillion, (3) Attacks to personal data/accounts will reach four billion by 2020 (Microsoft estimated that four billion will be online—twice the number of online people now), (4) Global ransomware damage costs are predicted to exceed $5 billion in 2017, which is up from $325 million in 2015 (15 times increase in two years), and (5) Attacks to healthcare organizations will quadruple by 2020. The political disagreement presented during and after the 2016 elections clearly magnified the criticality of addressing all

cybersecurity challenges, as these threats may compromise our national security and the prosperity of the American citizens.

The Integrated Post-secondary Education Data System (IPEDS) reported that the number of students enrolled in post-secondary institutions has been in a continuous decline since 2010 (two million less students between 2010 and 2015). Many states, including West Virginia, have systemically reduced their financial support to higher education, thus forcing more yearly budget cuts; therefore, the establishment of new programs to significantly increase enrollment rates and produce tuition revenues is vital to the growth of Marshall University. The M.S. in Cybersecurity degree program will be a viable, low-cost program that will significantly result in increased enrollment and the production of more tuition and program/lab fees. The M.S. in Cybersecurity degree program will effectively produce graduates who will fill the workforce needs in this rapidly-growing field.

### 2.2.2 Employment Opportunities

The proposed M.S. in Cybersecurity degree program is timely for West Virginia, the nation, and the world. For example, Forbes reported that the burgeoning cybersecurity market is expected to grow from $75 billion in 2015 to $170 billion by 2020. A report from Cisco estimates the global figure at one million cybersecurity job openings. Moreover, the demand for these positions will rise to six million globally by 2019, with a projected shortfall of 1.5 million. According to the Bureau of Labor Statistics, the rate of growth for jobs in information security is projected at 37 percent from 2012–2022, which is a much faster rate than the average (seven percent) for all other occupations. According to the U.S. Bureau of Labor Statistics, the mean annual salary for private sector cybersecurity analyst jobs is $96,400. The U.S. News and World Report ranked the career in information security analysis 8$^{th}$ on its list of the 100 best jobs for 2015. CNN Money ranked the career of an Information Assurance Analyst 9$^{th}$ in 2015 and 5$^{th}$ in 2017 in the Top 100 best jobs. Cybersecurity workers can also command an average salary premium increase of nearly $6,500 per year, or nine percent more than other IT workers, according to the Job Market Intelligence. It is clear that there is a strong need and job market for cybersecurity professionals, locally, nationally and internationally.

A search of indeed.com for cybersecurity jobs in West Virginia showed advertisements

for 41 different positions (https://www.indeed.com/jobs?q=cybersecurity&l=WV). About half of these jobs are in the IT industry including Amazon Web Services, Inc., NetCentrics Corporation, Pragmatics, and Rockwell Collins. The other half of the jobs are for commercial banks, the healthcare and manufacturing sectors, engineering firms, and federal and state government law enforcement. As reported by many industrial leaders, a substantial percentage of IT and Cybersecurity jobs in West Virginia are filled by graduates from out-of-state and foreign institutions. The proposed M.S. in Cybersecurity degree program has received the full support of many local companies and letters of support are included in Appendix B.

### 2.3 Program Impact

The Weisberg Division of Computer Science currently houses four programs (B.S. in Computer Science degree program, B.S. in Computer and Information Security, M.S. in Computer Science degree program, and M.S. in Information Systems degree program). The Division just started a B.S. in Computer and Information Security degree program in the fall 2018 semester. Currently, various cybersecurity courses are offered related to technology, people, and process, including required Information Systems (IS) courses for the *Graduate Certificate in Information Security* of the College of Information Technology and Engineering.

The M.S. in Cybersecurity degree program will strengthen existing programs at Marshall University while creating new pathways for education and research. Closely related existing Marshall University undergraduate and graduate degree and certificate programs (such as Information Systems, Technology Management, Computer and Information Security, Digital Forensics and Information Assurance, Electrical and Computer Engineering, Management Information Systems, and Criminal Justice), will have the option of enhancing their offerings by incorporating Cybersecurity courses. The students in these programs will have many opportunities to participate in undergraduate and graduate research projects. These projects will provide students with research experience in innovative cybersecurity fields. The program's faculty will create partnerships with other universities and research institutions.

### 2.4 Cooperative Arrangements

The proposed M.S. in Cybersecurity program will incorporate an internship option in the

curriculum. Currently, the Weisberg Division of Computer Science has strong partnerships with several industry partners and state government agencies. The proposed Cybersecurity program already has the strongest support from many local, state and tristate industries and employers. The advisory board members of the Weisberg Division of Computer Science have been very excited about this much needed degree program and have committed themselves to providing suitable employment opportunities for enrolled students, as well as graduates of this proposed degree program. In addition, the advisory board members have committed to forming less formal relationships earlier in the students' curriculum through field experiences, internships, and co-ops beginning in the sophomore year.

### 2.5 Alternatives to Program Development

The proposed M.S. in Cybersecurity degree program will be the first established graduate degree program in the field of cybersecurity at Marshall University. The regional, national and international shortage of qualified graduates in this specialized field have shaped the process of identifying and developing the program learning outcomes and curriculum. Currently, there is not an alternative to the proposed M.S. in Cybersecurity degree program at Marshall University.

## 3. Program Implementation Projected Resource Requirements

The program does not require additional resources in its initial stage and can be sustainable for two years by leveraging already existing resources available at the Weisberg Division of Computer Science. Additional resources might be added either when the number of students reaches 50 students or during the third year of the program. Even with these additional resources, the program will remain cost-effective. The program will provide multiple benefits at a low cost to the institution. Scenarios that examine the Return on Investment (ROI) of this timely program have shown it to be a lucrative addition to Marshall University.

### 3.1 Program Administration

The Weisberg Division of Computer Science of the College of Information Technology and Engineering will house the M.S. in Cybersecurity degree program. The Chair of the Weisberg Division of Computer Science will supervise and manage the program with oversight by the

Dean of the College of Information Technology and Engineering. The college does not project changes in the administration of the division with the addition of this new degree program.

### 3.2 Program Projections

Based upon the number of student inquiries and interest of the proposed degree, it is conservatively estimated that the M.S. in Cybersecurity program will have 20 full time equivalent (FTE) students in its first year, with 20 percent annual growth and 80% retention in the following five years (Table 4). Twenty-eight students will graduate from the program in the 5th year.

**Table 4: Student Enrollment Projection**

| Student Enrollment | 1st year | 2nd year | 3rd year | 4th year | 5th year |
|---|---|---|---|---|---|
| Enrollment of 1st year students | 20 | 16 | | | |
| Enrollment of 2nd year students | | 24 | 19 | | |
| Enrollment of 3rd year students | | | 29 | 23 | |
| Enrollment of 4th year students | | | | 35 | 28 |
| Enrollment of 5th year students | | | | | 42 |
| **Estimated Total Student Enrollment** | **20** | **40** | **48** | **58** | **70** |

### 3.3 Faculty Instructional Requirements

The College of Information Technology and Engineering has the administrative system and necessary faculty to support the M.S. in Cybersecurity degree program. The Weisberg Division of Computer Science's faculty acquired terminal degrees in their fields, have demonstrated excellent research and publication records, and possess the technical expertise to support the program. Research projects of the faculty have focused on security in mobile and wireless networking, Internet of Things (IoT), intrusion detection, and cloud computing.

Recent staffing changes in the College of Information Technology and Engineering (CITE) have provided the college's administration with an opportunity to reshape the future of the Weisberg Division of Computer Science. The CITE Dean has implemented an aggressive plan to address systemic obstacles, enhance the efficiencies of program delivery, and modernize the offerings of the Division through hiring very promising faculty who possess the latest knowledge in the fields of computer science and cybersecurity. The Division is currently hiring

three tenure-track assistant professors. These hires will be tasked with teaching new courses and developing research in cybersecurity areas.

The current computer science faculty, as well as newly hired faculty, will collectively teach cybersecurity courses and the course assignment of five new M.S. in cybersecurity program is shown in Table 5.

**Table 5. New Cybersecurity Courses and Faculty Assignment**

| New Cybersecurity Courses | Term | Course starts | Faculty |
|---|---|---|---|
| CYBR 510 - Introduction to Cybersecurity | SP | 2019 | Dr. Cong Pu |
| CYBR 530 - Cybersecurity Policies and Management | SP | 2019 | Dr. Wook-Sung Yoo |
| CYBR 615 - Cyber Vulnerability Assessment | FA | 2019 | Dr. Paulus Wahjudi |
| CYBR 620 - Cyberwarfare | SP | 2020 | Dr. Husnu Narman |
| CYBR 625 - Applied Cryptography | SP | 2020 | Dr. Cong Pu |

Based on the estimated number of students shown in Table 4 and the number of computer science and cybersecurity courses in the M.S. in Cybersecurity degree program, one full-time faculty time from the current faculty body and one adjunct faculty will cover courses needed in the program's curriculum in the second year. 1.25 full-time faculty and 2 adjunct faculty will teach a few more computer science sections needed for the students enrolled in the program from the third year of the program. The CITE Dean anticipates the addition of a tenure-track faculty line to support the program's growth starting from the third year of the program. More faculty and adjuncts could be added as the program continues to grow. Table 6 displays the projected revenue generation over the first five years of delivering the program.

### 3.4 Library Resources and Instructional Materials:

Marshall University Libraries have the majority of the resources needed to support the proposed M.S. in Cybersecurity degree program. Few additional library collections may be added over time to adequately complement the library resources currently available for the Computer Science programs.

### 3.5 Support Service Requirements

A dedicated cybersecurity lab system administrator and two part-time graduate students (lab

assistants) will be needed after the program acquires a critical mass (probably after three years from the starting of the program).

### 3.6. Facilities Requirements

Marshall University Computing Services currently supports all user computing needs of the users on Marshall campuses. The College of Information Technology and Engineering has recently added multiple state-of-the-art computer labs and classrooms within its magnificent Arthur Weisberg Family Applied Engineering Complex (WAEC) to support the various programs of the Weisberg Division of Computer Science. The Weisberg Division of Computer Science houses a cybersecurity lab, Computer Science Project lab, and Computer Graphics lab. These spaces are shared amongst the existing programs in the Weisberg Division of Computer Science and will support the addition of other programs in the division, including the proposed M.S. in Cybersecurity degree program. The cybersecurity lab has a built-in internal network for testing and developing various cybersecurity-related projects without compromising the Marshall University network. The Cybersecurity lab currently supports existing courses of Internetworking and Cybersecurity. The M.S. in Cybersecurity program will have access to the available computer workstations and Wi-Fi in WAEC. As the program continues to grow, another cybersecurity specialized lab/classroom will be needed. The cost of the additional equipment is estimated at $250,000 (to acquire additional powerful computers, servers, and network facilities).

### 3.7. Operating Resource Requirements

As an integral part of the Weisberg Division of Computer Science, the M.S. in Cybersecurity degree program will share the operating resources with the other programs offered by the Division. Table 6 shows the estimated revenue generated by the proposed program during its first five years (based on the estimated number of students in Table 4). Table 7 provides a summary of the operating resource requirements.

## Table 6. Revenue Generated by the Proposed Program in 5 years

| | Tuition & Fee | 1st Year | | 2nd Year | | 3rd Year | | 4th Year | | 5th Year | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Yearly | FTE | Revenue | FTE | Revenue | FTE | Revenue | FTE | Revenue | FTE | Revenue |
| Resident of WV (50%) | $9,188 | 10 | $91,880 | 20 | $183,760 | 24 | $220,512 | 29 | $266,452 | 35 | $321,580 |
| Metro resident (20%) | $16,040 | 6 | $96,240 | 12 | $192,480 | 14 | $224,560 | 17 | $272,680 | 21 | $336,840 |
| Out of State (30%) | $21,222 | 4 | $84,888 | 8 | $169,776 | 10 | $212,220 | 12 | $254,664 | 14 | $297,108 |
| **Total** | | **20** | **$273,008** | **40** | **$546,016** | **48** | **$657,292** | **58** | **$793,796** | **70** | **$955,528** |

## Table 7: Five-Year Projection of Total Operating Resources Requirements

| | First Year 2018 | Second Year 2019 | Third Year 2020 | Fourth Year 2021 | Fifth Year 2022 |
|---|---|---|---|---|---|
| A. FTE POSITIONS | | | | | |
| 1. Administrators | 0.125 | 0.125 | 0.125 | 0.25 | 0.25 |
| 2. Full-time Faculty | 0.5 | 1 | 1.25 | 1.25 | 1.25 |
| 3. Adjunct Faculty | 0 | 1 | 2 | 2 | 2 |
| 4. Graduate Assistants | 0 | 0 | 2 | 2 | 2 |
| 5. Other Personnel: | | | | | |
| a. Clerical Workers | 0 | 0 | 0 | 0 | 0 |
| b. Professionals | 0 | 0 | 1 | 1 | 1 |
| B. OPERATING COSTS | | | | | |
| 1. Personal Services: | | | | | |
| a. Administrators | $18,750.00 | $18,750.00 | $18,750.00 | $37,500.00 | $37,500.00 |
| b. Full-time Faculty | $53,125.00 | $106,250.00 | $132,812.50 | $132,812.50 | $132,812.50 |
| c. Adjunct Faculty | $- | $4,500.00 | $9,000.00 | $9,000.00 | $9,000.00 |
| d. Graduate Assistants | $- | $- | $6,400.00 | $6,400.00 | $6,400.00 |
| e. Non-Academic Personnel: | | | | | |
| Clerical Workers | $- | $- | $- | $- | $- |
| Professionals | $- | $- | $62,500.00 | $62,500.00 | $62,500.00 |
| Total Salaries | $71,875.00 | $129,500.00 | $229,462.50 | $248,212.50 | $248,212.50 |
| 2. Current Expenses (Recurring) | $10,000.00 | $15,000.00 | $20,000.00 | $30,000.00 | $40,000.00 |

| | | | | | |
|---|---|---|---|---|---|
| 3. Repairs and Alterations (Lab) | $- | $- | $5,000.00 | $5,000.00 | $5,000.00 |
| 4. Equipment: | | | | | |
| Educational Equip. | $5,000.00 | $5,000.00 | $5,000.00 | $5,000.00 | $5,000.00 |
| Library Books | $- | $- | $- | $- | $- |
| 5. Nonrecurring Expenses: (Lab) | $- | $- | $250,000.00 | $- | $- |
| Total Costs | $86,875.00 | $149,500.00 | $509,462.50 | $288,212.50 | $298,212.50 |
| **C. Sources** | | | | | |
| 1. General Fund Appropriations | $273,008.00 | $546,016.00 | $657,292.00 | $793,796.00 | $955,528.00 |
| **D Net Revenue** | $186,133.00 | $396,516.00 | $147,829.50 | $505,583.50 | $657,315.50 |

The program and lab fees will be sufficient to cover additional operating budget needs, and will ensure the program's financial viability.

### 3.8. Source of Operating Resources

The source of the program's operational support will be a combination of: (1) sharing the operating budget of the Weisberg Division of Computer Science, and (2) program and lab fees that will specifically be collected from the students in this program.

## References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## Appendix A: Course Description in the Cybersecurity Program

**CYBR 510 - Introduction to Cybersecurity. 3 hrs.**
This course provides an overview of the cybersecurity field, the basic foundations of the current technology and its impacts along with the predominant threat components and remediation.

**CYBR 530 - Cybersecurity Policies and Management. 3 hrs.**
The course covers risk management, integrating continuous monitoring and real-time security solutions with information system to improve situational awareness and deployment of countermeasures.

**CYBR 615 - Cybersecurity Vulnerability Assessment. 3 hrs.**
This course focuses on the complete cycle of Enterprise security from identifying vulnerabilities, detecting application exploitation and post exploitation mitigations and analysis for an enterprise level cyber infrastructure.

**CYBR 620 – Cyberwarfare. 3 hrs.**
The course covers both offensive and defensive techniques pertaining to cyber security from techniques to find vulnerabilities and analysis on the likelihood of an attack to developing solutions to secure cyber infrastructure.

**CYBR 625 - Applied Cryptography. 3 hrs.**
This course introduces fundamentals of cryptography, including classical ciphers, Shannon's perfect secrecy, DES, AES, public-key crypto (RSA), as well as advanced cryptographic schemes.

## Appendix B: Letter of Support

strictly BUSINESS
COMPUTER SYSTEMS

848 4th Avenue, Suite 200
Huntington, WV 25701
(304) 529-0401
www.sbcs.com
info@sbcs.com

Wook-Sung Yoo, Ph.D.
Professor and Chair, Weisberg Division of Computer Science,
College of Information Technology and Engineering,
WAEC 3101A,
Marshall University
Huntington, WV 25755

Dear Dr. Yoo,

I am writing in support of your proposed plan to create a Bachelor of Science in Cybersecurity program at Marshall University.

Given the recent news of a massive security breach and the possible leak of millions of customer records at Wells Fargo, it should come as no surprise that the field of Cybersecurity is tremendously important to our personal privacy interests as well as a major contributor to the protection of our national security interests. As such, the formation of a degree program in Cybersecurity is not only timely, but vital.

I believe the Weisberg Division of Computer Science is well positioned to take advantage of this opportunity as they have the resources in place to begin this program very quickly.

As the principal of a technology company that works with both industry and the Federal Government, I see daily, the demand for, and growing shortage of, professionals to manage cybersecurity initiatives nationwide, and am completely confident that graduates of Marshall's program will have little trouble finding rewarding careers as well as making significant contributions to the field.

As an employer of technology professionals, I am also confident that we will be the first in line to consider hiring a graduate of this important program.

With best regards,

Michael G. Owens, Sr.
President
Strictly Business Computer Systems Inc.

STATE OF WEST VIRGINIA
**DEPARTMENT OF ADMINISTRATION**
OFFICE OF TECHNOLOGY
State Capitol
Charleston, West Virginia 25305

Jim Justice
Governor

John A. Myers
Cabinet Secretary

John D. Dunlap
Chief Technology Officer

October 6, 2017

To whom it may concern:

As a cyber security expert serving the Department of Defense and the State of West Virginia, I have been exposed to the stark reality of the cyber security threat. Our world has fully integrated technology and the resulting interdependence has created a serious situation. The rapid advancement and integration of new technology, technology inheritably vulnerable, coupled with the lack of a skilled cyber workforce presents a situation that is likely to get worse before it becomes better. A key component to answer this threat is a strong dedication to the cyber workforce development.

The importance of developing a cyber workforce cannot be understated, but it should also be noted the development programs must be designed and implemented with an understanding of the cyber threat issue. Educational programs must account for the desperate need of technical-minded experts, trained with the skills to solve complex problems. Core education should start and delve deep in to computer science fundamentals. In addition, programs must recognize the need to teach practical skillsets in hands-on environments. Finally, cyber workforce programs can serve to help fill the workforce gap sooner, rather than later through internship and apprenticeship programs offering mutually beneficial opportunities.

In conclusion, I recommend Marshall University strongly consider implementing a strong cyber security program for the undergraduate and graduate levels with a curriculum foundation in computer science.

Respectfully,

//SIGNED//
Joshua D. Spence, CISSP
Chief Information Security Officer
West Virginia Office of Technology

City Holding Company

Wook-Sung Yoo, Ph. D.
Professor and Chair, Weisberg Division of Computer Science,
College of Information Technology and Engineering,
WAEC 3101A,
Marshall University
Huntington, WV 25755

Dear Dr. Yoo,

I'm very excited about the prospect of a Cybersecurity program at Marshall University. As an alumnus of Marshall University's Computer Science program, it's encouraging to see progress and growth. It seems I read an article weekly describing what is believed to be a cyber security professional shortage by 2019. What better time than now to begin providing students with an education that will allow them to take full advantage of this dynamic job market.

Throughout the country, financial institutions have identified cyber-threats as their top priority for 2017. This issue has been moved to the forefront of bank-board meeting agendas, and senior managers must act fast to mitigate these growing threats to banks. Cyber-threats have the power to wipe out huge swathes of business value in a matter of moments, and banks need to address this growing risk through resource budgeting. Radical change needs to be made. One way of incorporating cost-effective solutions will be by enlisting the help of specialized external cybersecurity teams along with building strong internal staffing expertise. The traditional approach to IT solutions and tools is not going to be enough to tackle this problem, which changes shape every moment. Skilled expert knowledge will be required to effectively tackle the fast-paced dynamics of threats—and even then because of the speed of technological development, it will be hard to keep up.

I'm sure City National Bank will be challenged in our market(s) to find qualified candidates to fill the security analyst positions that will be needed. We already are! Educate them and we'll find a place for them.

Sincerely,

Jeffrey D. Legge
Chief Information and Administrative Officer
City Holding Company

MARSHALL APPALACHIAN TRANSPORTATION INSTITUTE

CBER CENTER FOR BUSINESS AND ECONOMIC RESEARCH

Wook-Sung Yoo, Ph.D.
Professor and Chair, Weisber Division of Computer Science,
College of Information Technology and Engineering
WAEC 3101A
Marshall University
Huntington, WV 25755

Dear Dr. Yoo,

I am writing in support of the proposed Bachelor of Science, Cybersecurity program at Marshall University. As a research arm of Marshall University, we work directly with the public and private sectors who are increasingly concerned about cyber-threats.

This year alone we have seen an alarming number of cybersecurity breaches within the Federal Government, an onslaught of ransomware attacks and the Equifax data breach that compromised as many as 143 million consumers. Given the surge in cyber-attacks it is vital to the nation's security interest that we start developing a workforce that can combat these types of attacks.

I believe the Weisburg Division of Computer Science would be doing a great service to our community and nation by the creation of a Bachelor of Science Degree in Cybersecurity.

Sincerely,

Robert H. "Bob" Plymale,
Marshall University Research Corporation
Associate Vice President for Economic Development
COO, Appalachian Transportation Institute
COO, Center for Business and Economic Research

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Steven L. Paine, Ed.D., State Superintendent of Schools
wvde.state.wv.us

October 13, 2017

Wook-Sung Yoo, Ph.D.
Professor and Chair, Weisberg Division of Computer Science
College of Information Technology and Engineering
Marshall University
WAEC 3101A
Huntington, WV 25755

Dear Dr. Yoo,

Thank you for providing me with an overview of the proposed Bachelor of Science in Cybersecurity (BSCY) degree program currently under consideration at Marshall University. The program appears to be a rigorous course of study designed to prepare graduates to effectively prevent and mitigate emerging and evolving threats while maintaining high standards of ethical professional practice. I am pleased to support your efforts.

The need for trained experts in Cybersecurity has never been more pressing. According to the Identity Theft Resource Center,[1] the United States has experienced more than 1,000 confirmed data breaches to date in 2017, with at least 163 million individual records being exposed to unauthorized parties. Over the past 12 years, nearly 8,000 confirmed data breaches have exposed more than one billion records. In perhaps the most shocking breach so far, the credit reporting company Equifax revealed earlier this month that approximately 143 million credit records for more than 200,000 people were accessed by hackers who exploited a vulnerability in the company's website. Breaches and other security incidents seem to be becoming commonplace.

West Virginia's K-12 education system has so far been fortunate in avoiding major data breaches that threaten our students' information. However, we know that the risk is ever present and constantly growing. Agencies like the West Virginia Department of Education and our districts need highly skilled professionals with expertise to identify and stop threats before they become incidents and to respond quickly when breaches do occur.

[1] Identity Theft Resource Center. (2017, September 14). 2017 Data Breaches. Retrieved from http://www.idtheftcenter.org/2017-data-breaches.html

Threat environments evolve and change quickly. Cybersecurity professionals need adaptive skills and excellent critical thinking processes to be able to respond effectively and decisively. Marshall University's proposed BSCY program is designed to cultivate those technical and professional skills and to ensure that graduates will collaborate successfully to improve their employers' security postures in support of organizational missions.

Technology is a powerful tool for change. Through my leadership roles in West Virginia's education sector and in initiatives like the Partnership for 21st Century Skills, I have seen directly how effective technology implementation can provide a strong foundation for student achievement. West Virginia's educators have long recognized the great promise technological tools and advancements hold for helping our students cultivate the knowledge and skills they need to build bright futures. Every day, I see our educators working to find ways to harness the promise of technology and connected learning environments while simultaneously trying to avoid potential harm to their students. The ability to collaborate with trained Cybersecurity professionals, such as those who will graduate from the BSCY program, will enhance our educators' confidence that they are acting in the best interests of their students while adopting new innovations for improvement.

We must use every available tool and technology to prepare our students for their futures, and we must do so while respecting and protecting the security of their personal information. I look forward to watching the BSCY program at Marshall University further evolve as plans are finalized and implemented. I hope that, in the near future, we may see Marshall's BSCY graduates working with educators to keep our students safe.

Sincerely,

Steven L. Paine, Ed.D.
State Superintendent of Schools

SLP:GHW:csm

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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: Science | Dept/Division: Criminal Justice | Alpha Designator/Number: CJ ~~5xx~~ 515 | (•) Graded ( ) CR/NC

Contact Person: Kim DeTardo-Bora | Phone: 304-696-3084

**NEW COURSE DATA:**

New Course Title: Rural Criminology

Alpha Designator/Number: C J 5 ~~x x~~ 5 1 5

Title Abbreviation: R u r a l C r i m i n o l o g y

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)

Critical analysis of rural crime and the criminological sub-field of rural criminology. Examines the economic, racial, and cultural conditions in rural America which reproduce exploitive economies and overall destructive behaviors.

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

Prerequisite(s): None | Credit Hours: 3

Course(s) being deleted in place of this addition (*must submit course deletion form*): None

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

| | |
|---|---|
| Dept. Chair/Division Head | Date 8-24-2018 |
| Registrar | Date 8/29/18 |
| College Curriculum Chair | Date 9/26/2018 |
| Graduate Council Chair | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: Science | Department/Division: Criminal Justice | Alpha Designator/Number: CJ 515

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.

Dr. Stephen Young, Dr. Wendy Perkins, Dr. Kim DeTardo-Bora, Dr. Leslie Quick

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 deparment(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)

See course syllabus (attached)

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

See attached.

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

DeKeseredy, W., Martin, D., and Donnermeyer, J. (2009). Dangerous Exits: Escaping Abusive Relationships in Rural America. Newark, NJ: Rutgers University Press.

Donnermeyer, J. and DeKeseredy, J. (2014). Rural Criminology: New Directions in Critical Criminology. New York, NY: Routledge.

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

Lecture based instruction and in class activities.

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

Exams, critical essay assignments, term paper, and quizzes

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

Graduate students will complete additional discussions, a larger academic research paper, and have greater class participation expectations.

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

Brisman, A., McClanahan, B., & South, N. (2014). Toward a green-cultural criminology of "the rural". Critical Criminology, 22(4), 479-494.

DeKeseredy, W. S., Muzzatti, S. L., & Donnermeyer, J. F. (2014). Mad men in bib overalls: Media's horrification and pornification of rural culture. Critical Criminology, 22(2), 179- 197.

Donnermeyer, J. F., & DeKeseredy, W. (2008). Toward a rural critical criminology. Southern Rural Sociology, 23(2), 4.

Hartigan, J. (2013). Who are these White people?:"Rednecks,""Hillbillies," and "white trash" as marked racial subjects. In White out (pp. 100-116). Routledge.

Kimmel, M., & Ferber, A. L. (2000). "White Men Are This Nation:" Right-Wing Militias and the Restoration of Rural American Masculinity. Rural Sociology, 65(4), 582-604.

Linnemann, T., & Wall, T. (2013). 'This is your face on meth': The punitive spectacle of 'white trash' in the rural war on drugs. Theoretical Criminology, 17(3), 315-334.

Weisheit, R. A., & Donnermeyer, J. F. (2000). Change and continuity in crime in rural America. Criminal justice, 1(1), 309-357.

Young, S. T. (2017). Wild, Wonderful, White Criminality: Images of "White Trash" Appalachia. Critical criminology, 25(1), 103-117.

# Request for Graduate Course Addition - Page 5

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: Criminal Justice
Course Number and Title: CJ 515: Rural Criminology
Catalog Description: Critical analysis of rural crime and the criminological sub-field of rural criminology. Examines the economic, racial, and cultural conditions in rural America which reproduce exploitive economies and overall destructive behaviors.
Prerequisites: None
First Term Offered: Spring 2019
Credit Hours: 3

Rural Criminology
CJ 515
Spring 2019

**Instructor Information**

| | |
|---|---|
| Name: | Dr. Stephen Young |
| Office Location: | Smith Hall 734 |
| School: | School of Forensic & Criminal Justice Sciences |
| Office Hours: | M/W/F 9-1050 am and 1-2pm T/TR 11am to 12:30pm |
| Email Address: | Young250@marshall.edu |

**Course Description**

Critical analysis of rural crime and the criminological sub-field of rural criminology. Examines the economic, racial, and cultural conditions in rural America which reproduce exploitive economies and overall destructive behaviors.

- 3 credit hours
- Prerequisites: None

***Required Text***

American Psychological Association [APA] (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC.

DeKeseredy, W., Martin, D., and Donnermeyer, J. (2009). *Dangerous Exits: Escaping Abusive Relationships in Rural America.* Newark, NJ: Rutgers University Press.

Donnermeyer, J. and DeKeseredy, J. (2014). *Rural Criminology: New Directions in Critical Criminology.* New York, NY: Routledge

**Academic Calendar**

For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: http://www.marshall.edu/calendar/academic ).

***Required Technology***

- Computer (or access)
- Internet (send and receive email messages)
- Email (make sure all accounts are forward to Marshall email account)
- Access to MU Online (blackboard)

## COURSE LEARNING OUTCOMES MATRIX

| Course Learning Outcomes | How Each Outcome is Practiced in this Course | How Each Outcome is Evaluated in this Course |
|---|---|---|
| (A) Students will articulate principles and concepts of various criminological perspectives dealing with inequality and other causes of criminality in rural areas. | In-class examples and assignments, readings, and discussions | Critical essay assignments, term paper, and class discussion. |
| (B) Students will develop basic scientific inquiry skills, particularly the link between theory, research, and policy implications within the rural criminological literature. | In-class examples and assignments, readings, and discussions | Critical essay assignments, term paper, and class discussion. |
| (C) Students will examine the utility of critical criminological theory in rural areas by developing a term paper dealing with an issue facing rural criminology. | In-class examples and assignments, readings, and discussions | Term paper |
| (D) Students will conduct research using the library databases and incorporate scholarly sources into a professional paper. | Library database research for term paper | Critical essay assignments and term paper |
| (E) Students will develop and enhance professional writing skills by using APA publication guidelines for a term paper. | APA presentation and review sessions, APA practice quiz, and draft of term paper | APA quizzes, term paper |

***Grading Criteria***
Your final grade will be calculated using the following guidelines:

Assignments:

| | |
|---|---|
| Paper | 100 points |
| Essay 1 | 50 points |
| Essay 2 | 50 points |
| Discussions | 150 points |
| Collaborate Ses. | 100 points |
| Total | 450 points |

Grading Scale:

| | |
|---|---|
| **A** | 90% - 100% |
| **B** | 80% - 89% |
| **C** | 70% - 79% |
| **D** | 60% - 69% |
| **F** | 0 - 59% |

Paper: Students are required to write an academic research paper describing the presence of a discussed criminological issue detrimental to rural communities. Student papers are to be ten to fifteen pages in length (introduction through conclusion). ***YOUR TOPIC IS FINAL ONCE YOU SUBMIT YOUR SELECTION. The paper is worth 100 points.

Critical Essay Assignments: There are two essay style analysis assignments during the course of the semester. These assignments will examine a specific criminological issue in rural areas and the policy (lack of) presently being used to alleviate the harm being experienced. Students will situate the issue within relative rural criminological frameworks and outline potential policy based solutions. Essays are to be no more than 8 pages in length (introduction to conclusion). Each essay is worth 50 points.

Discussion Blogs: Students will be expected to answer weekly discussion questions dealing with a particular topic from corresponding readings. You will type your answer to the question out as a part of the discussion board. Graduates are expected to comment and "debate" on other student responses. Total of 150 points.

Collaborate Ultra Session: Once every module, students will be expected to join a Collaborate Ultra Session with Dr. Young. You will be provided a series of discussion questions, as well as an article to read to prepare for the class. You will be expected to complete these sessions as you would a seminar class. (MEANING YOU DO THE MAJORITY OF THE TALKING). Total of 100 points.

**Course Policies**

Make Up Policy:

There will be **no** make-up of class assignments (including exams) without a university excuse. Late papers will receive a 5 point deduction per day late (each assignment is due at the end of the class period, a 5 point deduction per day late begins immediately following the end of the class the paper is due; a hard copy must be turned in during class). Communicating absences a head of time (when possible) will help with support making up missed assignments.

Course Etiquette:

For each class period, it is required that you come to class having read the assigned readings. This will provide a basic foundation for the material covered in class and prompt the development of class discussion. Class attendance is required as attendance is part of your final grade. Late arrivals and early departures from class are not acceptable on a regular basis. Although emergencies do occur, please let me know a head of time, if possible, because they serve as an unfair distraction to your peers and the instructor.

Cell Phone Policy

ANY USE OF CELL PHONES WILL NOT BE TOLERATED DURING CLASS. If a cell phone is seen during class you will be asked initially to turn it to silent and to put it away. If a phone is seen a second time, I will ask that you to place it on my desk until the end of class at which point you can retrieve it as you leave the room. If usage continues, I reserve the right to ask you to leave the room and you will not be credited for any assignments accepted during that particular period.

Computer Usage Policy

The use of computers for the purpose of taking notes will be allowed. If I believe that a student is using a computer for any other purpose than class, I will reserve the right to eliminate the usage of computers by that particular student and if need be, the class as a whole.

**University Policies**

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to Academic Affairs: Marshall University Policies. (URL: http://www.marshall.edu/academic-affairs/policies/ )

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy

- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Academic Dishonesty:
Academic Dishonesty includes cheating, fabrication and falsification of data or information, plagiarism, bribes/favors/threats, and complicity (i.e., helping or attempting someone commit an act of dishonesty). As stated in the policy, "A student, by voluntarily accepting admission to the institution or enrolling in a class or course of study offered by Marshall University accepts the academic requirements and criteria of the institution. It is the student's responsibility to be aware of policies regulating academic conduct, including the definitions of academic dishonesty, the possible sanctions and the appeal process. For the purposes of this policy, an academic exercise is defined as any assignment, whether graded or ungraded, that is given in an academic course or must be completed toward the completion of degree or certification requirements. This includes, but is not limited to: Exams, quizzes, papers, oral presentations, data gathering and analysis, practica and creative work of any kind" (MU Undergraduate Catalog). If a student violates this policy, discretion will be used by the instructor; the possible sanction to be applied will be a failing grade for the assignment, exam, or paper. For those of you who need a reminder about the policy, please refer to the MU Undergraduate/Graduate Catalog.

| Tentative Course Outline | | |
|---|---|---|
| **Week** | **Topics** | **Readings/Assignment** |
| 1 | Syllabus Day<br>Introduction to Rural Criminology | Rural: Pages 1-6<br><br>Exits: Pages 6-8 and 18-20<br><br>Discussion Blog one |
| 2 | Rural Horror and the Anti-Idyll<br><br>No Class MLK Jr. Holiday | Rural: Pages 15-27<br><br>Mad Men in Bib Overalls: Media's Horrification and Pornification of Rural Culture<br><br>Discussion Blog Two |
| 3 | Myths About Rural Crime | Rural: Pages 6-15<br><br>Chang and Continuity in Crime in Rural America<br><br>Provide Critical Essay One Topic<br><br>Discussion Blog Three |
| 4 | Nothing But Trash: Race and Rural Space | Who are these White People?: Rednecks, Hillbillies, and White Trash as Marked Racial Subjects<br><br>Term Paper Topic Due<br><br>Discussion Blog Four<br><br>Collaborate Ultra Session One |
| 5 | Rural Crime and Media | Wild, Wonderful, White Criminality: Images of "White Trash" Appalachia<br><br>Discussion Blog Five |
| 6 | Studying Crime In Rural Areas | Exits: Chapter 3<br><br>Discussion Blog Six |
| 7 | Elements of a Critical Rural Criminology | Rural: Pages 28-42<br><br>Toward a Rural Critical Criminology<br><br>Discussion Blog Seven |

| | | |
|---|---|---|
| 8 | Environment and Green Culture in Rural Areas | Toward a Green-Cultural Criminology of the "Rural"<br><br>Critical Essay One Due<br><br>Discussion Blog Eight<br><br>Collaborate Ultra Session Two |
| 9 | Drugs and Rural Criminology | This is Your Face on Meth: The Punitive Spectacle of 'White Trash' in the Rural War on Drugs<br><br>Discussion Blog Nine |
| 10 | Rurality and Sexual Assault | Exits: Chapter 2<br><br>Discussion Blog Ten |
| 11 | Spring Break | |
| 12 | Hate Crime and Rural America | White Mean Are This Nation: Right-Wing Militias and the Restoration of Rural American Masculinity<br><br>Provide Critical Essay Two Topic<br><br>Discussion Blog Eleven |
| 13 | Collective Efficacy and Rural Crime | Rural: Pages 54-67<br>Exits: Pages 88-95<br><br>Discussion Blog Twelve<br><br>Collaborate Ultra Session Three |
| 14 | Writing Lab | Writing Week<br><br>Discussion Blog Thirteen |
| 15 | New Directions in Rural Research, Policy, and Practice | Rural: Pages 92-103<br>Exits: Pages 96-101<br><br>Critical Essay Two Due<br><br>Discussion Blog Fourteen |
| 16 | Policy Issues | Rural: Pages 111-117<br>Exits: 101-125<br><br>Discussion Blog Fifteen<br><br>Collaborate Ultra Session 4 |

| | | |
|---|---|---|
| 17 | Finals Week | Final Paper Due |

Bibliography

Brisman, A., McClanahan, B., & South, N. (2014). Toward a green-cultural criminology of "the rural". *Critical Criminology*, *22*(4), 479-494.

DeKeseredy, W. S., Muzzatti, S. L., & Donnermeyer, J. F. (2014). Mad men in bib overalls: Media's horrification and pornification of rural culture. *Critical Criminology*, *22*(2), 179-197.

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Hartigan, J. (2013). Who are these White people?:"Rednecks,""Hillbillies," and "white trash" as marked racial subjects. In *White out* (pp. 100-116). Routledge.

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Weisheit, R. A., & Donnermeyer, J. F. (2000). Change and continuity in crime in rural America. *Criminal justice*, *1*(1), 309-357.

Young, S. T. (2017). Wild, Wonderful, White Criminality: Images of "White Trash" Appalachia. *Critical criminology*, *25*(1), 103-117.

# Request for Graduate Non-Curricular Changes

PLEASE USE THIS FORM FOR ALL NON-CURRICULAR CHANGE REQUESTS (changes in admission requirements or requirements for graduation, changes in existing or new policies/procedures, changes in program descriptions in catalog, general language changes in catalog).

SIGNATURES may not be required, depending on the nature of the request and from where it originates. Consult Graduate Council Chair.

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.
3. **The Graduate Council cannot process this application until it has received both the PDF copy and the signed hard copy.**

College: Health Profession Dept/Division: Biomechanics - SOK

Contact Person: Suzanne M. Konz Phone: 6-2926

Rationale for Request:

The rationale for the changes to MS Biomechanics admission standards are to

1) ensure candidates have an appropriate background for the MS Biomechanics degree, and
2) ensure competitiveness within the program.

Signatures: if disapproved at any level, do not sign. Return to previous signer with recommendation attached.
NOTE: all requests may not require all signatures.

Department/Division Chair _____ Date 8/23/18

Registrar _____ Date 8/24/18

College Curriculum Committee Chair _____ Date 8/30/18
(or Dean if no college curriculum committee)

Graduate Council Chair _____ Date 10/27/18

NOTE: please complete information required on the following pages before obtaining signatures above.

## Request for Graduate Non-Curricular Changes – Page 2

1. **Current Catalog Description (if applicable)**: Please insert the catalog description from the current catalog for entries you would like to change.

See Attached.

2. **Edits to current description**: Attach or insert a PDF copy of the current catalog description prepared in MS WORD with strikethroughs to mark proposed deletions and use the highlight function to indicate proposed new text.

See Attached.

3. **New Catalog Description**: Provide a "clean" copy of your proposed description without strikethroughs or highlighting. This should be what you are proposing for the new description.

See Attached.

## Request for Graduate Non-Curricular Changes – Page 5

Please insert below your proposed change information for the Graduate Council agenda.

Type of change request: Non-Curricular

Department: Biomechanics - SOK

Degree program: MS Biomechanics

Effective date (fall/spring/summer, year): Fall 2019

**Current Description**

**Biomechanics**

**Program Description**

Biomechanics is the study of forces and their effects on living systems. Biomechanics provides advanced knowledge in biomechanics particularly related to performance enhancement and injury prevention. Students focus their academic course work on developing the ability to understand and apply the principles of biomechanics when serving as a movement analyst in competitive and recreational sport situations, as well as in the workplace.

**Admission Requirements**

Applicants should follow the admissions process described in this catalog or at the Graduate Admissions website at *www. marshall.edu/graduate/admissions/how-to-apply-for-admission.*

Prospective students wishing to enter Biomechanics at MU must meet all MU admission criteria for the graduate level and be fully admitted to the MU graduate program. In addition to the MU graduate college admission criteria, all students must apply to the College of Health Professions Biomechanics program. Completion of the undergraduate degree at MU does not guarantee admission to the M.S. program; however, preference will be given to Marshall alumni if all things are equal. Additional admission requirements exist for the M.S. in Biomechanics program (see below).

Students may enter the program in three ways: 1} at the completion of a bachelor's degree, 2) transfer from another accredited university or school of higher learning, or, 3} after the junior year of a B.S. degree program with permission of the dean of the College of Health Professions (MU students only). Criteria for admission will match the MU standards for admission to graduate programs. Specifically, a student who desires admission as a degree-seeking graduate student must have an overall undergraduate Grade Point Average (GPA) of at least 2.75 on a 4.0 scale and must submit GRE scores and three letters of reference. To continue in the M.S. in Biomechanics program, students are required to maintain a 3.0 GPA in all coursework.

**Program Requirements**

The M.S in Biomechanics will consist of at least 36 post-baccalaureate credit hours that will be taken in a prescribed sequence to be developed by the student's graduate committee advisor. Students without a background in biomechanics will be advised to take additional foundation biomechanical courses.

The Master of Science program consists of the following coursework:

*Required (24 hours)*

EDF 517 Statistical Methods (3)
ESS 670 Research in Physical Education (3)
HS 535 Biomechanical Instrumentation with Data Processing in MatLab (3)
HS 610 Advanced Biomechanics (3)
HS 615 Kinematic Analysis and Application in Biomechanics (3)
HS 635 Kinetic Analysis and Appliction in Biomechanics (3)
HS 650 Gait (3)
HS 681 Thesis or HS 660, Internship (3)

*Electives (9 hours)*

These are only suggested courses. Some course may require permission from the instructor prior to enrollment. All prerequisites must be met.

HS 578 Biomechanics: Research Practicum (3)
HS 595 Trends in Biomechanical Analysis II (3)
ESS 578 Exercise Metabolism ESS 601 Advanced Exercise Testing
ESS 621 Exercise Physiology I ESS 636 Structural Kinesiology
ESS 642 Devising and Implementing Training and Conditioning Programs
ESS 651 Mechanical Analysis of Motor Skills

ESS 670 Research in Kinesiology
HP 605 Medical Vocabularies and Classification Systems
ESS 644 Cardiovascular Exercise Physiology
ESS 645 Respiratory Exercise Physiology
ACB 620 Gross Anatomy/Embryology
BMS 600 Foundations of Biomedical Science
BMS 628 Neuroscience I
BMS 629 Neuroscience II
BMS 630 Neuroscience
BMS 632 Neuroscience Research Techniques
DTS 670 Advanced Medical Nutrition Therapy I
EDF 616 Advanced Studies in Human Development
EDF 617 Multiple Regression
MTH 518 Biostatistics
MPNA 724 Evidence-Based Research Methods I
MPNA 725 Evidence-Based Research Methods II
MPNA 726 Statistical Methods for Research
SFT 560 Fundamentals of Ergonomics
SFT 610 Concepts in Occupational Safety and Health
SFT 630 Research in Occupational Safety and Health
SFT 645 Safety Engineering and Equipment Design
SFT 660 Human Factors in Accident Prevention

**Thesis or Comprehensive Examination**

The thesis project is a collaborative academic effort between the student and the faculty of the School of Kinesiology. The student can receive up to 6 credit hours toward his or her 36 credit hour degree requirement. The thesis project and oral defense of the student's thesis project must occur prior to the completion of the student's final semester in the program. The thesis project needs to reflect an effort that is at least equivalent to the 6 credit hours and is to be completed over 2 or more semesters.

As an alternative to a thesis project, a student can chose to take a written/oral comprehensive examination. The comprehensive examination will consist of responses to written and verbal questions that are prepared by select faculty members of the School of Kinesiology.

**Edits to Current Description:**

**Biomechanics**

**Program Description**

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Applicants should follow the admissions process described in this catalog or at the Graduate Admissions website at www.marshall.edu/graduate/admissions/how-to-apply-for-admission.

~~Prospective students wishing to enter Biomechanics at MU must meet all MU admission criteria for the graduate level and be fully admitted to the MU graduate program. In addition to the MU graduate college admission criteria, all students must apply to the College of Health Professions Biomechanics program. Completion of the undergraduate degree at MU does not guarantee admission to the M.S. program; however, preference will be given to Marshall alumni if all things are equal. Additional admission requirements exist for the M.S. in Biomechanics program (see below). Students may enter the program in three ways: 1) at the completion of a bachelors degree, 2) transfer from another accredited university or school of higher learning, or, 3) after the junior year of a B.S. degree program with permission of the dean of the College of Health Professions (MU students only). Criteria for admission will match the MU standards for admission to graduate programs. Specifically, a student who desires admission as a degree-seeking graduate student must have an overall undergraduate Grade Point Average (GPA) of at least 2.75 on a 4.0 scale and must submit GRE scores and three letters of reference.~~

In addition (submit all materials directly to Graduate Admissions office):

For **Full Admission**

- an undergraduate Grade Point Average (GPA) of 3.0 or higher on a 4.0 scale for all previously completed undergraduate university work;
- an appropriate undergraduate/graduate background that includes anatomy, physiology, kinesiology, physics, algebra/trigonometry;
- Graduate Record Exam scores (no older than five (5) years) with at least a 295 combined score on verbal and quantitative reasoning on the GRE and an analytical writing GRE score of at least 3.0;
- a personal statement describing the applicant's interest in the program at Marshall and how the experience will benefit them professionally and personally;
- three (3) letters of recommendation from individuals familiar with the applicant's relevant academic/professional performance as it relates to the successful completion of the program.

For **Provisional Admission** (a limited number of students may be admitted as a provisional candidate)

- an undergraduate Grade Point Average (GPA) of 2.75 or higher on a 4.0 scale for all previously completed undergraduate university work;
- an appropriate undergraduate/graduate background that includes anatomy, physiology, kinesiology, physics, algebra/trigonometry;
- Graduate Record Exam scores (no older than five (5) years) with at least a 285 combined score on verbal and quantitative reasoning on the GRE and an analytical writing GRE score of at least 3.0;
- a personal statement describing the applicant's interest in the program at Marshall and how the experience will benefit them professionally and personally;
- three (3) letters of recommendation from individuals familiar with the applicant's relevant academic/professional performance as it relates to the successful completion of the program.

Acceptance into the M.S. Biomechanics program is competitive and not guaranteed. To continue in the M.S. in Biomechanics program, students are required to maintain a 3.0 GPA in all coursework.

**Program Requirements**

The M.S in Biomechanics will consist of at least 36 post-baccalaureate credit hours that will be taken in a prescribed sequence to be developed by the student's graduate committee advisor. Students without a background in biomechanics will be advised to take additional foundation biomechanical courses.

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ESS 644 Cardiovascular Exercise Physiology
ESS 645 Respiratory Exercise Physiology
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BMS 629 Neuroscience II
BMS 630 Neuroscience
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DTS 670 Advanced Medical Nutrition Therapy I
EDF 616 Advanced Studies in Human Development
EDF 617 Multiple Regression
MTH 518 Biostatistics
MPNA 724 Evidence-Based Research Methods I
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**New Catalog Description:**

**Biomechanics**

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Biomechanics is the study of forces and their effects on living systems. Biomechanics provides advanced knowledge in biomechanics particularly related to performance enhancement and injury prevention. Students focus their academic course work on developing the ability to understand and apply the principles of biomechanics when serving as a movement analyst in competitive and recreational sport situations, as well as in the workplace.

**Admission Requirements**

Applicants should follow the admissions process described in this catalog or at the Graduate Admissions website at www.marshall.edu/graduate/admissions/how-to-apply-for-admission.

In addition (submit all materials directly to Graduate Admissions office):

For **Full Admission**

- an undergraduate Grade Point Average (GPA) of 3.0 or higher on a 4.0 scale for all previously completed undergraduate university work;
- an appropriate undergraduate/graduate background that includes anatomy, physiology, kinesiology, physics (1-2 courses that include Newton's Laws, torques and moments, work and energy, projectile motion, and angular motion), algebra/trigonometry;
- Graduate Record Exam scores (no older than five (5) years) with at least a 295 combined score on verbal and quantitative reasoning on the GRE and an analytical writing GRE score of at least 3.0;
- a personal statement describing the applicant's interest in the program at Marshall and how the experience will benefit them professionally and personally;
- three (3) letters of recommendation from individuals familiar with the applicant's relevant academic/professional performance as it relates to the successful completion of the program.

For **Provisional Admission** (a limited number of students may be admitted as a provisional candidate)

- an undergraduate Grade Point Average (GPA) of 2.75 or higher on a 4.0 scale for all previously completed undergraduate university work;
- an appropriate undergraduate/graduate background that includes anatomy, physiology, kinesiology, physics (1-2 courses that include Newton's Laws, torques and moments, work and energy, projectile motion, and angular motion), algebra/trigonometry;
- Graduate Record Exam scores (no older than five (5) years) with at least a 285 combined score on verbal and quantitative reasoning on the GRE and an analytical writing GRE score of at least 3.0;
- a personal statement describing the applicant's interest in the program at Marshall and how the experience will benefit them professionally and personally;
- three (3) letters of recommendation from individuals familiar with the applicant's relevant academic/professional performance as it relates to the successful completion of the program.

**Program Requirements**

The M.S in Biomechanics will consist of at least 36 post-baccalaureate credit hours that will be taken in a prescribed sequence to be developed by the student's graduate committee advisor. Students without a background in biomechanics will be advised to take additional foundation biomechanical courses.

The Master of Science program consists of the following coursework:

*Required (24 hours)*

EDF 517 Statistical Methods (3)
ESS 670 Research in Physical Education (3)
HS 535 Biomechanical Instrumentation with Data Processing in MatLab (3)
HS 610 Advanced Biomechanics (3)

HS 615 Kinematic Analysis and Application in Biomechanics (3)
HS 635 Kinetic Analysis and Application in Biomechanics (3)
HS 650 Gait (3)
HS 681 Thesis or HS 660, Internship (3)

*Electives (9 hours)*

These are only suggested courses. Some course may require permission from the instructor prior to enrollment. All prerequisites must be met.

HS 578 Biomechanics: Research Practicum (3)
HS 595 Trends in Biomechanical Analysis II (3)
ESS 578 Exercise Metabolism ESS 601 Advanced Exercise Testing
ESS 621 Exercise Physiology I ESS 636 Structural Kinesiology
ESS 642 Devising and Implementing Training and Conditioning Programs
ESS 651 Mechanical Analysis of Motor Skills
ESS 670 Research in Kinesiology
HP 605 Medical Vocabularies and Classification Systems
ESS 644 Cardiovascular Exercise Physiology
ESS 645 Respiratory Exercise Physiology
ACB 620 Gross Anatomy/Embryology
BMS 600 Foundations of Biomedical Science
BMS 628 Neuroscience I
BMS 629 Neuroscience II
BMS 630 Neuroscience
BMS 632 Neuroscience Research Techniques
DTS 670 Advanced Medical Nutrition Therapy I
EDF 616 Advanced Studies in Human Development
EDF 617 Multiple Regression
MTH 518 Biostatistics
MPNA 724 Evidence-Based Research Methods I
MPNA 725 Evidence-Based Research Methods II
MPNA 726 Statistical Methods for Research
SFT 560 Fundamentals of Ergonomics
SFT 610 Concepts in Occupational Safety and Health
SFT 630 Research in Occupational Safety and Health
SFT 645 Safety Engineering and Equipment Design
SFT 660 Human Factors in Accident Prevention

**Thesis or Comprehensive Examination**

The thesis project is a collaborative academic effort between the student and the faculty of the School of Kinesiology. The student can receive up to 6 credit hours toward his or her 36 credit hour degree requirement. The thesis project and oral defense of the student's thesis project must occur prior to the completion of the student's final semester in the program. The thesis project needs to reflect an effort that is at least equivalent to the 6 credit hours and is to be completed over 2 or more semesters.

As an alternative to a thesis project, a student can choose to take a written/oral comprehensive examination. The comprehensive examination will consist of responses to written and verbal questions that are prepared by select faculty members of the School of Kinesiology.

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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/500 | (•) Graded ( ) CR/NC

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

**NEW COURSE DATA:**

New Course Title: Computer Security Design

Alpha Designator/Number: C Y B R / 5 0 0

Title Abbreviation: C o m p u t e r S e c u r i t y D e s i g n

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)

The course covers

~~Foundation of~~ technical and analytical skills to implement comprehensive computer security that encompass designing secure systems, information security, protecting information assets, managing computer security, risk mitigation strategies, ~~and~~ incident response.

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

Prerequisite(s): None | 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 [signature] | Date 9/17/18 |
| Registrar [signature] 110101 | Date 9/21/18 |
| College Curriculum Chair [signature] | Date 9/28/18 |
| Graduate Council Chair [signature] | Date 10/27/18 |

Form updated 10/2011

# Request for Graduate Course Addition - Page 2

College: CITE | Department/Division: Computer Science | Alpha Designator/Number: CYBR/500

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.
Cong Pu, 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 deparment(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

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

# Request for Graduate Course Addition - Page 4

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

# Request for Graduate Course Addition - Page 5

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 500 Computer Security Design
Catalog Description: The course covers technical and analytical skills to implement comprehensive computer security that encompass designing secure systems, information security, protecting information assets, managing computer security, risk mitigation strategies, incident response.
Prerequisites: None
First Term Offered: Fall 2019
Credit Hours: 3

## BIBLIOGRAPHY

Cybersecurity - Attack and Defense Strategies: Infrastructure security with Red Team and Blue Team tactics, 1st Edition by Yuri Diogenes and Erdal Ozkaya, ISBN-13: 978-1788475297, ISBN-10: 1788475291

Computer Security: Art and Science, 1st Edition by Matt Bishop , ISBN-13: 978-0134289519 ISBN-10: 013428951X

Computer Security: A Hands-on Approach, 1st Edition by Wenliang Du , ISBN-13: 978-1548367947 ISBN-10: 154836794X

Guide to Disaster Recovery (1st Edition) by Michael Erbschloe ISBN-13: 978-0619131227 ISBN-10: 0619131225

# CYBR 500 Computer Security Design

| | |
|---|---|
| Course Title/Number | Computer Security Design /CYBR 500 |
| Semester/Year | Fall/2019 |
| Days/Time | TBD |
| Location | TBD |
| Instructor | Wook-Sung Yoo |
| Office | WAEC 3101A |
| Phone | X5452 |
| E-Mail | yoow@marshall.edu |
| Office Hours | TBD |
| University Policies | 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 |

## Course Description

The course covers technical and analytical skills to implement comprehensive computer security that encompass designing secure systems, information security, protecting information assets, managing computer security, risk mitigation strategies, incident response.

## 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 |
|---|---|---|
| Students will be able to explore the threat landscape and ways to mitigate risks. | Homework assignments,<br>In class examples,<br>Group discussions | Graded exam problems<br>Graded homework assignments |
| Students will be able to respond to an incident using the six-step process of incident response: Preparation, Identification, Containment, Eradication, Recovery, and Lessons Learned | Homework Assignments,<br>In class examples<br>Group discussions | Graded exam problems<br>Graded homework assignments |

| | | |
|---|---|---|
| Students will be familiar with approaches to analyzing malware, ranging from fully automated analysis to static properties analysis, behavioral analysis, and code analysis | Homework,<br>In class examples | Graded exam problems<br>Graded homework assignments |

## Required Texts, Additional Reading, and Other Materials

**Required Text**

Cybersecurity - Attack and Defense Strategies: Infrastructure security with Red Team and Blue Team tactics, 1st Edition by Yuri Diogenes and Erdal Ozkaya, ISBN-13: 978-1788475297, ISBN-10: 1788475291

**Additional Text**

Computer Security: A Hands-on Approach, 1st Edition by Wenliang Du , ISBN-13: 978-1548367947 ISBN-10: 154836794X

## Course Requirements / Due Dates

**Interim Examinations**

There will be two exams, midterm and final exams.

**Homework Assignments**

Homework problems will be assigned regularly and must be completed individually.

**Class Projects**

Class Projects are done in teams and focus on specific objectives.

**Late Submission Policy**

*No Late submission will be accepted*

## Attendance Policy

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

## Grading Policy

| Activity | Points |
|---|---|
| Attendance and Participation | 10 |
| Midterm Exam | 25 |
| Homework Assignments | 20 |
| Class Projects | 20 |
| Final Exam | 25 |
| Total | 100 |

Course grades are awarded based on the following scheme:

| Score | Letter Grade |
|---|---|
| >= 90 | A |
| >= 80 & < 90 | B |
| >= 70 & < 80 | C |
| >= 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 | Security Benchmarks, Standards, and the Role of Audit in Defending Infrastructure |
| 2 | Social Engineering |
| 3 | Enterprise Vulnerability Scanning |
| 4 | Identifying Malicious Content and Streams |
| 5 | Traffic Visualization & Handling Encrypted Network Traffic |
| 6 | Digital Forensics and Incident Response |
| 7 | Midterm Exam |
| 8 | Malware Analysis |
| 9 | Static Properties Analysis & Interactive Behavior Analysis |
| 10 | Manual Code Reversing |
| 11 | Identify and remediate malware across organization |
| 12 | Data classification program and data-loss-prevention solutions |
| 13 | Risk analysis, risk assessment and risk mitigation |
| 14 | Qualitative and quantitative risk assessment methods |
| 15 | Six-step incident handling process |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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/510 | (•) Graded ( ) CR/NC

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

**NEW COURSE DATA:**

New Course Title: Introduction to Cyber Security

Alpha Designator/Number: C Y B R / 5 1 0

Title Abbreviation: I n t r o t o C y b e r S e c u r i t y (1 word: Cybersecurity)

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
This course provides an overview of the cybersecurity field, the basic foundations of the current technology and its impacts along with the predominant threat components and remediation.

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

Prerequisite(s): None | 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 [signature] | Date 9/17/18 |
| Registrar [signature] 110101 | Date 9/21/18 |
| College Curriculum Chair [signature] | Date 9/28/18 |
| Graduate Council Chair [signature] | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: CITE | Department/Division: Computer Science | Alpha Designator/Number: CYBR/510

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.
Cong Pu, 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 deparment(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

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

# Request for Graduate Course Addition - Page 4

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

# Request for Graduate Course Addition - Page 5

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 510 Introduction to ~~Cyber Security~~ Cybersecurity
Catalog Description: This course provides an overview of the cybersecurity field, the basic foundations of the current technology and its impacts along with the predominant threat components and remediation.
Prerequisites: None
First Term Offered: Spring 2019
Credit Hours: 3

## BIBLIOGRAPHY

Principles of Computer Security, Fourth Edition (Official Comptia Guide) 4th Edition by Wm. Arthur Conklin ISBN-13: 978-0071835978 ISBN-10: 0071835970

Computer Security: Principles and Practice (4th Edition) 4th Edition by William Stallings ISBN-13: 978-0134794105 ISBN-10: 0134794109

# CYBR 510 Introduction to Cyber Security

| | |
|---|---|
| Course Title/Number | Introduction to Cyber Security /CYBR 510 |
| Semester/Year | Spring/2019 |
| Days/Time | TBD |
| Location | TBD |
| Instructor | Dr. Cong Pu |
| Office | WAEC 3109 |
| Phone | (304)696-6204 |
| E-Mail | puc@marshall.edu |
| Office Hours | TBD |
| University Policies | 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 |

## Course Description

This course provides an overview of the cybersecurity field, the basic foundations of the current technology and its impacts along with the predominant threat components and remediation.

## 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 |
|---|---|---|
| Students will be able to discuss the various aspects in physical and cyber security, its weaknesses and ways to mitigate | Homework assignments,<br>In class examples,<br>Group discussions | Graded exam problems<br>Graded homework assignments |
| Students will be able to discuss and utilize techniques to find vulnerabilities in an environment and develop reasonable solutions | Homework Assignments,<br>In class examples<br>Group discussions | Graded exam problems<br>Graded homework assignments |
| Students will be able to explain the basics and perform fundamental analysis on the likelihood of an attack against an environment | Homework,<br>In class examples | Graded exam problems<br>Graded homework assignments |

## Required Texts, Additional Reading, and Other Materials

### Required Text

Principles of Computer Security, Fourth Edition (Official Comptia Guide) 4th Edition by Wm. Arthur Conklin ISBN-13: 978-0071835978 ISBN-10: 0071835970

### Additional Text

Computer Security: Principles and Practice (4th Edition) 4th Edition by William Stallings ISBN-13: 978-0134794105 ISBN-10: 0134794109

## Course Requirements / Due Dates

### Interim Examinations

There will be two exams, midterm and final exams.

### Homework Assignments

Homework problems will be assigned regularly and must be completed individually.

### Class Projects

Class Projects are done in teams and focus on specific objectives.

### Late Submission Policy

*No Late submission will be accepted*

## Attendance Policy

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

## Grading Policy

| Activity | Points |
|---|---|
| Attendance and Participation | 10 |
| Midterm Exam | 25 |
| Homework Assignments | 20 |
| Class Projects | 20 |
| Final Exam | 25 |
| Total | 100 |

Course grades are awarded based on the following scheme:

| Score | Letter Grade |
|---|---|
| >= 90 | A |
| >= 80 & < 90 | B |
| >= 70 & < 80 | C |
| >= 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 | General Security Concepts |
| 2 | Privacy, Legal Issues and Ethics |
| 3 | Operational and Organizational Security |
| 4 | Cryptography |
| 5 | Public Key Infrastructure |
| 6 | Physical Security |
| 7 | Midterm Exam |
| 8 | Network Fundamentals |
| 9 | Infrastructure Security |
| 10 | Wireless Security |
| 11 | Intrusion Detection Systems |
| 12 | System Hardening and Baselines |
| 13 | Types of Attacks |
| 14 | Secure Software Development |
| 15 | Disaster Recovery and Risk Management |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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/530 | (•) Graded ( ) CR/NC

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

**NEW COURSE DATA:**

New Course Title: Cybersecurity Policies and Management

Alpha Designator/Number: C Y B R / 5 3 0

Title Abbreviation: C y b e r s e c P o l i c i e s & M g m t

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)

The course covers risk management, integrating continuous monitoring and real-time security solutions with information systems to improve situational awareness and deployment of countermeasures.

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

Prerequisite(s): None | 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 Yoo, Wook-Sung | Date 9/17/18 |
| Registrar 110101 | Date 9/21/18 |
| College Curriculum Chair | Date 9/28/18 |
| Graduate Council Chair | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: CITE | Department/Division: Computer Science | Alpha Designator/Number: CYBR/530

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.
Wook-Sung Yoo, 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 deparment(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

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

# Request for Graduate Course Addition - Page 4

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

# Request for Graduate Course Addition - Page 5

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 530 ~~Cyber Security~~ cyber security Policies and Management
Catalog Description: The course covers risk management, integrating continuous monitoring and real-time security solutions with information systems to improve situational awareness and deployment of countermeasures.
Prerequisites: None
First Term Offered: Spring 2019
Credit Hours: 3

## BIBLIOGRAPHY

"Cyber Security Management: A Governance, Risk and Compliance Framework", 1st Edition, by Peter Trim, and Yang-Im Lee; Routledge 1 edition (September 10, 2014); ISBN-10: 1472432096, ISBN-13: 978-1472432094

"How to Measure Anything in Cybersecurity Risk", 1st Edition, by Douglas Hubbard, Richard Seiersen; Wiley; 1 edition (July 25, 2016); ISBN-10: 1119085292, ISBN-13: 978-1119085294

"Ethics and Cyber Warfare: The Quest for Responsible Security in the Age of Digital Warfare", 1st Edition, by George Lucas; Oxford University Press; 1 edition (December 13, 2016); ISBN-10: 0190276525, ISBN-13: 978-0190276522

# CYBR 530 Cybersecurity Policies and Management

| | |
|---|---|
| Course Title/Number | Cybersecurity Policies and Management/530 |
| Semester/Year | Spring/2019 |
| Days/Time | TBD |
| Location | TBD |
| Instructor | Dr. Wook-Sung Yoo |
| Office | WAEC 3101A |
| Phone | X5452 |
| E-Mail | yoow@marshall.edu |
| Office Hours | TBD |
| University Policies | 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 |

## Course Description

The course covers risk management, integrating continuous monitoring and real-time security solutions with information systems to improve situational awareness and deployment of countermeasures.

## 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 |
|---|---|---|
| List the applicable laws and policies related to cyber defense | Group discussions | Graded homework assignments |
| Evaluate and assess the use of technology to support cyber security goals and objectives | Homework Assignments, Group discussions | Graded exam problems Graded homework assignments |
| Formulate, update, and communicate short- and long-term organizational cyber security strategies and policies | Homework, In class examples, Group discussions | Graded exam problems Graded homework assignments |

## Required Texts, Additional Reading, and Other Materials

### Required Text

Peter Trim, Yang-Im Lee, Cyber Security Management: A Governance, Risk and Compliance Framework; Routledge, 1 edition (September 10, 2014); ISBN-10: 1472432096, ISBN-13: 978-1472432094

### Other Materials

Douglas Hubbard, Richard Seiersen, How to Measure Anything in Cybersecurity Risk; Wiley; 1 edition (July 25, 2016); ISBN-10: 1119085292, ISBN-13: 978-1119085294

George Lucas, Ethics and Cyber Warfare: The Quest for Responsible Security in the Age of Digital Warfare; Oxford University Press; 1 edition (December 13, 2016); ISBN-10: 0190276525, ISBN-13: 978-0190276522

## 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 |
| >= 80 & < 90 | B |
| >= 70 & < 80 | C |
| >= 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 | Introduction to cyberspace |
| 2 | Computer security act |
| 3 | Laws and authorities |
| 4 | Cybersecurity governance |
| 5 | Vulnerabilities and risks |
| 6 | Foundations in cybersecurity management |
| 7 | Threat Identification |
| 8 | Midterm Exam |
| 9 | Vulnerability assessment |
| 10 | Cybersecurity program development |
| 11 | Incident awareness and response |
| 12 | Cyber strategy development |
| 13 | Cybersecurity with mobile projects |
| 14 | Disaster recovery and planning |
| 15 | Case study and simulation |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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/535 | (•) Graded ( ) CR/NC

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

**NEW COURSE DATA:**

New Course Title: Cyber Risk

Alpha Designator/Number: C Y B R / 5 3 5

Title Abbreviation: C y b e r R i s k

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
The functions and purposes of the latest developments in cybersecurity are covered. Topics include design, implementation, and testing industrial networks and applications to ensure their security and reliability.

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

Prerequisite(s): CYBR 510 | 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 Yoo, Wook | Date 9/17/18 |
| Registrar 110101 | Date 9/21/18 |
| College Curriculum Chair | Date 9/26/18 |
| Graduate Council Chair Lani Kwant | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: CITE | Department/Division: Computer Science | Alpha Designator/Number: CYBR/535

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.
Cong Pu, 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 deparment(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

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

# Request for Graduate Course Addition - Page 4

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

# Request for Graduate Course Addition - Page 5

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 535 Cyber Risk
Catalog Description: The functions and purposes of the latest developments in cybersecurity are covered. Topics include design, implementation, and testing industrial networks and applications to ensure their security and reliability.
Prerequisites: CYBR 510
First Term Offered: Fall 2019
Credit Hours: 3

**BIBLIOGRAPHY**


- Alshanetsky, Ilia. PHP/architect's guide to PHP security. Toronto: Marco Tabini & Associates, 2005. Print.
- Connor, T. J. Violent Python a cookbook for hackers, forensic analysts, penetration testers and security engineers. Waltham, MA: Syngress, 2013. Print.
- Kennedy, David. Metasploit : the penetration tester's guide. San Francisco: No Starch Press, 2011. Print.
- McClure, Stuart, et al. Hacking exposed 7: network security secrets & solutions. New York: McGraw-Hill, 2012. Print.
- Sanders, Chris. Practical packet analysis using Wireshark to solve real-world network problems. San Francisco, CA: No Starch Press, 2011. Print.
- Seitz, Justin. Gray hat Python Python programming for hackers and reverse engineers. San Francisco: No Starch Press, 2009. Print.

# CYBR 535 Cyber Risk

| | |
|---|---|
| Course Title/Number | Cyber Risk /CYBR 535 |
| Semester/Year | Fall/2019 |
| Days/Time | TBD |
| Location | TBD |
| Instructor | Dr. Paulus Wahjudi |
| Office | WAEC 3113 |
| Phone | (304)696-5443 |
| E-Mail | wahjudi@marshall.edu |
| Office Hours | TBD |
| University Policies | 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 |

## Course Description

The functions and purposes of the latest developments in cybersecurity are covered. Topics includes design, implementation, and testing industrial networks and applications to ensure their security and reliability. (PR: CYBR 510).

## 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 |
|---|---|---|
| Design, develop and implement a secure Cyber-infrastructure and Security Operation Center. | Homework assignments,<br>In class examples,<br>Group discussions | Exam problems<br>Homework assignments<br>Class Project |
| Assess network defenses and computer system's security vulnerabilities and detect attempted security breaches using appropriate tools and resources. | Homework Assignments,<br>In class examples<br>Group discussions | Exam problems<br>Homework assignments<br>Class Project |
| Utilize security technologies such as firewalls, VPNs, virtualization, virus | Homework,<br>In class examples | Exam problems<br>Homework assignments |

| | |
|---|---|
| scanning, intrusion protection and patches to industrially harden a cyber-infrastructure. | Class Project |

## Required Texts, Additional Reading, and Other Materials

### Required Text

Stuttard, Dafydd, and Marcus Pinto. The web application hacker's handbook finding and exploiting security flaws. Indianapolis: Wiley, 2011. Print.

### Additional Text

- Sanders, Chris. Practical packet analysis using Wireshark to solve real-world network problems. San Francisco, CA: No Starch Press, 2011. Print.
- Seitz, Justin. Gray hat Python Python programming for hackers and reverse engineers. San Francisco: No Starch Press, 2009. Print.

## Course Requirements / Due Dates

### Interim Examinations

There will be two exams, midterm and final exams.

### Homework Assignments

Homework problems will be assigned regularly and must be completed individually.

### Class Projects

Class Projects are done in teams and focus on specific objectives.

### Late Submission Policy

*No Late submission will be accepted*

## Attendance Policy

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

## Grading Policy

| Activity | Points |
|---|---|
| Attendance and Participation | 10 |
| Midterm Exam | 25 |
| Homework Assignments | 20 |
| Class Projects | 20 |
| Final Exam | 25 |
| Total | 100 |

Course grades are awarded based on the following scheme:

| Score | Letter Grade |
|---|---|
| >= 90 | A |
| >= 80 & < 90 | B |
| >= 70 & < 80 | C |
| >= 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 | Understanding Cyber Risk |
| 2 | Virtualization & Hypervisor |
| 3 | Network Scanning and Forensics |
| 4 | Honeypot and Tarpit |
| 5 | Public Key Infrastructure |
| 6 | Trojan Horse and Rootkit |
| 7 | Midterm Exam |
| 8 | Intrusion Detection and Penetration Testing |
| 9 | Software as a Service and System Hardening |
| 10 | Cyber Defense and Offense |
| 11 | Switch management and ARP attacks |
| 12 | Wireless Security |
| 13 | Software as a Service |
| 14 | Secure Software Development |
| 15 | Information Security and Assurance |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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: (Limit of 30 words)

Study of various concepts and aspects in choosing, deploying, supporting, troubleshooting, and securing various local and distributed components of a cyber operation.

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: Yoo, Wook | Date: 9/17/18 |
| Registrar: 110101 | Date: 9/21/18 |
| College Curriculum Chair: | Date: 9/26/18 |
| Graduate Council Chair: | Date: 10/27/18 |

# Request for Graduate Course Addition - Page 2

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 deparment(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

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

# Request for Graduate Course Addition - Page 4

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

# Request for Graduate Course Addition - Page 5

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 | 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 |

## 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

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

## 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 |
| >= 80 & < 90 | B |
| >= 70 & < 80 | C |
| >= 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 |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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/615 | (•) Graded ( ) CR/NC

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

**NEW COURSE DATA:**

New Course Title: Cybersecurity Vulnerability Assessment

Alpha Designator/Number: C Y B R / 6 1 5

Title Abbreviation: C y b e r V u l n e r a b i l i t y A S S E .

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)

This course focuses on the complete cycle of enterprise security from identifying vulnerabilities, detecting application exploitation and post exploitation mitigations and analysis for an enterprise level cyber infrastructure.

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

Prerequisite(s): None | 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 Yoo, Wook-Sung | Date 9/17/18 |
| Registrar 110101 | Date 9/21/18 |
| College Curriculum Chair | Date 9/26/18 |
| Graduate Council Chair | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: CITE | Department/Division: Computer Science | Alpha Designator/Number: CYBR/615

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.
Cong Pu, 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 deparment(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

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

# Request for Graduate Course Addition - Page 4

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

# Request for Graduate Course Addition - Page 5

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 615 Cybersecurity Vulnerability Assessment
Catalog Description: This course focuses on the complete cycle of enterprise secu[illegible] identifying vulnerabilities, detecting application exploitation and post exploitation mitigations and analysis for an [illegible]el cyber infrastructure.
Prerequisites: None
First Term Offered: Fall 2019
Credit Hours: 3

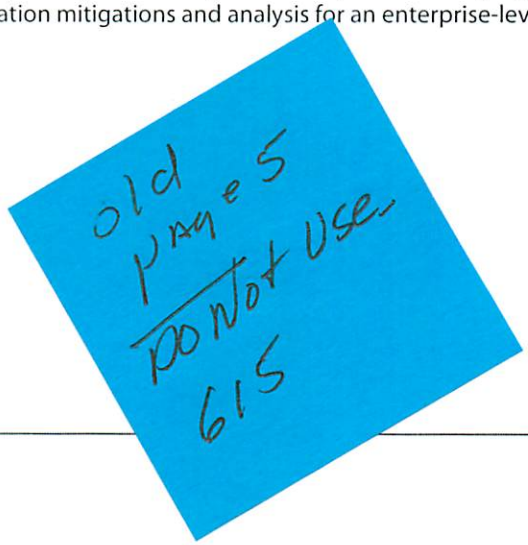
Per Lisa's email
New pg 5

# Request for Graduate Course Addition - Page 5

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 635 Cyber Risk and Vulnerability
Catalog Description: This course focuses on the complete cycle of enterprise security from identifying vulnerabilities, detecting application exploitation and post exploitation mitigations and analysis for an enterprise-level cyber infrastructure.
Prerequisites: None
First Term Offered: Fall 2019
Credit Hours: 3



## BIBLIOGRAPHY

Advanced Penetration Testing: Hacking the World's Most Secure Networks by Will Allsopp, ISBN-13: 978-1119367680 , ISBN-10: 1119367689

Penetration Testing Essentials 1st Edition by Sean-Philip Oriyano, ISBN-13: 978-1119235309 ISBN-10: 1119235308

Alfred Menezes, Paul van Oorschot, Scott Vanstone, Handbook of Applied Cryptography, CRC Press; 1 edition (October 16, 1996), ISBN-10: 0849385237/ISBN-13: 978-0849385230

The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws 2nd Edition, Dafydd Stuttard ISBN-13: 978-1118026472 ISBN-10: 1118026470

# CYBR 615 Cybersecurity Vulnerability Assessment

| | |
|---|---|
| Course Title/Number | Cybersecurity Vulnerability Assessment /CYBR 615 |
| Semester/Year | Fall/2019 |
| Days/Time | TBD |
| Location | TBD |
| Instructor | TBD |
| Office | TBD |
| Phone | TBD |
| E-Mail | TBD |
| Office Hours | TBD |
| University Policies | 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 |

## Course Description

This course focuses on the complete cycle of enterprise security from identifying vulnerabilities, detecting application exploitation and post exploitation mitigations and analysis for an enterprise-level cyber infrastructure.

## 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 |
|---|---|---|
| Students will be able to perform risk assessment | Homework assignments,<br>In class examples,<br>Group discussions | Graded exam problems<br>Graded homework assignments |
| Students will be able to various security testing and analysis tools | Homework Assignments,<br>In class examples<br>Group discussions | Graded exam problems<br>Graded homework assignments |
| Students will be able to analyze common security loopholes and identify the cause | Homework,<br>In class examples | Graded exam problems<br>Graded homework assignments |

# CYBR 615 Cybersecurity Vulnerability Assessment Course Syllabus

## Required Texts, Additional Reading, and Other Materials

### Required Text

Advanced Penetration Testing: Hacking the World's Most Secure Networks by Will Allsopp, ISBN-13: 978-1119367680 , ISBN-10: 1119367689

### Other Materials

Penetration Testing Essentials 1st Edition by Sean-Philip Oriyano, ISBN-13: 978-1119235309 ISBN-10: 1119235308

Alfred Menezes, Paul van Oorschot, Scott Vanstone, Handbook of Applied Cryptography, CRC Press; 1 edition (October 16, 1996), ISBN-10: 0849385237/ISBN-13: 978-0849385230

The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws 2nd Edition, Dafydd Stuttard ISBN-13: 978-1118026472 ISBN-10: 1118026470

## Course Requirements / Due Dates

### Interim Examinations

There will be two exams, midterm and final exams.

### Homework Assignments

Homework problems will be assigned regularly and must be completed individually.

### Class Projects

Class Projects are done in teams and focus on specific objectives.

### Late Submission Policy

*No Late submission will be accepted*

## Attendance Policy

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

## Grading Policy

| Activity | Points |
|---|---|
| Attendance and Participation | 10 |
| Midterm Exam | 25 |
| Homework Assignments | 20 |
| Class Projects | 20 |
| Final Exam | 25 |
| Total | 100 |

Course grades are awarded based on the following scheme:

| Score | Letter Grade |
|---|---|
| >= 90 | A |
| >= 80 & < 90 | B |
| >= 70 & < 80 | C |
| >= 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 MUOline.

| Week | Schedule |
|---|---|
| 1 | Introduction to Course |
| 2 | Introduction to Penetration Testing Concepts |
| 3 | Penetration Testing Scoping and Rules of Engagement |
| 4 | Online Reconnaissance and Offensive Counterintelligence |
| 5 | Social Engineering |
| 6 | Network Mapping and Scanning Techniques |
| 7 | Midterm Exam |
| 8 | Enterprise Vulnerability Scanning |
| 9 | Network Exploitation Tools and Techniques |
| 10 | Web Application Exploitation Tools and Techniques |
| 11 | Post-Exploitation and Pivoting |
| 12 | OS and Application Exploit Mitigations |
| 13 | Malware Analysis |
| 14 | Malware Locations and Footprints |
| 15 | Manual Code Reversing |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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/620 | (•) Graded ( ) CR/NC

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

**NEW COURSE DATA:**

New Course Title: Cyberwarfare

Alpha Designator/Number: C Y B R / 6 2 0

Title Abbreviation: C y b e r w a r f a r e

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)

The course covers both offensive and defensive techniques pertaining to cybersecurity from techniques to find vulnerabilities and ~~analysis on~~ analyze the likelihood of an attack to developing solutions to secure cyber infrastructure.

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

Prerequisite(s): None | 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 Yoo, Wook-Sung | Date 9/17/18 |
| Registrar Cheryl D Fuller 110101 | Date 9/21/18 |
| College Curriculum Chair Walo | Date 9/26/18 |
| Graduate Council Chair Lori Kenard | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: CITE | Department/Division: Computer Science | Alpha Designator/Number: CYBR/620

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 deparment(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

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

# Request for Graduate Course Addition - Page 4

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

# Request for Graduate Course Addition - Page 5

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 620 Cyberwarfare
Catalog Description: The course covers both offensive and defensive techniques pertaining to cybersecurity from techniques to find vulnerabilities and analyze the likelihood of an attack to developing solutions to secure cyber infrastructure.
Prerequisites: None
First Term Offered: Spring 2019
Credit Hours: 3

## BIBLIOGRAPHY

The Practice of Network Security Monitoring: Understanding Incident Detection and Response 1st Edition by Richard Bejtlich ISBN-13: 978-1593275099 ISBN-10: 1593275099

Real Digital Forensics: Computer Security and Incident Response 1st Edition by Keith J. Jones ISBN-13: 978-0321240699 , ISBN-10: 9780321240699

Applied Network Security Monitoring: Collection, Detection, and Analysis 1st Edition by Chris Sanders ISBN-13: 978-0124172081 ISBN-10: 0124172083

# CYBR 620 Cyberwarfare

| | |
|---|---|
| Course Title/Number | Cyberwarfare /CYBR 620 |
| Semester/Year | Spring/2019 |
| Days/Time | TBD |
| Location | TBD |
| Instructor | Dr. Paulus Wahjudi |
| Office | WAEC 3113 |
| Phone | (304)696-5443 |
| E-Mail | wahjudi@marshall.edu |
| Office Hours | TBD |
| University Policies | 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 |

## Course Description

The course covers both offensive and defensive techniques pertaining to cybersecurity from techniques to find vulnerabilities and analyze the likelihood of an attack to developing solutions to secure cyber infrastructure.

## 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 |
|---|---|---|
| Students will be able to detect advanced attacks on systems that are currently compromised | Homework assignments,<br>In class examples,<br>Group discussions | Graded exam problems<br>Graded homework assignments |
| Students will be able to respond to an incident using the six-step process of incident response | Homework Assignments,<br>In class examples<br>Group discussions | Graded exam problems<br>Graded homework assignments |
| Students will be able to analyze security threats, and how they have impacted confidentiality, integrity, and availability. | Homework,<br>In class examples | Graded exam problems<br>Graded homework assignments |

## Required Texts, Additional Reading, and Other Materials

**Required Text**

The Practice of Network Security Monitoring: Understanding Incident Detection and Response 1st Edition by Richard Bejtlich ISBN-13: 978-1593275099 ISBN-10: 1593275099

**Additional Text**

Real Digital Forensics: Computer Security and Incident Response 1st Edition by Keith J. Jones ISBN-13: 978-0321240699 , ISBN-10: 9780321240699

Applied Network Security Monitoring: Collection, Detection, and Analysis 1st Edition by Chris Sanders ISBN-13: 978-0124172081 ISBN-10: 0124172083

## Course Requirements / Due Dates

**Interim Examinations**

There will be two exams, midterm and final exams.

**Homework Assignments**

Homework problems will be assigned regularly and must be completed individually.

**Class Projects**

Class Projects are done in teams and focus on specific objectives.

**Late Submission Policy**

*No Late submission will be accepted*

## Attendance Policy

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

## Grading Policy

| Activity | Points |
|---|---|
| Attendance and Participation | 10 |
| Midterm Exam | 25 |
| Homework Assignments | 20 |
| Class Projects | 20 |
| Final Exam | 25 |
| Total | 100 |

Course grades are awarded based on the following scheme:

| Score | Letter Grade |
|---|---|
| >= 90 | A |
| >= 80 & < 90 | B |
| >= 70 & < 80 | C |
| >= 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 | Attacks Against Network Device |
| 2 | Securing Web Communications |
| 3 | Wired and Wireless Network Device Security |
| 4 | Advanced Persistent Threat (APT) |
| 5 | Critical Security Controls |
| 6 | Midterm Exam |
| 7 | Security Privacy |
| 8 | Malicious Code and Exploit Mitigation |
| 9 | Active Defense |
| 10 | Performing Forensically Sound Analysis |
| 11 | Incident Response |
| 12 | Preparation, Identification/Scoping, Containment/Intelligence Development |
| 13 | Eradication/Remediation, Recovery, Follow-up/Lessons Learned |
| 14 | Malware Analysis |
| 15 | Analysis of Ransomware |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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/625 | (•) Graded ( ) CR/NC

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

**NEW COURSE DATA:**

New Course Title: Cybersecurity Policies and Management

Alpha Designator/Number: C Y B R / 6 2 5

Title Abbreviation: A p p l i e d C r y p t o g r a p h y

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
This course introduces fundamentals of cryptography, including classical ciphers, Shannon's perfect secrecy, DES, AES, public-key crypto (RSA), as well as advanced cryptographic schemes

Co-requisite(s): None | First Term to be Offered: Spring 2020

Prerequisite(s): None | 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 Yoo, Wook-Sung | Date 9/17/18 |
| Registrar [signature] 110101 | Date 9/21/18 |
| College Curriculum Chair [signature] | Date 9/26/18 |
| Graduate Council Chair [signature] | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: CITE | Department/Division: Computer Science | Alpha Designator/Number: CYBR/625

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.
Wook-Sung Yoo, 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 deparment(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

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

# Request for Graduate Course Addition - Page 4

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

# Request for Graduate Course Addition - Page 5

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 625 Applied Cryptography
Catalog Description: This course introduces fundamentals of cryptography, including classical ciphers, Shannon's perfect secrecy, DES, AES, public-key crypto (RSA), as well as advanced cryptographic schemes.
Prerequisites: None
First Term Offered: Spring 2020
Credit Hours: 3

## BIBLIOGRAPHY

"Cryptography: Theory and Practice", 3rd Edition, by Douglas Stinson; Chapman and Hall/CRC; 3 edition (November 1, 2005), ISBN-10: 1584885084/ISBN-13: 978-1584885085

"Introduction to Modern Cryptography", 2nd Edition, by Jonathan Katz, Yehuda Lindell; Chapman and Hall/CRC, 2 editio; ISBN-13: 978-1466570269/ISBN-10: 1466570261

"Handbook of Applied Cryptography", 1st Edition, by Alfred Menezes, Paul van Oorschot, Scott Vanstone; CRC Press; 1 edition (October 16, 1996), ISBN-10: 0849385237/ISBN-13: 978-0849385230

# CYBR 625 Applied Cryptography

| | |
|---|---|
| Course Title/Number | Applied Cryptography/625 |
| Semester/Year | Spring/2020 |
| Days/Time | TBD |
| Location | TBD |
| Instructor | TBD |
| Office | TBD |
| Phone | TBD |
| E-Mail | TBD |
| Office Hours | TBD |
| University Policies | 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 |

## Course Description

This course introduces fundamentals of cryptography, including classical ciphers, Shannon's perfect secrecy, DES, AES, public-key crypto (RSA), as well as advanced cryptographic schemes.

## 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 |
|---|---|---|
| An ability to understand modern cryptographic primitives | Homework assignments,<br>In class examples,<br>Group discussions | Graded exam problems<br>Graded homework assignments |
| An ability to analyze the security strength of a given cryptographic scheme | Homework Assignments,<br>In class examples<br>Group discussions | Graded exam problems<br>Graded homework assignments |
| An ability to apply cryptographic primitives in designing software, protocols | Homework,<br>In class examples | Graded exam problems<br>Graded homework assignments |

## 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 | Introduction to Course |
| 2 | Mathematical Background: Number Theory |
| 3 | Mathematical Background: Probability Theory and Complexity Theory |
| 4 | Perfect Secrecy |
| 5 | Secret Key Encryption: Stream Cipher, Block Cipher |
| 6 | Secret Key Encryption: Message Integrity and Authentication |
| 7 | Midterm Exam |
| 8 | Pseudo-random Number Generator |
| 9 | Key Establishment and Distribution |
| 10 | Public Key Infrastructure: RSA |
| 11 | Public Key Infrastructure: Digital Signatures |
| 12 | Security Protocols |
| 13 | Using Cryptographic Primitives |
| 14 | Advanced Cryptographic Schemes: Cryptocurrency |
| 15 | Advanced Cryptographic Schemes: Secret Sharing and Secure Computation |

## Required Texts, Additional Reading, and Other Materials

### Required Text

Douglas Stinson, Cryptography: Theory and Practice, 3rd Edition, Chapman and Hall/CRC; 3 edition (November 1, 2005), ISBN-10: 1584885084/ISBN-13: 978-1584885085

### Other Materials

Jonathan Katz, Yehuda Lindell, Introduction to Modern Cryptography, Chapman and Hall/CRC; 2 edition, ISBN-13: 978-1466570269/ISBN-10: 1466570261

Alfred Menezes, Paul van Oorschot, Scott Vanstone, Handbook of Applied Cryptography, CRC Press; 1 edition (October 16, 1996), ISBN-10: 0849385237/ISBN-13: 978-0849385230

## 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 |
| >= 80 & < 90 | B |
| >= 70 & < 80 | C |
| >= 60 & < 70 | D |
| < 60 | F |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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/680 | ○ Graded ◉ CR/NC

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

**NEW COURSE DATA:**

New Course Title: Research in Cybersecurity

Alpha Designator/Number: C Y B R / 6 8 0

Title Abbreviation: R e s e a r c h i n C y b e r s e c u r i t y

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)

~~Study~~ research methods and current significant findings in the field of cybersecurity.

This course covers various

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

Prerequisite(s): CYBR 510 | Credit Hours: 3

Course(s) being deleted in place of this addition (*must submit course deletion form*): N/A

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

| | |
|---|---|
| Dept. Chair/Division Head Yoo, wook | Date 9/17/18 |
| Registrar Alan J. Wilkins 110101 | Date 9/21/18 |
| College Curriculum Chair Tracy | Date 9/26/18 |
| Graduate Council Chair Lan Wang | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: CITE | Department/Division: Computer Science | Alpha Designator/Number: CYBR/680

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.

Wook-Sung Yoo, 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 deparment(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

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

# Request for Graduate Course Addition - Page 4

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

# Request for Graduate Course Addition - Page 5

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/680 Research in Cybersecurity
Catalog Description: This course covers various research methods and current significant findings in the field of cybersecurity.
Prerequisites: CYBR510
First Term Offered: Fall 2019
Credit Hours: 3

## BIBLIOGRAPHY

Research Methods for Cyber Security, 1st Edition, Thomas W. Edgar David O. Manz, Syngress, April 2017, ISBN: 9780128053492.

# CYBR 680 Research in Cybersecurity

| | |
|---|---|
| Course Title/Number | Research in Cybersecurity /CYBR 680 |
| Semester/Year | Fall/2019 |
| Days/Time | TBD |
| Location | TBD |
| Instructor | TBD |
| Office | TBD |
| Phone | TBD |
| E-Mail | TBD |
| Office Hours | TBD |
| University Policies | 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 |

## Course Description

This course covers various research methods and current significant findings in the field of cybersecurity. (PR: CYBR510).

## 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 |
|---|---|---|
| Students will be able to explain different research method | Homework assignments,<br>In class examples,<br>Group discussions | Graded exam problems<br>Graded homework assignments |
| Students will be able to do literature survey | Homework Assignments,<br>Research report | Graded homework<br>Graded research report |
| Students will be able to write research paper | Report and presentation | Presentation evaluation<br>Graded report paper |

## Required Texts, Additional Reading, and Other Materials

### Required Text

Research Methods for Cyber Security, 1st Edition, Thomas W. Edgar David O. Manz, Syngress, April 2017, ISBN: 9780128053492.

## Course Requirements / Due Dates

### Examinations

There will be two midterms

### Homework Assignments

Weekly report on reading assignments

### Report

Final report and presentation is due at the end of the term.

## Attendance Policy

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

## Grading Policy

Course grades are based on the total points earned for all activities and the grading scale shown below:

| Activity | Points |
|---|---|
| Exams | 30 |
| Weekly Report | 20 |
| Presentation and Final Report | 50 |
| Total | 100 |

| Scale | |
|---|---|
| Score 70- 100 | P |
| Below 70 | 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 | Introduction to research and topic |
| 2 | Literature Survey |
| 3 | Science and Cybersecurity |
| 4 | Observational Research Methods |
| 5 | Descriptive Study |

| | |
|---|---|
| 6 | Machine Learning |
| 7 | Theoretical Research |
| 8 | Midterm 1 |
| 9 | Simulations for Research |
| 10 | Experimental Research Methods |
| 11 | Midterm 2 |
| 12 | Report on the research |
| 13 | Applied Research Method |
| 13 | Ethics in Cybersecurity |
| 15 | Final research presentation |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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/681 | ○ Graded ◉ CR/NC

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

**NEW COURSE DATA:**

New Course Title: Thesis

Alpha Designator/Number: C Y B R / 6 8 1

Title Abbreviation: T h e s i s

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
Investigate a research problem of theoretical interest and practical value under mentorship of a cybersecurity faculty.

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

Prerequisite(s): CYBR 680 | Credit Hours: 3

Course(s) being deleted in place of this addition (*must submit course deletion form*): N/A

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

| | |
|---|---|
| Dept. Chair/Division Head Yoo, wookse | Date 9/17/18 |
| Registrar 110101 | Date 9/21/18 |
| College Curriculum Chair | Date 9/26/18 |
| Graduate Council Chair | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: CITE | Department/Division: Computer Science | Alpha Designator/Number: CYBR/681

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.

Wook-Sung Yoo, 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 deparment(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

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

# Request for Graduate Course Addition - Page 4

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

# Request for Graduate Course Addition - Page 5

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/681 Thesis
Catalog Description: Investigate a research problem of theoretical interest and practical value under mentorship of a cybersecurity faculty.
Prerequisites: CYBR 680
First Term Offered: Fall 2019
Credit Hours: 3

## BIBLIOGRAPHY

Research Methods for Cyber Security, 1st Edition, Thomas W. Edgar David O. Manz, Syngress, April 2017, ISBN: 9780128053492.

# CYBR 681 Thesis

| | |
|---|---|
| Course Title/Number | Thesis/CYBR 681 |
| Semester/Year | Fall/2019 |
| Days/Time | TBD |
| Location | TBD |
| Instructor | TBD |
| Office | TBD |
| Phone | TBD |
| E-Mail | TBD |
| Office Hours | TBD |
| University Policies | 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 |

## Course Description

Investigate a research problem of theoretical interest and practical value under mentorship of a cybersecurity faculty. (PR: CYBR 680)

## 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 |
|---|---|---|
| Students will be able to conduct literature survey and propose the thesis | Proposal | Proposal evaluation |
| Students will be able to do conduct research activities | Research report | Report evaluation |
| Students will be able to write research paper and thesis | Thesis defense and presentation | Thesis evaluation |

## Required Texts, Additional Reading, and Other Materials

Research Methods for Cyber Security, 1st Edition, Thomas W. Edgar David O. Manz, Syngress, April 2017, ISBN: 9780128053492.

## Course Requirements / Due Dates / Schedule

Follow the thesis process description below:

A student must arrange supervision with a faculty member. In consultation with the supervisor, the student must choose a research topic for the thesis. The process of delineating the research topic is an iterative one. The student bounces ideas, and the supervisor coaches and councils, often providing leads to refine the students' efforts and keep it focused. Once thesis topic is agreed upon, student should explore the breadth of the topic area by researching on the state-of-the-art and doing related literature review.

After the thesis topic has been agreed upon, a thesis committee will be formed. The committee will consist of three graduate rank faculty (including the thesis supervisor). The majority of the thesis committee is to be drawn from CS faculty. The student can propose names of faculty who could serve on the supervisory committee. The mutual agreement of the student and the committee members must be confirmed to the division chair.

The thesis proposal is a short document (say 2 or 3 pages) written by the student outlining:

- Summary of literature which resulted in the proposal.
- The rationale for the proposal (what research questions are likely to be answered).
- Possible study design methods. And any procedures.
- The possible significance of the study.
- References.

After the completion of the thesis, the student should provide copies(s) of his final thesis to the committee members. One copy must be submitted to the CS graduate coordinator. At least, two weeks are required for the committee members to read through the thesis. The final oral comprehensive examination/thesis defense will be set up in accordance with Graduate College procedures.

## Grading Policy

Course grades are based on the total points earned for all activities and the grading scale shown below:

| Activity | Points |
|---|---|
| Proposal | 10 |
| Presentation | 20 |
| Thesis Final Report | 70 |
| Total | 100 |

| Scale | |
|---|---|
| Score 70- 100 | P |
| Below 70 | F |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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/685 | (•) Graded ( ) CR/NC

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

**NEW COURSE DATA:**

New Course Title: Independent Study

Alpha Designator/Number: C Y B R / 6 8 5

Title Abbreviation: I n d e p e n d e n t S t u d y

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
Faculty supervised, individualized course of study

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

Prerequisite(s): None | Credit Hours: 1 - 4

Course(s) being deleted in place of this addition (*must submit course deletion form*): N/A

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

| | |
|---|---|
| Dept. Chair/Division Head [signature] | Date 9/17/18 |
| Registrar [signature] 110101 | Date 9/21/18 |
| College Curriculum Chair [signature] | Date 9/20/18 |
| Graduate Council Chair [signature] | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: CITE | Department/Division: Computer Science | Alpha Designator/Number: CYBR/685-9

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.

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 deparment(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

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

# Request for Graduate Course Addition - Page 4

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

# Request for Graduate Course Addition - Page 5

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/685 Independent Study
Catalog Description: Faculty supervised, individualized course of study
Prerequisites: None
First Term Offered: Spring 2019
Credit Hours: 1 - 4

**BIBLIOGRAPHY**

N/A (Depending on the topic of the course and instructor)

# CYBR 685 Independent Study

| | |
|---|---|
| Course Title/Number | Independent Study/CYBR 685 |
| Semester/Year | Spring/2019 |
| Days/Time | TBD |
| Location | TBD |
| Instructor | TBD |
| Office | TBD |
| Phone | TBD |
| E-Mail | TBD |
| Office Hours | TBD |
| University Policies | 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 |

## Course Description

Faculty supervised, individualized course of study

## 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 |
|---|---|---|
| N/A (depending on the topic of the course and instructor) | N/A (depending on the topic of the course and instructor) | N/A (depending on the topic of the course and instructor) |

## Required Texts, Additional Reading, and Other Materials

**Required Text**

N/A (depending on the topic of the course and instructor)

## Course Requirements / Due Dates

N/A (depending on the topic of the course and instructor)

## Attendance Policy

## Grading Policy

N/A (depending on the topic of the course and instructor)

Course grades are awarded based on the following scheme:

| Score | Letter Grade |
|---|---|
| >= 90 | A |
| >= 80 & < 90 | B |
| >= 70 & < 80 | C |
| >= 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 | N/A (depending on the topic of the course and instructor) |
| 2 | N/A (depending on the topic of the course and instructor) |
| 3 | N/A (depending on the topic of the course and instructor) |
| 4 | N/A (depending on the topic of the course and instructor) |
| 5 | N/A (depending on the topic of the course and instructor) |
| 6 | N/A (depending on the topic of the course and instructor) |
| 7 | N/A (depending on the topic of the course and instructor) |
| 8 | N/A (depending on the topic of the course and instructor) |
| 9 | N/A (depending on the topic of the course and instructor) |
| 10 | N/A (depending on the topic of the course and instructor) |
| 11 | N/A (depending on the topic of the course and instructor) |
| 12 | N/A (depending on the topic of the course and instructor) |
| 13 | N/A (depending on the topic of the course and instructor) |
| 13 | N/A (depending on the topic of the course and instructor) |
| 15 | N/A (depending on the topic of the course and instructor) |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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/698 | ○ Graded ◉ CR/NC

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

**NEW COURSE DATA:**

New Course Title: Internship

Alpha Designator/Number: C Y B R / 6 9 8

Title Abbreviation: I n t e r n s h i p

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
Supervised work experience in Cybersecurity.

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

Prerequisite(s): Permission by Chair | Credit Hours: 1 - 6

Course(s) being deleted in place of this addition (*must submit course deletion form*): N/A

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

| | |
|---|---|
| Dept. Chair/Division Head [signature] | Date 9/17/18 |
| Registrar [signature] 10101 | Date 9/21/18 |
| College Curriculum Chair [signature] | Date 9/26/18 |
| Graduate Council Chair [signature] | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: CITE | Department/Division: Computer Science | Alpha Designator/Number: CYBR/698

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.

Wook-Sung Yoo, 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 deparment(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

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

# Request for Graduate Course Addition - Page 4

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

# Request for Graduate Course Addition - Page 5

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/698 Internship
Catalog Description: Supervised work experience in Cybersecurity.
Prerequisites: Permission by Chair
First Term Offered: Spring 2019
Credit Hours: 1 - 6

## BIBLIOGRAPHY


- "The Mythical Man-Month: Essays on Software Engineering," Anniversary Edition (2nd Edition), by Fred Brooks, Addison-Wesley Professional; ISBN-10: 0201835959

# CYBR 698 Internship

| | |
|---|---|
| Course Title/Number | Internship /CYBR 698 |
| Semester/Year | Spring/2019 |
| Days/Time | TBD |
| Location | TBD |
| Instructor | Wook-Sung Yoo |
| Office | WAEC 3010A |
| Phone | X5452 |
| E-Mail | yoow@marshall.edu |
| Office Hours | TBD |
| University Policies | 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 |

## Course Description

Supervised work experience in Cybersecurity (PR: Chair's permission).

## 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 |
|---|---|---|
| Students will be able to apply knowledge and skills learned in the classroom in a work setting. | Project assigned | Project Evaluation |
| Students will be able to demonstrate effective verbal and written communication skills | Weekly and final reports and presentation | Graded homework<br>Graded research report |
| Students will be able to understand the industrial or organizational practices, culture, and ethical standards | Final Report | Presentation evaluation<br>Graded report paper |

## Required Texts, Additional Reading, and Other Materials

**Required Text**

- "The Mythical Man-Month: Essays on Software Engineering," Anniversary Edition (2nd Edition), by Fred Brooks, Addison-Wesley Professional; ISBN-10: 0201835959

## Course Requirements / Due Dates

**Report**

Three types of reports below are required:

1. *Objective worksheet (due: 2nd week)*
   The student should complete specific objectives during the term and submit the work objectives within the first two weeks. The objectives will be used to evaluate student's progress.
2. *Monthly progress reports (Every 4 weeks)*
   Weekly progress reports following the format provided by the instructor should be submitted to instructor each week which include the week's accomplishment/progress on objectives agreed on, meeting summary, issues, and plan for next week.
3. *Final report (Last week of the semester)*
   Final report following the format provided by the instructor should be submitted by the end of the semester. The final report should be a reflective examination of the work experience to (1) evaluate your objectives, (2) describe the most difficult challenge that you faced, and (3) write final reflective thoughts.

The company should provide its evaluation of the student's performance to instructor by the end of the term. The course is not required course and the credit hours is not counted for graduation.

## Grading Policy

Course grades are based on the total points earned for all activities and the grading scale shown below:

| Activity | Points |
|---|---|
| Objective worksheet | 20 |
| Weekly Report | 30 |
| Presentation and Final Report | 50 |
| Total | 100 |

| Scale | |
|---|---|
| Score 70- 100 | P |
| Below 70 | 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 | Introduction |
| 2 | Objective worksheet |
| 3 | Project work |
| 4 | Weekly Report |
| 5 | Project work |
| 6 | Project work |
| 7 | Project work |
| 8 | Weekly Report |
| 9 | Project work |
| 10 | Project work |
| 11 | Project work |
| 12 | Weekly Report |
| 13 | Project work |
| 13 | Weekly Report |
| 15 | Final report and presentation |

Chair: Tracy Christofero | **GC#7: Course Change**

# Request for Graduate Course Change

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: COLA Dept/Division: English Current Alpha Designator/Number: ENG 508

Contact Person: Kristen Lillvis Phone: 304-696-6269

**CURRENT COURSE DATA:**

Course Title: Advanced Expository Writing

Alpha Designator/Number: E N G 5 0 8

Title Abbreviation: A d v E x p o s i t o r y W r i t i n g

1. Complete this **five** page form in its entirety and route through the departments/committees below for changes to a course involving: course title, alpha designator, course number, course content, credit hours, or catalog description.
2. If this change will affect other departments that require this course, please send a memo to the affected department and include it with this packet, as well as the response received from the affected department.
3. If the changes made to this course will make the course similar in title or content to another department's courses, please send a memo to the affected department and include it with this packet as well as the response received from the affected department.
4. List courses, if any, that will be deleted because of this change (*must submit course deletion form).*
5. If the faculty requirements and/or equipment need to be changed upon approval of this proposal, attach a written estimate of additional needs.

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

| | |
|---|---|
| Dept. Chair/Division Head Allison E Carey | Date 3/13/2018 |
| Registrar Sonya L C | Date 9/13/18 |
| College Curriculum Chair Melissa Adams | Date 9/19/18 |
| Graduate Council Chair Lori Kunk | Date 10/27/18 |

Rec'd in COLA Office
Date: 9-14-18

# Request for Graduate Course Change - Page 2

College: COLA | Department/Division: English | Alpha Designator/Number: ENG 508

Provide complete information regarding the course change for each topic listed below.

**Change in CATALOG TITLE:** ☒ YES ☐ NO

From: Advanced Expository Writing (limited to 30 characters and spaces)

To: Writing in the Digital World

If Yes, Rationale: *The UCC approved the same title change for the corresponding undergraduate course (ENG 408). Since the courses are taught concurrently, we would like to make sure the title is the same for both levels. Additionally, the course is currently being taught with an emphasis on writing in the digital world. This title change will allow the title to match the content and be more comprehensible to students who have not read the course description.*

**Change in COURSE ALPHA DESIGNATOR:**

From: ____ To: ____ ☐ YES ☒ NO

If Yes, Rationale: NA

**Change in COURSE NUMBER:** ☐ YES ☒ NO

From: ____ To: ____

If Yes, Rationale: NA

Change in COURSE GRADING

From ☐ Grade To ☐ Credit/No Credit

Rationale: NA

**Change in CATALOG DESCRIPTION:** ☒ YES ☐ NO IF YES, fill in below:

From: Development and refinement of writing skills—description, organization, and style—with an emphasis on informative and explanatory genres.

To: Development of writing skills and strategies with an emphasis on digital texts and genres.

Rationale: e course will continue to focus on the development of writing skills in exploratory and informative genres, but the ıge to the description will more accurately reflect the digital writing the class covers. The UCC has approved this ıe (408).

**Change in COURSE CREDIT HOURS:** ☐ YES ☒ NO If YES, fill in below:

NOTE: If credit hours increase/decrease, please provide documentation that specifies the adjusted work requirements.

From NA

To NA

**Change in COURSE CONTENT:** ☐ YES ☒ NO

From NA

To NA

Rationale NA

# Request for Graduate Course Change-Page 4

College: COLA

Department: English

Course Number/Title ENG 508

1. REQUIRED COURSE: If this course is required by another department(s), identify it/them by name and attach the written notification you sent to them announcing to them the proposed change and any response received. Enter NOT APPLICABLE if not applicable.

NOT APPLICABLE

2. COURSE DELETION: List any courses that will be deleted because of this change. A *Course Deletion* form is also required. Enter NOT APPLICABLE if not applicable.

NOT APPLICABLE

3. ADDITIONAL RESOURCE REQUIREMENTS: If your department requires additional faculty, equipment, or specialized materials as a result of this change, attach an estimate of the time and cost etc. 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

# Request for Graduate Course Change - Page 5

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

| COURSE DESCRIPTION CHANGE | COURSE NUMBER CHANGE | COURSE TITLE CHANGE |
|---|---|---|
| Department: | Department: | Department: |
| Course Number and Title: | Current Course Number/Title: | Current Course Number/Title: |
| Rationale: | New Course Number: | New Course Title: |
| Course Description (old) | Rationale: | Rationale: |
| Course Description: (new) | Catalog Description: | Catalog Description: |
| Catalog Description: | Credit hours: | |

COURSE DESCRIPTION CHANGE
Department: English
Course Number and Title: ENG 508
Rationale: The course will continue to focus on the development of writing skills in exploratory and informative genres, but the change to the description will more accurately reflect the digital writing the class covers. The UCC has approved this change (408).
Course Description (old) Development and refinement of writing skills—description, organization, and style—with an emphasis on informative and explanatory genres.
Course Description: (new) Development of writing skills and strategies with an emphasis on digital texts and genres.
Catalog Description: Development and refinement of writing skills—description, organization, and style—with an emphasis on informative and explanatory genres.

COURSE TITLE CHANGE
Department: English
Current Course Number/Title: ENG 508: Advanced Expository Writing
New Course Title: Writing in the Digital World
Rationale: The UCC approved the same title change for the corresponding undergraduate course (ENG 408). Since the courses are taught concurrently, we would like to make sure the title is the same for both levels. Additionally, the course is currently being taught with an emphasis on writing in the digital world. This title change will allow the title to match the content and be more comprehensible to students who have not read the course description.
Catalog Description: Development and refinement of writing skills—description, organization, and style—with an emphasis on informative and explanatory genres.

Chair: Tracy Christofero | **GC#7: Course Change**

# Request for Graduate Course Change

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: Liberal Arts | Dept/Division: Geography | Current Alpha Designator/Number: GEO531

Contact Person: James Leonard | Phone: 6-4626

**CURRENT COURSE DATA:**

Course Title: Principles of Remote Sensing and Photogrammetry

Alpha Designator/Number: G E O 5 3 1

Title Abbreviation: R e m o t e S e n s i n g & P h o t o g r a

1. Complete this **five** page form in its entirety and route through the departments/committees below for changes to a course involving: course title, alpha designator, course number, course content, credit hours, or catalog description.
2. If this change will affect other departments that require this course, please send a memo to the affected department and include it with this packet, as well as the response received from the affected department.
3. If the changes made to this course will make the course similar in title or content to another department's courses, please send a memo to the affected department and include it with this packet as well as the response received from the affected department.
4. List courses, if any, that will be deleted because of this change (*must submit course deletion form).*
5. If the faculty requirements and/or equipment need to be changed upon approval of this proposal, attach a written estimate of additional needs.

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

| | |
|---|---|
| Dept. Chair/Division Head | Date 9/14/18 |
| Registrar | Date 9/14/18 |
| College Curriculum Chair | Date 9/19/18 |
| Graduate Council Chair | Date 10/27/18 |

REGISTRAR'S OFFICE
14 SEP '18 PM1:36

# Request for Graduate Course Change - Page 2

College: Liberal Arts | Department/Division: Geography | Alpha Designator/Number: GEO531

Provide complete information regarding the course change for each topic listed below.

**Change in CATALOG TITLE:** ☐ YES ☒ NO

From [ ] (limited to 30 characters and spaces)

To [ ]

If Yes, Rationale [ ]

**Change in COURSE ALPHA DESIGNATOR:**

From: [ ] To [ ] ☐ YES ☒ NO

If Yes, Rationale [ ]

**Change in COURSE NUMBER:** ☐ YES ☒ NO

From: [ ] To: [ ]

If Yes, Rationale [ ]

Change in COURSE GRADING

From ☐ Grade To ☐ Credit/No Credit

Rationale [ ]

**Change in CATALOG DESCRIPTION:** ☐ YES ☒ NO IF YES, fill in below:

From [ ]

To [ ]

If Yes Rationale [ ]

**Change in COURSE CREDIT HOURS:** ☒ YES ☐ NO If YES, fill in below:

NOTE: If credit hours increase/decrease, please provide documentation that specifies the adjusted work requirements.

From: 3 credit hours

To: 4 credit hours

**Change in COURSE CONTENT:** ☐ YES ☒ NO

From:

To:

Rationale:

# Request for Graduate Course Change-Page 4

College: Liberal Arts

Department: Geography

Course Number/Title GEO531 Remote Sensing & Photogrammetry

1. REQUIRED COURSE: If this course is required by another department(s), identify it/them by name and attach the written notification you sent to them announcing to them the proposed change and any response received. Enter NOT APPLICABLE if not applicable.

n/a

2. COURSE DELETION: List any courses that will be deleted because of this change. A *Course Deletion* form is also required. Enter NOT APPLICABLE if not applicable.

n/a

3. ADDITIONAL RESOURCE REQUIREMENTS: If your department requires additional faculty, equipment, or specialized materials as a result of this change, attach an estimate of the time and cost etc. required to secure these items. (NOTE: approval of this form does not imply approval for additional resources. Enter NOT APPLICABLE if not applicable.

n/a

# Request for Graduate Course Change - Page 5

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

| COURSE DESCRIPTION CHANGE | COURSE NUMBER CHANGE | COURSE TITLE CHANGE |
|---|---|---|
| Department: | Department: | Department: |
| Course Number and Title: | Current Course Number/Title: | Current Course Number/Title: |
| Rationale: | New Course Number: | New Course Title: |
| Course Description (old) | Rationale: | Rationale: |
| Course Description: (new) | Catalog Description: | Catalog Description: |
| Catalog Description: | Credit hours: | |

COURSE CREDIT HOURS CHANGE
Department: Geography
Current Course Number/Title: GEO531 Remote Sensing and Photogrammetry
Current Course Credit Hours: 3
Proposed Course Credit Hours: 4
Rationale: The course has lecture/lab format similar to other 4 hour geospatial technology courses that are lecture/lab such as GEO526 (4 credits), GEO529 (4 credits), GEO530 (4 credits), GEO540 (4 credits), BSC510 (4 credits) and BSC511 (4 credits). The course has always had workloads comparable to those 4 credit hours courses, but this change of credit hours will also add a semester project to the course material. See attached syllabi.
Catalog Description: Scientific study of the earth using images and data captured using satellite- or aircraft-borne sensors, with emphasis on issues of acquisition, photogrammetric interpretation, spatial analysis, and application.

# CURRENT SYLLABUS – (3 CREDITS)

## Principles of Remote Sensing and Photogrammetry

GEO431/531: Fall 2015, Section 101 - CRNs 2441/2453


| | |
|---|---|
| Instructor: L. Keith Evans | Time: Thurs. 6:30-9:00pm |
| Phone: 304.736.4273; Fax: N/A | Place: HH202 |
| Office: HH202 (one half hour before/after class, as needed) | levans@marshall.edu |


**Web Sites:** http://www.east-by-west.com, ArcGIS Server-based http://tagis.dep.wv.gov/mapservices2.html

*Catalog description:*

Principles and techniques for preparing and utilizing remotely sensed data for visualization and analysis. 3 credit hours. (Prerequisite: GEO426 , or GEO429 , or GEO430 , or IST423, 3 credit hours)

| 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 |
|---|---|---|
| Students will research sources for downloading existing remote sensing data for use in GIS projects | Weekly projects | Weekly projects, exams |
| Students will learn basic digital image processing techniques applicable to a broad array of geographic research | Weekly projects | Weekly projects, exams |
| Students experience creation of custom data products by experimentation with classification techniques applicable to remotely sensed data | Weekly projects | Weekly projects, exams |

*Required readings:*

- Lillesand, Thomas M., Kiefer, Ralph W. and Chipman, Jonathan W., Remote Sensing and Image Interpretation, NY: John Wiley & Sons, Inc., 2008.

*Organization of Class Time:*

Class time will consist of the following: 1) lectures, presentations and examples of remote sensing and digital imagery analysis (=RS&DIA) including data collection, data input, and spatial analysis topics; 2) hands-on experience using ERDAS IMAGINE to complete RS&DIA exercises.

*Time Outside of Class:*

This class consists of more than simple class attendance. Expect to spend time outside class each week researching assigned RS&DIA areas of study necessary to complete weekly projects.

*Grading:*

Grades will be based on two exams (100 points each) and 10 projects [100 points total for all of the ten projects]). Projects shall be completed weekly (10 points each) as listed on the classroom agenda shown below in this document. The exact number of projects may change during the semester. It may also be necessary to have multiple business processes per project to insure proper coverage of some key RS&DIA, GIS, IT and business processes. The total number of points earned will determine final grades:

A = 300 - 270 points (100-90%)
B = 269 - 240 (89-80%)
C = 239 - 210 (79-70%)
D = 209 - 180 (69-60%)
F = 179 and below (less than 60%)

The dates for exams are listed on the classroom agenda shown below in this document. Exam format will be previewed before each exam.

*Attendance Policy:*

Absences threaten your chance of success in this class. You should make every attempt to attend every class. Topics emphasized in lecture, exercises, and readings will generally be emphasized on the exams. In-class exercises will each count for a 10-point grade, will be discussed **in class** and should be completed **in class**. In addition, time during class is the only time you will be guaranteed access to the computers. For these reasons, attendance is vital. **If you miss an exercise or exam for an UNEXCUSED reason, you will receive a zero for that exercise or exam.** If you will miss an exam for an excused reason, it MUST be taken before the class you will miss or made up before the next day of class. If you are not present for an excused reason on a day an exercise counts for a grade, you MUST either turn it in early or by the following class day. **Failure to follow these instructions will result in a ZERO on the missed exercise or exam.**

University policy states that excused absences include death in the family, uncommon illness (this does not include regular appointments), dean-approved major religious holiday, or institutional activity. For an absence to be excused you MUST provide adequate documentation to me BEFORE the class to be missed, or at the latest, at the next class. For a death in the family an obituary or other document stating your relationship to the deceased is acceptable documentation. For an emergency illness, you must provide a doctor's excuse that clearly states that your illness prevented class

attendance. Regular appointments are not excused absences. You must have written approval in advance from the appropriate dean for an approved major religious holiday. For an institutional activity, you must provide a signed document from the appropriate university official that clearly states that your activity will preclude class attendance. No excused absence is a license to miss additional assignments or classes, but only the specific date(s) of the excused absence. **If you do not follow these instructions for excused absences, your absence will be counted as UNEXCUSED no matter the reasons, and you will receive a ZERO for any missed quiz or exam.** Every effort should be made to inform me at least two days BEFORE a scheduled, excused absence. Missing 2 days or more (excused or unexcused) probably means FAILURE in this class.

The following are UNEXCUSED absences: work or work related absences, attendance at special functions for other classes, illness of a relative out of town, vacation, missed flights, car problems, illnesses that do not prevent class attendance (according to the doctor), marriage, honeymoons, marriage of relatives/friends, child care difficulties, appointments for interviews, pre-arranged travel plans, extending weekends or holidays by missing a Friday or a Monday or any day, or breaking up with your girl/boyfriend.

*Academic Dishonesty:*

University policy states that any act of a dishonorable nature that gives the student engaged in it an unfair advantage over others engaged in the same or similar course of study is prohibited. University sanctions for academic dishonesty may range from a lower final grade in or a failure of the course or exclusion from further participation in the class to dismissal from the institution. You must do you own work inside and outside of this class. Cheating in or out of this class is prohibited. **You will be given a final grade of F for any instance of cheating.**

*Other University Policies:*

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy be going to www.marshall.edu/academic-affairs and clicking on "Marshall University Policies." or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802:

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.

*Schedule:*

| Chapter Number | PowerPoint Presentations | Lillesand & Kiefer Chapter Name | Lab Exercise Assigned Date | Lab Exercise Due Date | Date |
|---|---|---|---|---|---|
| Internet/Handouts | Week 1 | Introduction to Instructor & Introduction to Course | N/A | N/A | Aug 27 |
| Internet/Handouts/ Chapter 1 | Week 2A – 2B | Concepts & Foundations of Remote Sensing | Intro to RS&IA | N/A | Sep 3 |

| | | | | | |
|---|---|---|---|---|---|
| Internet/Handouts/ Chapter 2 | Week 3 | Elements of Photographic Systems | Intro to RS&IA (cont) & Lab Ex. **1** | N/A | Sep 10 |
| Internet/Handouts/ Chapter 3 | Week 4 | Basic Principles of Photogrammetry | 2 | 1 | Sep 17 |
| Internet/Handouts/ Chapter 4 | Week 5 | Introduction to Visual Image Interpretation | 3 | 2 | Sep 24 |
| Internet/Handouts/ Chapter 4 | Week 6 | Introduction to Visual Image Interpretation (2nd week) | 4 | 3 | Oct 1 |
| Internet/Handouts/ Chapter 5 | Week 7 | Multispectral, Thermal, and Hyperspectral Sensing | 5 | 4 | Oct 8 |
| Internet/Handouts/ Chapter 6 | Week 8 | **Midterm Exam** & Earth Resource Satellites Operating in the Optical Spectrum | N/A | N/A | Oct 15 |
| Internet/Handouts/ Chapter 6 (second half) | Week 9 | Earth Resource Satellites Operating in the Optical Spectrum (2nd Week) | 6 | 5 | Oct 22 |
| Internet/Handouts/ Chapter 7 (first 1/3rd) | Week 10 | Digital Image Processing | 7 | 6 | Oct 29 |
| Internet/Handouts/ Chapter 7 (second 1/3rd) | Week 11 | Digital Image Processing (2nd. Week) | 8 | 7 | Nov 5 |
| Internet/Handouts/ Chapter 7 (last 1/3rd) | Week 12 | Digital Image Processing (3rd. Week) | 9 | 8 | Nov 12 |
| Internet/Handouts/ Chapter 8 | Week 13 | Active Sensors – Microwave & LiDAR | 10 | 9 | Nov 19 |
| N/A | Week 14 | Thanksgiving Holiday | N/A | N/A | Nov 26 |
| Internet/Handouts/ Unwritten Chapter 9 | Week 15 | Military Applications & World Events | N/A | 10 | Dec 3 |
| N/A | Week 16 | **Final Exam** | N/A | N/A | Dec 10 |

# NEW SYLLABUS (4 CREDITS)

## Principles of Remote Sensing and Photogrammetry

GEO431/531: Fall 2019, Section 101 – CRNs 2441/2453

| | |
|---|---|
| Instructor: L. Keith Evans | Time: Thurs. 6:30-9:00pm |
| Phone: 304.736.4273 | Place: HH202 |
| Office: HH202 (one half hour before/after class, as needed) | levans@marshall.edu |
| **Web Sites:** http://www.east-by-west.com, ArcGIS Server-based http://tagis.dep.wv.gov/mapservices2.html | |

*Catalog description:*

Scientific study of the earth using images and data captured using satellite- or aircraft-borne sensors, with emphasis on issues of acquisition, photogrammetric interpretation, spatial analysis, and application. (PR: GEO423 or GEO426 or GEO429 or GEO430 or IST423 or permission).

| 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 |
|---|---|---|
| Students will research sources for downloading existing remote sensing data for use in GIS projects | Weekly class exercises | Weekly projects, exams |
| Students will learn basic digital image processing techniques applicable to a broad array of geographic research | Weekly class exercises | Weekly projects, exams |
| Students experience creation of custom data products by experimentation with classification techniques applicable to remotely sensed data | Weekly class exercises | Weekly projects, exams |
| Students will apply processing and interpretation to an independent research project. | Weekly class exercises, Weekly projects, exams | Semester Project |

*Required readings:*

- Lillesand, Thomas M., Kiefer, Ralph W. and Chipman, Jonathan W., Remote Sensing and Image Interpretation, NY: John Wiley & Sons, Inc., 2008.

*Organization of Class Time:*

Class time will consist of the following: 1) lectures, presentations and examples of remote sensing and digital imagery analysis (=RS&DIA) including data collection, data input, and spatial analysis topics; 2) hands-on experience using ERDAS IMAGINE to complete RS&DIA exercises.

*Time Outside of Class:*

This class consists of more than simple class attendance. Expect to spend time outside class each week researching assigned RS&DIA areas of study necessary to complete weekly projects.

*Grading:*

Grades will be based on 10 Weekly Projects [100 points total for all of the ten projects]), two Exams (100 points each), and a Semester Project (100 points).

- Projects shall be completed weekly (10 points each) as listed on the classroom agenda shown below in this document. Class time will be used for practice exercises similar to the Weekly Projects.
- The dates for Exams are listed on the classroom agenda shown below in this document. Exam format will be previewed before each exam.
- The semester project will allow you to pursue a topic of interest to you, applying principles and techniques learned in the exercises and Weekly Projects. Additional instructions will be given in class.
- The total number of points earned will determine final grades:

A = 400 - 360 points (100-90%)
B = 359 - 320 (89-80%)
C = 319 - 280 (79-70%)
D = 279 - 240 (69-60%)
F = 239 and below (less than 60%)

**Graduate students will have more extensive Weekly Projects, Exams, and Semester Projects.**

*Attendance Policy:*

Absences threaten your chance of success in this class. You should make every attempt to attend every class. Topics emphasized in lecture, exercises, and readings will generally be emphasized on the exams. In-class exercises will prepare you for a homework Weekly Project, each of which counts for a 10-point grade. Weekly Projects will be discussed **in**

**class** and must be submitted **at the next class**. In addition, time during class is the only time you will be guaranteed access to the computers/software. For these reasons, attendance is vital. **If you miss a Weekly Project or exam for an UNEXCUSED reason, you will receive a zero for that Weekly Project or exam.** For an absence to be excused you MUST provide adequate documentation to me BEFORE the class to be missed, or at the latest, at the next class. Missing 2 days or more (excused or unexcused) probably means FAILURE in this class.

*Academic Dishonesty:*

You must do you own work inside and outside of this class. Cheating in or out of this class is prohibited. **You will be given a final grade of F for any instance of cheating.**

*Other University Policies:*

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy be going to www.marshall.edu/academic-affairs and clicking on "Marshall University Policies."

*Schedule:*

| Chapter Number | PowerPoint Presentations | Lillesand & Kiefer Chapter Name | Lab Exercise Assigned Date | Lab Exercise Due Date | Date |
|---|---|---|---|---|---|
| Internet/Handouts | Week 1 | Introduction to Instructor & Introduction to Course | N/A | N/A | Aug 27 |
| Internet/Handouts/ Chapter 1 | Week 2A – 2B | Concepts & Foundations of Remote Sensing | Intro to RS&IA | N/A | Sep 3 |

| | | | | | |
|---|---|---|---|---|---|
| Internet/Handouts/ Chapter 2 | Week 3 | Elements of Photographic Systems | Intro to RS&IA (cont) & Lab Ex. **1** | N/A | Sep 10 |
| Internet/Handouts/ Chapter 3 | Week 4 | Basic Principles of Photogrammetry | 2 | 1 | Sep 17 |
| Internet/Handouts/ Chapter 4 | Week 5 | Introduction to Visual Image Interpretation | 3 | 2 | Sep 24 |
| Internet/Handouts/ Chapter 4 | Week 6 | Introduction to Visual Image Interpretation (2nd week) | 4 | 3 | Oct 1 |
| Internet/Handouts/ Chapter 5 | Week 7 | Multispectral, Thermal, and Hyperspectral Sensing | 5 | 4 | Oct 8 |
| Internet/Handouts/ Chapter 6 | Week 8 | **Midterm Exam** & Earth Resource Satellites Operating in the Optical Spectrum | N/A | N/A | Oct 15 |
| Internet/Handouts/ Chapter 6 (second half) | Week 9 | Earth Resource Satellites Operating in the Optical Spectrum (2nd Week); **Semester Project Part 1 due** | 6 | 5 | Oct 22 |
| Internet/Handouts/ Chapter 7 (first 1/3rd) | Week 10 | Digital Image Processing | 7 | 6 | Oct 29 |
| Internet/Handouts/ Chapter 7 (second 1/3rd) | Week 11 | Digital Image Processing (2nd. Week) | 8 | 7 | Nov 5 |
| Internet/Handouts/ Chapter 7 (last 1/3rd) | Week 12 | Digital Image Processing (3rd. Week) | 9 | 8 | Nov 12 |
| Internet/Handouts/ Chapter 8 | Week 13 | Active Sensors – Microwave & LiDAR | 10 | 9 | Nov 19 |
| N/A | Week 14 | Thanksgiving Holiday | N/A | N/A | Nov 26 |
| Internet/Handouts/ Unwritten Chapter 9 | Week 15 | Military Applications & World Events; **Semester Project Part 2 due** | N/A | 10 | Dec 3 |
| N/A | Week 16 | **Final Exam** | N/A | N/A | Dec 10 |

# Request for Graduate Non-Curricular Changes

PLEASE USE THIS FORM FOR ALL NON-CURRICULAR CHANGE REQUESTS (changes in admission requirements or requirements for graduation, changes in existing or new policies/procedures, changes in program descriptions in catalog, general language changes in catalog).

SIGNATURES may not be required, depending on the nature of the request and from where it originates. Consult Graduate Council Chair.

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.
3. **The Graduate Council cannot process this application until it has received both the PDF copy and the signed hard copy.**

College: Graduate College Dept/Division: Graduate College

Contact Person: David J. Pittenger Phone: 6-2818

Rationale for Request:

The Graduate College offers two forms of accelerated graduate degree options. Both allow qualified seniors to enroll in graduate courses during their final year. The options allow students to complete both the undergraduate and graduate degrees in less time and at a lower cost.

The first is a "3+2" option offered by the College of Business that allows students to "double count" up to nine hours of course work for the undergraduate and graduate degrees.

The second is the "Accelerated Master's Degree" that allows students to count 12 hours of graduate courses as electives for the undergraduate degree.

We have no option for an accelerated doctoral degree. Therefore, I propose the following:

1) Allow all graduate programs to use the 3+ model, the accelerated degree model, or a combination of both. Doing so will allow departments to control their students' undergraduate and graduate

Signatures: if disapproved at any level, do not sign. Return to previous signer with recommendation attached.
NOTE: all requests may not require all signatures.

Department/Division Chair David J. Pittenger Digitally signed by David J. Pittenger Date: 2018.09.12 11:16:50 -04'00' Date Fall 2019

Registrar Sonja G. Cantrell Digitally signed by Sonja G. Cantrell Date: 2018.09.12 12:02:47 -04'00' Date 9.12.18

College Curriculum Committee Chair _____ Date _____
(or Dean if no college curriculum committee)

Graduate Council Chair Lori Edwards Date 10/27/18

NOTE: please complete information required on the following pages before obtaining signatures above.

## Request for Graduate Non-Curricular Changes – Page 2

1. **Current Catalog Description (if applicable)**: Please insert the catalog description from the current catalog for entries you would like to change.

See Attached Document "Original Text"

2. **Edits to current description**: Attach or insert a PDF copy of the current catalog description prepared in MS WORD with strikethroughs to mark proposed deletions and use the highlight function to indicate proposed new text.

See Attached Document "Strike Through Text"

3. **New Catalog Description**: Provide a "clean" copy of your proposed description without strikethroughs or highlighting. This should be what you are proposing for the new description.

See Attached Document "Revised Text"

## Request for Graduate Non-Curricular Changes – Page 5

Please insert below your proposed change information for the Graduate Council agenda.

Type of change request: Revision of language pertaining to accelerated degreesd

Department: The Graduate College

Degree program: The Graduate College

Effective date (fall/spring/summer, year): Fall 2019

# ORIGINAL TEXT

ADMISSION TO THE GRADUATE COLLEGE

Admission to the Graduate College is based on receipt of a baccalaureate degree from an accepted, regionally accredited college or university, the Grade Point Average, the scores on required Admissions examinations and the information provided on the "Application for Graduate Admissions" form.* The receipt of a bachelor's degree from an accepted, regionally accredited college or university is the basic requirement for admission as a graduate student to Marshall University. An applicant who holds a bachelor's degree from an institution that is not regionally accredited may file an appeal to request a waiver of this requirement. Appeals will be reviewed by the Dean of the Graduate College and the dean of the applicant's proposed college on a case-by-case basis and will be granted on an extremely limited basis when the situation warrants. To initiate the appeal process, send a letter of request to the Graduate Admissions Office. The exceptions to the baccalaureate degree requirement pertain to the 3 + 2 joint bachelor's/graduate degree programs offered by the College of Business, students enrolled in the Doctor of Pharmacy program, and those students participating in an approved articulated program of study offered by Marshall University and a collaborating accredited institution of higher education. Students who have previously taken graduate coursework at another institution must submit all transcripts and also meet undergraduate and examination requirements. Poor academic performance in prior graduate work may serve as the basis for the denial of admission to Marshall University Graduate College, at the discretion of the faculty.

...

ACCELERATED MASTER'S DEGREE

Marshall University offers an accelerated path through a number of its master's degree programs. We encourage qualified undergraduates to consider doing an Accelerated Master's Degree (AMD). Accelerated Master's Degrees are currently offered in Criminal Justice, Geography, Political Science, Psychology, and Sociology.

Undergraduates accepted to an AMD program can begin taking graduate coursework in their senior year up to a maximum of 12 hours in place of electives. Students reduce the number of hours required to complete the Bachelor's degree by the number of graduate hours they complete (up to a maximum of 12). They must meet all other degree requirements for their Bachelor's degree while they work on their Master's degree. None of the credit hours used for the Bachelor's degree can be counted toward the Master's degree.

Graduate coursework/credit will appear ONLY on the graduate transcript, and graduate course grades will be calculated at the graduate level. The undergraduate transcript will indicate that graduate courses were used to fulfill the AMD requirement.

Advantages of an Accelerated Degree

- complete the Bachelor's degree with up to 12 fewer credit hours, (must meet all other degree requirements for the Bachelor's degree);
- begin work on the master's degree during the senior year;
- complete up to 12 graduate credits at undergraduate tuition rates;
- earn a bachelor's and master's degree in less time.

Eligibility Requirements for Accelerated Master's Degree program

- must have completed at least 90 hours toward the bachelor's degree;
- must have at least a 3.30 overall undergraduate GPA;
- must have at least a 3.30 GPA in the major;
- must meet the admission requirements of the chosen master's degree program. (Note: AMD programs may have admission requirements that differ from the admission requirements for the regular master's degree. For example, some departments might waive the required admission test, such as the GRE, GMAT or Miller Analogies. Students should check with the chosen master's degree program.)

How to Apply

1. During the junior or senior year, eligible students should meet with their undergraduate advisor and the Director of Graduate Studies of their chosen master's degree program to develop an AMD Plan of Study. The Plan of Study form is available from the Graduate College office or online at the Graduate College website. The completed, signed, and approved Plan of Study must be submitted to the Graduate College. Any changes to the AMD Plan of Study must be approved by the undergraduate advisor and Director of Graduate Studies and submitted in writing to the Dean of the Graduate College.

2. The student's acceptance into the AMD program is subject to the approval of the Plan of Study by the Dean of the Graduate College.
3. Students accepted into the AMD program should apply for admission to the chosen master's degree program for the first semester after the bachelor's degree is awarded. Applications should be submitted during the last semester of the senior year.

Requirements for Continuation in the AMD Degree Program

Students must maintain a minimum GPA of 3.0 for all graduate credit toward their master's degree program.

Withdrawal from the AMD

A student may withdraw at any time from an approved AMD program by informing the undergraduate advisor, the Director of Graduate Studies, and the Dean of the Graduate College

in writing. A student's status will then revert to the standard undergraduate degree program. Any graduate hours earned must be approved for use in fulfillment of bachelor's degree requirements by the student's Undergraduate Dean.

From Undergraduate to Graduate Student
Beginning with the semester after the student has earned the bachelor's degree and has been accepted into a master's degree program, the student is enrolled in the Graduate College and is assessed tuition and fees at the graduate rate. All rules regarding graduate education will apply to the student once admitted into the master's degree program.

Master's Programs that offer the AMD
Criminal Justice
Geography
Health Informatics
Political Science
Psychology
Sociology

...

FOUR-PLUS-ONE DEGREE PROGRAMS
See Accelerated Master's Degree Program.

...

THREE-PLUS-TWO PROGRAMS
See Accelerated Master's Degree Program and/or degree requirements section of the College of Business.

...

ADMISSION TO THE GRADUATE COLLEGE

Admission to the Graduate College is based on receipt of a baccalaureate degree from an accepted, regionally accredited college or university, the Grade Point Average, the scores on required Admissions examinations and the information provided on the "Application for Graduate Admissions" form.* The receipt of a bachelor's degree from an accepted, regionally accredited college or university is the basic requirement for admission as a graduate student to Marshall University. An applicant who holds a bachelor's degree from an institution that is not regionally accredited may file an appeal to request a waiver of this requirement. Appeals will be reviewed by the Dean of the Graduate College and the dean of the applicant's proposed college on a case-by-case basis and will be granted on an extremely limited basis when the situation warrants. To initiate the appeal process, send a letter of request to the Graduate Admissions Office. The exceptions to the baccalaureate degree requirement pertain to the ~~3 + 2 joint bachelor's/graduate degree programs offered by the College of Business~~several accelerated graduate degree programs, students enrolled in the Doctor of Pharmacy program, and those students participating in an approved articulated program of study offered by Marshall University and a collaborating accredited institution of higher education. Students who have previously taken graduate coursework at another institution must submit all transcripts and also meet undergraduate and examination requirements. Poor academic performance in prior graduate work may serve as the basis for the denial of admission to Marshall University Graduate College, at the discretion of the faculty.

...

ACCELERATED ~~MASTER'S~~ GRADUATE DEGREE OPTIONS

Marshall University offers an accelerated path through a number of its master's and doctoral degree programs. We encourage qualified undergraduates to consider participating in an Accelerated Graduate Degree (AGD) option ~~doing an Accelerated Master's Degree (AMD). Accelerated Master's Degrees are currently offered in Criminal Justice, Geography, Political Science, Psychology, and Sociology.~~as it allows them to complete the requirements for the baccalaureate and graduate degree in less time and at lower cost.

Undergraduates accepted into an ~~AMD~~ AGD program can begin taking graduate coursework ~~in~~ during their senior year ~~up to a maximum of 12 hours in place of electives. Students reduce the number of hours required to complete the Bachelor's degree by the number of graduate hours they complete (up to a maximum of 12). They must meet all other degree requirements for their Bachelor's degree while they work on their Master's degree. None of the credit hours used for the Bachelor's degree can be counted toward the Master's degree.~~ Programs offering an accelerated master's degree option may allow up to 12 hours of graduate level course work. Programs offering an accelerated doctoral degree option may allow up to 18 hours of graduate level course work. ~~:~~

Programs may use one of two models for the AGD option. For those offering a 3+ graduate option, the department may allow specified graduate-level courses to double-count as fulfilling a portion of the bachelor's and master's degree requirements. For those offering an accelerated graduate degree option, the department will specify the graduate-level courses that to double-count as fulfilling a portion of the bachelor's and master's degree requirements and those graduate-level courses that will serve as electives for completion of the baccalaureate degree but not the graduate degree. Each program offering a AGD will clearly list how students may count courses for both degrees in the description of the degree options presented subsequently in this catalog~~Graduate coursework/credit will appear ONLY on the graduate transcript, and graduate course grades will be calculated at the graduate level. The undergraduate transcript will indicate that graduate courses were used to fulfill the AMD requirement.~~

Advantages of an Accelerated Degree

- complete the Bachelor's degree with ~~up to 12~~ fewer credit hours, (Note: Students must meet all other degree requirements for the Bachelor's degree);
- begin work on the ~~master's~~ graduate degree during the senior year;
- complete ~~up to 12~~a portion of graduate credits ~~at~~ paying undergraduate tuition rates;
- earn a bachelor's and ~~master's~~ graduate degree in less time.

Eligibility Requirements for Accelerated ~~Master's~~ Graduate Degree ~~program~~

- must have completed at least 90 hours toward the bachelor's degree;
- must have at least a 3.30 overall undergraduate GPA;
- must have at least a 3.30 GPA in the major;
- must meet the admission requirements of the chosen master's degree program. (Note: ~~AMD~~ AGD programs may have admission requirements that differ from the admission requirements for the regular master's degree. For example, some departments might waive the required admission test, such as the GRE, GMAT or Miller Analogies. Students should check with the chosen master's degree program.)

How to Apply

1. During the junior or senior year, eligible students should meet with their undergraduate advisor and the Director of Graduate Studies of their chosen master's degree program to develop an ~~AMD~~ AGD Plan of Study. The Plan of Study form is available from the Graduate College office or online at the Graduate College website. The completed, signed, and approved Plan of Study must be submitted to the Graduate College. Any changes to the ~~AMD~~ AGD Plan of Study must be approved by the undergraduate advisor and Director of Graduate Studies and submitted in writing to the Dean of the Graduate College.
2. The student's acceptance into the ~~AMD~~ AGD program is subject to the approval of the Plan of Study by the Dean of the Graduate College.

3. Students accepted into the ~~AMD~~ AGD program should apply for admission to the chosen master's degree program for the first semester after the bachelor's degree is awarded. Applications should be submitted during the last semester of the senior year.

Requirements for Continuation in the ~~AMD~~ AGD Degree Program
Students must maintain a minimum GPA of 3.0 for all graduate credit toward their master's degree program.

Withdrawal from the ~~AMD~~AGD
A student may withdraw at any time from an approved ~~AMD~~ AGD program by informing the undergraduate advisor, the Director of Graduate Studies, and the Dean of the Graduate College in writing. A student's status will then revert to the standard undergraduate degree program. Any graduate hours earned must be approved for use in fulfillment of bachelor's degree requirements by the student's Undergraduate Dean.

From Undergraduate to Graduate Student
Beginning with the semester after the student has earned the bachelor's degree and has been accepted into a master's degree program, the student is enrolled in the Graduate College and is assessed tuition and fees at the graduate rate. All rules regarding graduate education will apply to the student once admitted into the master's degree program.

Master's Programs that offer the ~~AMD~~AGD
Criminal Justice
Geography
Health Informatics
Political Science
Psychology
Sociology

...

...

FOUR-PLUS-~~ONE~~ DEGREE PROGRAMS
See Accelerated ~~Master's~~ Graduate Degree Program.

...

THREE-PLUS-~~TWO~~ PROGRAMS

See Accelerated ~~Master's~~ Graduate Degree Program. ~~and/or degree requirements section of the College of Business.~~

...

## ADMISSION TO THE GRADUATE COLLEGE

Admission to the Graduate College is based on receipt of a baccalaureate degree from an accepted, regionally accredited college or university, the Grade Point Average, the scores on required Admissions examinations and the information provided on the "Application for Graduate Admissions" form.* The receipt of a bachelor's degree from an accepted, regionally accredited college or university is the basic requirement for admission as a graduate student to Marshall University. An applicant who holds a bachelor's degree from an institution that is not regionally accredited may file an appeal to request a waiver of this requirement. Appeals will be reviewed by the Dean of the Graduate College and the dean of the applicant's proposed college on a case-by-case basis and will be granted on an extremely limited basis when the situation warrants. To initiate the appeal process, send a letter of request to the Graduate Admissions Office. The exceptions to the baccalaureate degree requirement pertain to the several accelerated graduate degree programs, students enrolled in the Doctor of Pharmacy program, and those students participating in an approved articulated program of study offered by Marshall University and a collaborating accredited institution of higher education. Students who have previously taken graduate coursework at another institution must submit all transcripts and also meet undergraduate and examination requirements. Poor academic performance in prior graduate work may serve as the basis for the denial of admission to Marshall University Graduate College, at the discretion of the faculty.

...

## ACCELERATED GRADUATE DEGREE OPTIONS

Marshall University offers an accelerated path through a number of its master's and doctoral degree programs. We encourage qualified undergraduates to consider participating in an Accelerated Graduate Degree (AGD) option as it allows them to complete the requirements for the baccalaureate and graduate degree in less time and at lower cost.

Undergraduates accepted into an AGD program can begin taking graduate coursework during their senior year. Programs offering an accelerated master's degree option may allow up to 12 hours of graduate level course work. Programs offering an accelerated doctoral degree option may allow up to 18 hours of graduate level course work.

Programs may use one of two models for the AGD option. For those offering a 3+ graduate option, the department may allow specified graduate-level courses to double-count as fulfilling a portion of the bachelor's and master's degree requirements. For those offering an accelerated graduate degree option, the department will specify the graduate-level courses that to double-count as fulfilling a portion of the bachelor's and master's degree requirements and those graduate-level courses that will serve as electives for completion of the baccalaureate degree but not the graduate degree. Each program offering a AGD will clearly list how students may count

courses for both degrees in the description of the degree options presented subsequently in this catalog

Advantages of an Accelerated Degree
- complete the Bachelor's degree with fewer credit hours, (Note: Students must meet all other degree requirements for the Bachelor's degree);
- begin work on the graduate degree during the senior year;
- complete a portion of graduate credits paying undergraduate tuition rates;
- earn a bachelor's and graduate degree in less time.

Eligibility Requirements for Accelerated Graduate Degree
- must have completed at least 90 hours toward the bachelor's degree;
- must have at least a 3.30 overall undergraduate GPA;
- must have at least a 3.30 GPA in the major;
- must meet the admission requirements of the chosen master's degree program. (Note: AGD programs may have admission requirements that differ from the admission requirements for the regular master's degree. For example, some departments might waive the required admission test, such as the GRE, GMAT or Miller Analogies. Students should check with the chosen master's degree program.)

How to Apply
1. During the junior or senior year, eligible students should meet with their undergraduate advisor and the Director of Graduate Studies of their chosen master's degree program to develop an AGD Plan of Study. The Plan of Study form is available from the Graduate College office or online at the Graduate College website. The completed, signed, and approved Plan of Study must be submitted to the Graduate College. Any changes to the AGD Plan of Study must be approved by the undergraduate advisor and Director of Graduate Studies and submitted in writing to the Dean of the Graduate College.
2. The student's acceptance into the AGD program is subject to the approval of the Plan of Study by the Dean of the Graduate College.
3. Students accepted into the AGD program should apply for admission to the chosen master's degree program for the first semester after the bachelor's degree is awarded. Applications should be submitted during the last semester of the senior year.

Requirements for Continuation in the AGD Degree Program
Students must maintain a minimum GPA of 3.0 for all graduate credit toward their master's degree program.

Withdrawal from the AGD

A student may withdraw at any time from an approved AGD program by informing the undergraduate advisor, the Director of Graduate Studies, and the Dean of the Graduate College in writing. A student's status will then revert to the standard undergraduate degree program. Any graduate hours earned must be approved for use in fulfillment of bachelor's degree requirements by the student's Undergraduate Dean.

From Undergraduate to Graduate Student
Beginning with the semester after the student has earned the bachelor's degree and has been accepted into a master's degree program, the student is enrolled in the Graduate College and is assessed tuition and fees at the graduate rate. All rules regarding graduate education will apply to the student once admitted into the master's degree program.

Master's Programs that offer the AGD
Criminal Justice
Geography
Health Informatics
Political Science
Psychology
Sociology

...

...

FOUR-PLUS DEGREE PROGRAMS
See Accelerated Graduate Degree Program.

...

THREE-PLUS- PROGRAMS
See Accelerated Graduate Degree Program.

...

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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: COHP | Dept/Division: Health Informatics | Alpha Designator/Number: HP 610 | (•) Graded ( ) CR/NC

Contact Person: Dr. Girmay Berhie | Phone: 304-696-2718

**NEW COURSE DATA:**

New Course Title: Data Analytics Tools for Healthcare

Alpha Designator/Number: HP6100

Title Abbreviation: Analytics for healthcare (Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
Data analytic tools useful in healthcare data analysis and healthcare administrative decision-making including health data analysis, Visualization, and reporting techniques

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

Prerequisite(s): Graduate Status | Credit Hours: 3

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

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

| | |
|---|---|
| Dept. Chair/Division Head Girmay Berhie | Date 09/10/2018 |
| Registrar | Date 9/13/18 |
| College Curriculum Chair | Date 9/20/18 |
| Graduate Council Chair Lori Kowaud | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: COHP | Department/Division: Health Informatics | Alpha Designator/Number: HP 610

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.

Dr. Girmay Berhie

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 deparment(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.

The health Informatics Department needs to acquire one faculty member with a 9-month salary in the range of 50,000 to 60,000. This position will also be required for other Health Informatics department responsibilities aside from this course. The responsibilities will include being a Health Informatics Practicum Coordinator, Health Informatics program promotion, student advising and recruitment, and other administrative responsibilities. As such, this position will need to be filled by June 30th, 2019.

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

Please attached syllabus.

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

Please attached syllabus.

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

https://www.lynda.com/Tableau-tutorials/Welcome/500540/545449-4.html
https://vle.sas.com/course/view.php
Cloud Computing in Healthcare by Neha Dubey, Sangeeta Vishwakarma, Department of Computer Application, Sardar Patel Institute of Technology

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

Recorded Lecture/ Online Course
Instructor Guided Content with Student-Driven Learning
Discussion Boards

# Request for Graduate Course Addition - Page 4

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

Midterm Exam
Homework Projects
Discussion Board Posts
Final 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 syllabus.

# Request for Graduate Course Addition - Page 5

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 Health Informatics

Course Number and Title HP 610 Data Analytics Tools for Healthcare

Catalog Description: Data analytic tools useful in healthcare data analysis and healthcare administrative decision-making including health data analysis, Visualization, and reporting techniques.

Prerequisites: Graduate Status

First Term Offered: Spring 2019

Credit Hours: 3

*I'd rather attempt to do something great and fail than to attempt to do nothing and succeed.*

*~Robert H. Schuller*

| ***Course Title/Number*** | **HP 610 – Data Analytics Tools for Healthcare** |
|---|---|
| *Semester/Year* | Spring 2019 |
| *Days/Time* | Online Course – No Meeting times or dates |
| *Location* | Online |
| *Instructor* | Girmay Berhie, PhD, MSW, MI-IS |
| *Office* | Gullickson Hall (GH) 107 |
| *Phone* | (304) 696-2718 |
| *Email* | berhie@marshall.edu |
| *Office/Hours* | By Appointment; Open communication via email at any time |
| *University Policies* | By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to http://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 |

| ***Course Description from Catalog*** |
|---|
| Data analytic tools useful in healthcare data analysis and healthcare administrative decision-making including health data analysis, Visualization, and reporting techniques. |

| *Student Learning Outcome (Students will...)* | Practiced by: | Assessed by: |
|---|---|---|
| *Be able to understand data analytics including terms, importance and types of data analytics in healthcare domain.* | Reading assignments, Homework | Homework, Projects, Midterm |
| *Be able to understand and apply SAS analytics techniques in healthcare data.* | | |
| *Be able to understand and apply Tableau visualization techniques in healthcare data.* | | |
| *Be able to summarize, analyze, and report results in clear and coherent form using analytical tool.* | | |
| *Be able to understand the analytic results and use for decision making* | | |
| *Be able to understand cloud computing architecture, infrastructure, pros and cons in healthcare.* | | |
| *Be able to understand meaningful use stage 3* | | |

| ***Required Texts, Additional Reading, and Other Materials*** | |
|---|---|
| | https://www.lynda.com/Tableau-tutorials/Welcome/500540/545449-4.html |
| | https://vle.sas.com/course/view.php |
| | **Cloud Computing in Healthcare** by Neha Dubey, Sangeeta Vishwakarma, Department of Computer Application, Sardar Patel Institute of Technology |

***Health Statistics & Data Resources:***

- *http://guides.lib.berkeley.edu/publichealth/healthstatistics/rawdata*
- *https://www.nlm.nih.gov/hsrinfo/datasites.html*
- *http://data.worldbank.org/topic/health*

***Articles Referencing HCUP Data***

| ***Course Requirements/Due Dates*** | | |
|---|---|---|
| **Discussion Board Posts**<br>Every week there will be a discussion board post due on the assigned reading for that week. | | |
| **Homework**<br>There will be homework assignments on each major topic, and will utilize health care data sets. | | |
| *#* | Description | Due beginning of: |
| *1* | Introduction | 3rd Week |
| *2* | SAS analytics in healthcare data | 5th Week |
| *3* | Tableau Visualization In healthcare data | 7th Week |
| *4* | Cloud Computing Infrastructure and analysis | 10th Week |

| | | |
|---|---|---|
| *5* | Meaningful Stage 3 | 11th Week |
| *6* | REDCap | 13th Week |
| *7* | Public health Data analysis, Visualization and Documentation | 15th Week |

**Mid-Term: Due by Midnight Monday of the 9th week of class.**
There will be a take home exam that will include multiple choice, t/f, and problem solving questions.

**Project Proposal**: Must have an explicit detailed write-up of planned project

**Project Rough-Draft:** Require all parts of the Final Project except Conclusion/Recommendations.

**Final Project: Due by Midnight the last day of class.**
There will be a final project in where the student will elect a project or be given a project that utilizes a healthcare data set. The project submission will include:

- *Introduction*
- *Hypothesis*
- *Methodology*
- *Findings*
- *Conclusion/Recommendation*
- *Must make use of statistical software.*

| ***Grading Policy*** | |
|---|---|
| *A* | 90-100% |
| *B* | 80-89% |
| *C* | 70-79% |
| *F* | Below 70% |
| ***Activities & Points*** | |
| *10%* | Discussion Board Posts |
| *30%* | Homework Assignments |
| *10%* | Mid-Term |
| *10%* | Project Proposal |
| *10%* | Project Rough Draft |
| *20%* | Final Project |

**Late Assignments will be deducted 10% for each day they are turned in late.**

100% credit will be given for completing all aspects of the assignment correctly. Any points deducted will have an accompanying explanation.
10% extra credit can be earned on any assignment in which a student goes above and beyond the requirements or produces otherwise exceptional work.

| ***Attendance Policy*** |
|---|
| Online class: Not applicable. |

| Week | Topics |
|---|---|
| 1 | Chapter 1 Data analytics in Healthcare<br>1.1 Introduction to data analytics<br>1.2 Data analytics terms<br>1.3 The role of Data analytics in healthcare |
| 2 | 1.4 Types of Data analytics<br>1.4.1 Descriptive<br>1.4.2 Diagnostic<br>1.4.3 Predictive<br>1.4.3 Prescriptive<br>1.5 Main Databases used in the healthcare industry |
| 3 | Chapter 2 Tableau 10 Essential Training<br>2.1 Introducing Tableau<br>2.2 Managing Data Sources and Visualization<br>2.3 Managing Tableau worksheets and workbooks<br>2.4 Creating custom calculation and fields<br>2.5 Analyzing Data using statistical tools |
| 4 | 2.6 Defining Groups and sets<br>2.7 Creating and pivoting crosstabs<br>2.8 Formatting Tableau Visualization<br>2.9 Creating basic charts<br>2.10 Annotating and formatting charts<br>2.11 Mapping Health data to its Geographic location<br>2.12 Creating dashboards and actions |
| 5 | Chapter 3 SAS for Health Data visualization<br>3.1 SAS Essentials<br>3.1.1 using SAS programing tools<br>3.1.2 understanding SAS syntax<br>3.2 Accessing Data from different Healthcare Databases<br>3.2.1 Understanding Types of SAS data<br>3.2.2 Accessing Data Through Libraries<br>3.2.3 Importing Data into SAS from healthcare Databases |
| 6 | 3.3 Exploring and Validating Data<br>3.3.1 Exploring data with procedures<br>3.3.2 Filtering Rows<br>3.3.3 Formatting Columns<br>3.3.4 Sorting and Removing Duplicates |
| 7 | 3.4 Preparing the Data<br>3.4.1 Reading and Filtering Data Using DATA steps to create SAS Data set |

| | |
|---|---|
| | 3.4.2 Computing New Columns<br>3.4.3 Conditional Processing |
| ***8*** | 3.5 Analyzing and Reporting on Data<br>3.5.1 Enhancing report with Titles, Footnotes and Labels<br>3.5.2 Creating Frequency Reports<br>3.5.3 Creating Summary Reports and Data<br>3.6 Exporting Results<br>3.6.1 Exporting report to excel<br>3.6.2 Exporting report to PowerPoint<br>3.6.3 Exporting report to pdf |
| ***9*** | Chapter 4 Cloud Analytics in Healthcare<br>4.1 Introduction<br>4.2 Cloud computing Architecture<br>4.3 Cloud Infrastructure<br>4.4 Pros and Cons of cloud in healthcare |
| ***10*** | Midterm Due |
| ***11*** | Spring Break |
| ***12*** | Chapter 5 Business Intelligence in Healthcare |
| ***13*** | Chapter 6 REDCap database |
| ***13*** | Chapter 7 AI & Machine Learning |
| ***14*** | Thanks, Giving Break |
| ***15*** | Chapter 8 Meaningful Use Stage 3 |
| ***16*** | Final Project Due |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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: COHP Dept/Division: SOK-Athletic Trainin Alpha Designator/Number: HS 657 (●) Graded ( ) CR/NC

Contact Person: Zach Garrett, DHSc, ATC Phone: 304-696-2924

**NEW COURSE DATA:**

New Course Title: Advanced Training/Certifications

Alpha Designator/Number: HS 657

Title Abbreviation: ADV TRN/CERTS

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)

This course allows the student to participate in advanced training and certification courses such as the Functional Movement Screening, Performance Enhancement Specialist, and others that may be offered each year.

Co-requisite(s):

First Term to be Offered: Spring 2019

Prerequisite(s): Instructor Permission

Credit Hours: 1-3

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

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

| | |
|---|---|
| Dept. Chair/Division Head | Date 9/12/18 |
| Registrar 5 10 9 13 | Date 9-19-18 |
| College Curriculum Chair | Date 9/20/18 |
| Graduate Council Chair | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: COHP | Department/Division: SOK-Athletic Training | Alpha Designator/Number: HS 657

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.

Dr. Joe Beckett, Dr. Mark Timmons, Dr. Zach Garrett, Dr. Suzanne Konz, Dr. Gary McIlvain

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 deparment(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)

See Attached

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

See Syllabus

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

See Bib/Syllabus.

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

Lecture, Labs

# Request for Graduate Course Addition - Page 4

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

Quizzes, Presentation, Certification Examinations, Oral Practicals

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

N/A

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

See attached Syllabus.

# Request for Graduate Course Addition - Page 5

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: SOK-Athletic Training
Course Number and Title: HS 657 Advanced Training/Certifications
Catalog Description: This course allows the student to participate in advanced training and certification courses such as the Functional Movement Screening, Performance Enhancement Specialist, and others that may be offered each year.
Prerequisites: ~~None~~ Instructor Permission
First Term Offered: Spring 2019
Credit Hours: 1-3

**Course:** HS657: Advance Training/Certifications
**Time/Location:** TBD; GH203
**Instructor:** Dr. Zach Garrett, AT, ATC
**Office:** Gullickson Hall 203D
**Office Hours:** MWF, by appointment.

**Term:** Spring 2019
**Email:** garrett46@Marshall.edu
**Mail:** GH108 **Phone:** 304-696-2924

**Texts:** Will Vary

**Credit Hours: 3**
**Prerequisites:** Instructor Permission

**Course Catalog Description:** This course allows the student to participate in advanced training and certification courses such as the Functional Movement Screening, Performance Enhancement Specialist, and others that may be offered each year.

**University Policies**

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: http://www.marshall.edu/academic-affairs/policies/ )

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

**Course Student Learning Outcomes**

| Learning Outcomes: | Outcome Practice: | Outcome Assessment: |
|---|---|---|
| Students will apply and interpret content to assess patient status, progress, and change using outcome instruments. | • Learning Modules<br>• Labs | • Skills Completion<br>• Exam completion |
| Students will define evidence-based practice and determine the effectiveness and efficacy of an athletic training intervention/certification utilizing those concepts. | • Labs<br>• Learning Modules | • Skills Completion<br>• Exam Completion |
| The student will teach at least one course/in-service covering the material learned during the course. | • Learning Modules<br>• Labs | • Skills Completion<br>• Presentation Development |
| Students will create a learning lab. | • Learning Modules<br>• Labs | • Presentation Development |

**Attendance policy:** Mandatory attendance for live lectures and labs.

**Social Justice:** No one will be discriminated against on the basis of race, sex, ethnicity, age, sexual orientation, social class, abilities, or differing viewpoints. Each student will be viewed as a valuable part of this class.

**Wireless Apparatus/Electronic Devices:** All electronic devices (computers, phones, pagers, games, IPods, etc.) must be turned off at the beginning of each class unless the instructor specifically permits them for an in-class assignment. If a special circumstance arises (e.g. family emergency), notify the instructor before class to obtain permission to keep an electronic device on during class time.

**Students with Disabilities**
For University policies and the procedures for obtaining services, please go to MU Academic Affairs: University Policies and read the section, **Students with Disabilities**. (URL: http://www.marshall.edu/academic-affairs/policies/ )

**Honor code:** Students found to have violated the honor code or plagiarize will be penalized; they will receive a zero on the assignment for the first offense; a second offense will result in a zero on the assignment and a two letter grade reduction in the course; a third offense is an automatic F in the course and recommended expulsion. The student will also be subject to dismissal from the athletic training program and/or Marshall University. For more information on Marshall's Academic Dishonesty policy go to: https://www.marshall.edu/academic-affairs/policies/ All offenders will be reported to the School of Kinesiology Chair and ATP Director as per the program disciplinary policy.

**Assessments:**

**Objective I Student In-service Presentation/Lab utilizing content from their Certification. (1 hours credit)**

The student will present their in-service to students and the instructor in an athletic training course. Specific objectives are as follows:

1. Meet with instructor prior to the class to discuss specific aims for the students in-service/presentation.
2. Assist students in understanding lab and courses material using computer and practical lab methods.
3. Teach at least one segment of a course, as per the assignment of each instructor.
5. This objective will be deemed complete upon meeting objectives 1 and 2.

**Objective II Student will prepare and take a Certification Exam. (2 hours credit)**
The student will prepare and take their certification Exam. The student will complete modules, quizzes, and assignments from the in-class or online course during the semester.

**Grading:**

| | |
|---|---|
| Objective 1 Completion | 100 points |
| Objective 2 Completion | 200 points |
| **Total Points** | **300 points** |

**Course evaluation (%):**

| | |
|---|---|
| **A** | 100-93 |
| **B** | 92.9-85 |
| **C** | 84.9-75 |
| **D** | 74.9-65 |
| **F** | 64.9-below |

Student's successful completion of this class will be determined by the performance in lab, module completions, certification examination, and In-service presentation. The Tentative Course Schedule is as follows:

| DATE | MATERIAL COVERED | Assigned Readings | Assessment |
|---|---|---|---|
| 1-14-19 | **Lab**<br>Session 1-8-Noon | Content/Articles TBD | Demonstration |
| 1-28-19 | **Lab**<br>Session 2-8-Noon | Content/Articles TBD | Demonstration |
| 2-4-19 | **Lab**<br>Session 3-8-Noon | Content/Articles TBD | Demonstration |
| 2-11-19 | **Lab**<br>Session 4-8-Noon | Content/Articles TBD | Demonstration |
| 2-18-19 | **Lab**<br>Session 5-8-Noon | Content/Articles TBD | Demonstration |
| 2-25-19 | **Lab**<br>Session 6-8-Noon | Content/Articles TBD | Demonstration |
| 3-4-19 | **Lab**<br>Session 7-8-Noon | Content/Articles TBD | Demonstration |
| 3-11-19 | **Lab**<br>Session 8-8-Noon | Content/Articles TBD | Demonstration |

***Note. This is a sample course calendar if the course was 3 credit hours.***

**Bibliography**

Cook, G., Burton, L., Kiesel, K., Rose, G., & Bryant, M.F. (2011). *Movement Functional Movement Systems: Screening, Assessment, Corrective Strategies* (2nd ed.). On Target Publications.

Kase, K., Wallis, J., & Kase, T. (2003). *Clinical Therapeutic Applications of the Kinesio Taping Method* (2nd ed.). Toyko, Japan: Ken Ikai Co.

Basic Life Support. (2016). *BLS Provider Manual*. Retrieved from: https://ebooks.heart.org/product/bls-provider-manual-ebook50025959

Takano, H., Morita, T., Iida, H., Asada, K. I., Kato, M., Uno, K., ... & Eto, F. (2005). Hemodynamic and hormonal responses to a short-term low-intensity resistance exercise with the reduction of muscle blood f low. *European Journal of Applied Physiology*, *95*(1), 65-73.

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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: COHP | Dept/Division: Public Health | Alpha Designator/Number: PH 657 | (•) Graded ( ) CR/NC

Contact Person: Dr. Anthony Woart | Phone: (304) 696-5772

**NEW COURSE DATA:**

New Course Title: Program Evaluation

Alpha Designator/Number: P H 6 5 7

Title Abbreviation: Public Health Prog Eval

~~P R O G R A M~~ ~~E V A L U A T I O N~~

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)

This course deals with the application of research methods to evaluate public health programs and health services.

Co-requisite(s): None

First Term to be Offered: Spring 2019

Prerequisite(s): PH 621

Credit Hours: 3

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

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

| | |
|---|---|
| Dept. Chair/Division Head | Date 9/13/2018 |
| Registrar 5/2201 | Date 9/14/18 |
| College Curriculum Chair | Date 9/20/18 |
| Graduate Council Chair | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: COHP | Department/Division: Public Health | Alpha Designator/Number: PH 657

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.

Dr. Robert Lowinger

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 deparment(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)

Upon completion of the course, students will be able to:
1. Explain the major concepts, methods, and applications of evaluation research in public health care settings.
2. Critically evaluate existing public health care programs.
3. Develop an evaluation design for the evaluation of an existing public health care program
4. Present an evaluation report of a public health program in either oral or written form.

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

Week1 : Introduction to the course; Types and process of health program evaluation
Week 2: Types and process of health program evaluation
Week 3: New Perspectives in Health Program Evaluation
Week 4: Describing the Program
Week 5: Needs Assessment
Week 6: Determining Program Goals
Week 7: Formative and Process Evaluations
Week 8: Program Evaluation Designs- Quasi-Experimental and Experimental Designs
Week 9: Cost Effectiveness Analysis
Week 10: Population and Sampling
Week 11: Measurement and Data Collection
Week 12: Quantitative Data Analysis
Week 13: Qualitative and Mixed Methods Analysis
Week 14: Report Writing and Disseminating Results
Week 15: Review for Final Exam
Week 16: Final Exam

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

- Grembowski D. The Practice of Health Program Evaluation, 2nd Edition, 2016, ISBN-13: 978-1483376370
- Smith, M. The Handbook of Program Evaluation for Social Workers and Health Professionals, Oxford University Press, 2010. ISBN-13: 978-0195158434

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

Lectures, videos, discussions

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

Paper #1 Program Evaluation Critique, Paper #2 Program Evaluation Design, Oral Presentation, Midterm Exam and Final Exam.

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

Not Applicable

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


- Grembowski D. The Practice of Health Program Evaluation, 2nd Edition, 2016, ISBN-13: 978-1483376370
- Smith, M. The Handbook of Program Evaluation for Social Workers and Health Professionals, Oxford University Press, 2010. ISBN-13: 978-0195158434
- Issel, L.M. & Wells, R. Health Program Planning and Evaluation, 4th ed., 2018.
- American Evaluation Association: http://www.eval.org/
- AnSWR (Analysis Software for Word-based Records) is a free software available on the Center for Disease Control website. AnSWR can help you electronically organize your qualitative data into common categories that can be used to develop themes. The CDC website for AnSWR (found below) gives further explanation of qualitative data, how AnSWR can be used and directions for downloading the software.
http://www.cdc.gov/hiv/software/answr.htm
- Better Tools for Multi-Site Research. http://www.researchtoolkit.org/
- CDC Evaluation Working Group. http://www.cdc.gov/eval/
- Community Tool Box website at: http://ctb.ku.edu/ Resources for conducting community-based evaluations.
- Diversity Rx. A clearinghouse of information on how to meet the language and cultural needs of minorities, immigrants, refugees, and other diverse populations seeking health care (http://www.DiversityRx.org)
- Empowerment Evaluation. This is the Home Page for the Collaborative, Participatory and Empowerment topical interest group of the American Evaluation Association
(http://homepage.mac.com/profdavidf/empowermentevaluation.htm (and his blog) http://eevaluation.blogspot.com/ ).
- Health and Psychosocial Instruments: Search for finding scales to measure self-efficacy, depression and many, many other concepts. (http://healthlinks.washington.edu/contentBrowser.jsp?ctype=1&segment=H)
- The HRET Health Disparities Toolkit gives hospitals, health systems, clinics, and health plans the information and resources needed for collecting race, ethnicity, and primary language data from patients. In order to make this invaluable Toolkit more accessible to all health care providers, the Toolkit is now available free of charge. Go to (http://www.hretdisparities.org ) to access the new Toolkit.
- Health Services Research Methods (sponsored by AcademyHealth): www.HSRmethods.org
- Health Services Research Methodology Core Library Recommendations, 2007 http://www.nlm.nih.gov/nichsr/corelib/hsrmethods.html
- International Health and Evaluation: Check the Web site for "MEASURE Evaluation," which is one of five components of the "Monitoring and Evaluation to Assess and Use Results" (MEASURE) ten-year effort, funded by the U.S. Agency for International Development's (USAID) Bureau of Global Health (BGH):
http://www.cpc.unc.edu/measure/home.html
- The Knowledge Base: An Online Research Methods Textbook. This site provides all kinds of useful information on research methods that can aid in the development of evaluation designs (http://www.socialresearchmethods.net/).
- Practihc (Pragmatic Randomized Controlled Trials in HealthCare) is a European Union-funded converted action which provides open-access tools, training and mentoring to researchers in developing countries who are interested in designing and conducting pragmatic randomized controlled trials of healthcare interventions.
- http://www.practihc.org/index.htm
- Rutgers Cooperative Extension, Procedures for Program Evaluation and Research. The Web site contains basic methods for evaluating education programs and conducting surveys, with links to other sites (http://www.rce.rutgers.edu/evaluation/).
- Resources to Help You Learn and Use Stata. UCLA has a website with lots of information on how to use the Stata statistical software package, including examples of Stata data analysis and output (http://www.ats.ucla.edu/stat/stata/).

# Request for Graduate Course Addition - Page 5

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: Public Health
Course Number and Title: PH 657-~~Program Evaluation~~ Public Health Prog Eval
Catalog Description: Application of research methods to evaluate public health programs and services.
Prerequisites: PH 621- Statistical Methods I
First Term Offered: Spring 2019
Credit Hours: 3

# PH 657 Syllabus – Program Evaluation

**Spring 2019**

## Course & Instructor Information

**Course Number and Title:** PH 657-Program Evaluation
**Term/Year:** Spring 2019
**Days/Time:** TBA
**Location:** TBA
**Credit Hours:** 3
**Prerequisites**: PH 621- Statistical Methods I
**Instructor:** Dr. Robert Lowinger
**Office:** Prichard Hall 215
**Phone:** 304-696-5769
**Email:** Lowinger@marshall.edu (Preferred contact)
**Office Hours:** Monday and Wednesday 10AM- 12 noon, Tuesday and Thursday 10AM-11AM. You may also schedule an appointment with me.
**Academic Calendar:**
For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar.

***University Policies:***
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 related to Academic Dishonesty/ Excused Absence Policy for graduates/ 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 directly by going to http://www.marshall.edu/academic-affairs/?page_id=802

## Course Description: From Catalog

This course deals with the application of research methods to evaluate public health programs and health services.

## Course Outcomes

Upon completion of the course, students will be able to:
1. Explain the major concepts, methods, and applications of evaluation research in public health care settings.
2. Critically evaluate existing public health care programs.
3. Develop an evaluation design for the evaluation of an existing public health care program
4. Present an evaluation report of a public health program in either oral or written form.

| 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 |
|---|---|---|
| Objective 1. Explain the major concepts, methods, and applications of evaluation research in public health care settings.<br>1.1) Explain political, administrative, ethical, and cultural issues in evaluating health programs<br>1.2) Describe experimental, quasi-experimental, and non-experimental designs as to how they are applied in | Readings, Lecture, Group discussion | Midterm and Final exams, Critique paper, Design Paper |

| | | |
|---|---|---|
| evaluating health programs<br>1.3) Explain the purpose and applications of common descriptive and inferential statistical techniques to health program evaluation<br>1.4) Describe the major features of, and compare process and outcome evaluations of health care programs<br>1.5) List and define the major steps in health care program evaluation | | |
| Objective 2. Assess the adequacy of proposals and program evaluations designed by others.<br>2.1) Assess internal validity of health program evaluation report and be able to discuss strengths and weaknesses<br>2.2) Assess external validity of health program evaluation report and be able to discuss strengths and weaknesses | Readings, Lecture, Group discussion | Midterm and Final exams, Critique paper |
| Objective 3. Develop an evaluation design for an existing health program.<br>3.1) Describe the program's objectives and characteristics, conceptual model of cause and effect and implementation model<br>3.2) Develop a needs assessment for the program<br>3.3) Develop appropriate evaluation questions<br>3.4) Develop the study design for answering each evaluation question<br>3.5) Develop the sampling plan to collect data for the design selected<br>3.6) Develop operational definitions of the predictors and outcomes and the specific measures to be used for the proposed evaluation<br>3.7) Develop a plan for the qualitative and quantitative analysis of the data including mock tables. | Readings, Lecture, Group discussion | Midterm and Final exams, Design Paper |
| Objective 4. Present a proposed health program evaluation in the form of an appropriate and actionable briefing. | Lecture, Readings, Group Discussion | Oral Presentation |

## Required Texts/Readings/Other Materials

- Grembowski D. *The Practice of Health Program Evaluation*, 2nd Edition, 2016, ISBN-13: 978-1483376370
- Smith, M. *The Handbook of Program Evaluation for Social Workers and Health Professionals*, Oxford University Press, 2010. ISBN-13: 978-0195158434

**Additional References:**

- Issel, L.M. & Wells, R. Health Program Planning and Evaluation, 4th ed., 2018.
- Personal computer and smartphone (iPhone or Android) are required.
- Students will be provided outlines, PowerPoint slides and selected recordings and readings.
- American Evaluation Association: http://www.eval.org/
- AnSWR (Analysis Software for Word-based Records) is a free software available on the Center for Disease Control website. AnSWR can help you electronically organize your qualitative data into common categories that

can be used to develop themes. The CDC website for AnSWR (found below) gives further explanation of qualitative data, how AnSWR can be used and directions for downloading the software. http://www.cdc.gov/hiv/software/answr.htm

- Better Tools for Multi-Site Research. http://www.researchtoolkit.org/
- CDC Evaluation Working Group. http://www.cdc.gov/eval/
- Community Tool Box website at: http://ctb.ku.edu/ Resources for conducting community-based evaluations.
- Diversity Rx. A clearinghouse of information on how to meet the language and cultural needs of minorities, immigrants, refugees, and other diverse populations seeking health care (http://www.DiversityRx.org)
- Empowerment Evaluation. This is the Home Page for the Collaborative, Participatory and Empowerment topical interest group of the American Evaluation Association (http://homepage.mac.com/profdavidf/empowermentevaluation.htm (and his blog) http://eevaluation.blogspot.com/ ).
- Health and Psychosocial Instruments: Search for finding scales to measure self-efficacy, depression and many, many other concepts. (http://healthlinks.washington.edu/contentBrowser.jsp?ctype=1&segment=H)
- The HRET Health Disparities Toolkit gives hospitals, health systems, clinics, and health plans the information and resources needed for collecting race, ethnicity, and primary language data from patients. In order to make this invaluable Toolkit more accessible to all health care providers, the Toolkit is now available free of charge. Go to (http://www.hretdisparities.org ) to access the new Toolkit.
- Health Services Research Methods (sponsored by AcademyHealth): www.HSRmethods.org
- Health Services Research Methodology Core Library Recommendations, 2007 http://www.nlm.nih.gov/nichsr/corelib/hsrmethods.html
- International Health and Evaluation: Check the Web site for "MEASURE Evaluation," which is one of five components of the "Monitoring and Evaluation to Assess and Use Results" (MEASURE) ten-year effort, funded by the U.S. Agency for International Development's (USAID) Bureau of Global Health (BGH): http://www.cpc.unc.edu/measure/home.html
- The Knowledge Base: An Online Research Methods Textbook. This site provides all kinds of useful information on research methods that can aid in the development of evaluation designs (http://www.socialresearchmethods.net/).
- Practihc (Pragmatic Randomized Controlled Trials in HealthCare) is a European Union-funded converted action which provides open-access tools, training and mentoring to researchers in developing countries who are interested in designing and conducting pragmatic randomized controlled trials of healthcare interventions.
- http://www.practihc.org/index.htm
- Rutgers Cooperative Extension, Procedures for Program Evaluation and Research. The Web site contains basic methods for evaluating education programs and conducting surveys, with links to other sites (http://www.rce.rutgers.edu/evaluation/).
- Resources to Help You Learn and Use Stata. UCLA has a website with lots of information on how to use the Stata statistical software package, including examples of Stata data analysis and output (http://www.ats.ucla.edu/stat/stata/).
- Sample size/Power Calculations: The name of the software is GLIMMPSE and you can find it at: http://glimmpse.samplesizeshop.org/
- Statistics Homepage. The site can be a useful source for information about various kinds of statistical techniques (http://www.statsoft.com/textbook/stathome.html).
- STATSnetBASE. Library of statistics information. http://www.statsnetbase.com/
- Resources for monitoring and evaluating HIV/AIDS Programs: http://www.fhi.org/en/HIVAIDS/pub/guide/meprogramguide.htm

## Syllabus Information

- You have 48 hours from the time this syllabus is provided online via blackboard to identify any possible errors to the attention of the instructor of this course.

- For any given reason if you happen to download a wrong/incorrect/outdated syllabus – It is completely your responsibility to bring this to the attention of the instructor. Failure to do so and following a wrong syllabus/due dates and seeking extension/s after assignment/s are overdue will not be entertained.

## Communication

- You must use your Marshall email when communicating with me. Do not use the Course Messages or Mail (Internal) tool in Blackboard.
- FERPA rules and regulations require you to use your Marshall email when communicating about a class. I will not speak to a family member or friend on your behalf regarding coursework so kindly do not ask them to communicate with me.
- If you are confused by an email, it is the responsibility of the student to seek clarification of that email, in writing, within 24 hours. If you do not notify me within 24 hours, I will not discuss or entertain changes to that email.
- All course related announcements will be sent to your Marshall email.
- When you send the instructor an email account, turn on a "read receipt" if possible.
- It is the student's responsibility to check their email regularly (2-3) times a day and follow email instructions.

## Grading Policy

| | |
|---|---|
| Paper #1 Program Evaluation Critique | 20% |
| Paper #2 Program Evaluation Design | 35% |
| Oral Presentation | 10% |
| Midterm Exam | 15% |
| Final Exam | 15% |
| Participation | 5% |

## Course Requirements

**General Information:** The critique and design papers should be typed double-spaced not including title page, references, or illustrations/charts/tables. You are to make extensive use of textbook and assigned readings. You must also include at least 3 to 5 additional sources drawn from journal articles relevant to public health published in the last ten years. The critique paper should be about 6-8 pages; the design paper should be 10-12 pages.

**1. Paper #1**-Program Evaluation Critique - You are to read a program evaluation in the field of public health. I will put some suggested reports on Blackboard or you are free to find your own report. You must email me with the report you are planning to use by November 14, whether you use one on Blackboard or your own report. No more than one student can do the same report. You are to discuss all aspects of the program evaluation as presented in the report including the program description, program goals, needs assessment, logic model, evaluation of financial (budgetary) and management information systems, measurement of inputs and outputs, evaluation of program quality, and the design, sampling, and qualitative/quantitative/mixed methods data analysis conducted to evaluate the program. Remember that your paper should be discussing the evaluation of the program on these elements, NOT the program itself. For each of these elements you need to state the methodology used for the evaluation as well as the strengths and weaknesses of that methodology. You should end your paper with a two to three-page discussion of your overall evaluation of the work of the evaluators writing the report and suggestions for improving the evaluation of this program.

**2. Paper # 2** - Design Health Program Evaluation- In this assignment, you are to first read about a health care program for which no published program evaluation is available. For this paper you will develop an evaluation proposal for this program. Your paper will have an introduction, body, conclusion, and references. In the introduction section, you are to write a clear description of: (1) characteristics of the setting and timeline for completing the evaluation (2) the program's objectives and characteristics including a needs assessment upon which the program is based (3) the program's conceptual logical model of cause and effect (4) the conceptual logical model of the program's implementation strategy. In the body of the paper, you should provide a clear description of: (1) the evaluation's questions; and (2) the study design(s) for answering each question. The study design needs to include the population and sample, quantitative measures (e.g., survey instruments), qualitative information to be collected (e.g. interview questions), data collection plans, and data analysis plan for qualitative and quantitative information including mock tables. The conclusions section should provide an

assessment of the strengths and weaknesses of the evaluation plan you developed as well as an assessment of potential problems and obstacles you could foresee in trying to carry out this evaluation and suggestions for handling these problems/obstacles.

**3. Oral Presentation** - Each student will make one 10-minute presentation on their progress and lead a discussion, informed by key readings, on conceptual and methodological challenges encountered in their evaluation projects. The presentations are expected to benefit the class in two ways. First, each student will receive comments about their projects from the class and the instructor, which may lead to improvements in the final design papers. Second, each presentation may reveal evaluation methods and insights that inform the design of other evaluations done by your classmates.

**4. Midterm and Final Exams**- The midterm and final exam will be non-cumulative take-home assessing all learning outcomes for the course. They will contain a series of essays from which you will select 6 to answer with a response required of approx. one page for each essay. The essays will target your understanding of aspects of the material that you might not have covered in your papers. For example, you might be asked specifically to address how cultural issues impact the formation of health program goals and objectives.

## Grading Scale

**A** (90 – 100); **B** (80 – 89); **C** (70 – 79); **D** (60 – 69); **F** (<60)

- No curving; grades ending in .5 will be rounded up; grades ending in .4 or lower will round down.
- No extra credit will be offered.
- No incompletes will be given in this class unless an extraordinary circumstance, accompanied by a University Excused Absence, warrants it. Please make sure you inform the instructor immediately if applicable.
- Turning in late work or late posts will result in loss of points.

***The Honor Code – Academic Dishonesty***

– is a very important and serious matter, so please do not jeopardize your grades or academic status by violating it. A violation of the Honor Code involves cheating, plagiarism, collusion, academic negligence, or other acts of dishonesty in the area of academics. The most frequent violations of the Honor Code are cheating, collusion and plagiarism:

- Taking credit for work another person has done.
- Using notes, textbooks, or reference materials on a test, quiz, or exam, unless the professor specifically permits the use.
- Giving or receiving facts or ideas either verbally or in writing during a test.
- Working on an assignment with others for any work meant to be completed individually.

*The professor will, without exception, immediately report any perceived violation to the Marshall University Honor Council.*

## Graded Activities

***Late Work***

- No makeup exams or extensions will be provided unless you supply a University Excused Absence.

***Athletes***

- You must provide the instructor a copy of your travel and game schedule at the beginning of the semester.
- Assignments will not be accepted late unless prior arrangements have been made with the instructor.

***Activities - Assessments***

- The Course Schedule contains topic information and activity due dates (located on Syllabus).
- Problem sets and exams are not open book.

## University Policy on Disability

Marshall University is committed to equal opportunity in education for all students, including those with physical, learning and psychological disabilities. University policy states that it is the responsibility of student with disabilities to contact the Office of Disability Services (ODS) in Prichard Hall 117 (304) 696-2271 to provide documentation of their disability. Following this, the ODS Director will send a letter to each of the students' instructors outlining the academic accommodations he/she will need to ensure equality in class experiences, outside assignments, testing and grading. The instructor and student will meet to discuss how the accommodation(s) requested will be provided.

### ATTENDANCE POLICY

| This class meets weekly. Attendance is mandatory. More than 2 unexcused absences will result in a penalty of full grade deducted from the final grade. |
|---|

## Technical Skills

Minimum Technical Skills required:

- Microsoft Office (Word and PowerPoint)
- Marshall email access and use
- Adobe Reader
- General understanding of Blackboard and how to navigate
- High-speed internet access and access to a computer on a regular basis (Please do not attempt to complete this course will a tablet or mobile device alone).
- Students may be required to submit assignments as Microsoft Word documents (.docx), using the most recent Microsoft Office suite. Office 365 is available at no extra charge to students enrolled at MU. For information visit Marshall IT: Office 365 (URL: http://www.marshall.edu/it/office365/).
- See the Tech Support tab in Blackboard for additional information on browsers, technology, and apps.

### Technology Assistance

- If you have technical problems, please contact one or more of the following:
- Blackboard Support Center (URL: http://marshall.edusupportcenter.com)
- Marshall Information Technology (IT) Service Desk (Help Desk) (URL: http://www.marshall.edu/it/departments/it-service-desk/ )
  - Huntington: (304) 696-3200
  - South Charleston: (304) 746-1969
  - Email the IT Service Desk (itservicedesk@marshall.edu)

## Marshall University E-Mail Accounts

You must have and use your MU email account. Your personal email accounts will not be used for official communication with Marshall University programs and personnel. You may redirect your MU email to your own personal email account, but you must sign in to your MU account to do that. Marshall University uses Office 365 email. For more information, visit Marshall IT: Office 365 (URL https://www.marshall.edu/it/office365/).

### *Marshall University Writing Center*

If you would like assistance with your writing, the Writing Center is available to all students, including distance students. The Writing Center is a free tutoring service, provided by the English Department, in conjunction with Reference

Librarians. If you need help with any aspect of writing, including citation methods, or if you are struggling to understand how library resources or reference works, you should contact the Writing Center:

http://www.marshall.edu/writingcenter/

## Course Schedule

| Week | Date | Topic | Readings |
|---|---|---|---|
| 1 | TBD | Introduction to the course; Types and process of health program evaluation | Smith, ch. 1 |
| 2 | TBD | Types and process of health program evaluation | Smith, ch. 2<br>• Knowlton W., Phillips, CC. The Logic Model Guidebook: Better Strategies for Great Results. (2nd Edition). Thousand Oaks, CA, Sage Publications, 2013.<br><br>Ball, Lauren; Ball, Dianne; Leveritt, Michael; Ray, Sumantra; Collins, Clare; et al., Using logic models to enhance the methodological quality of primary health-care interventions: guidance from an intervention to promote nutrition care by general practitioners and practice nurses **Australian Journal of Primary Health; Collingwood** Vol. 23, Iss. 1, (Feb 2017): 53-60. DOI:10.1071/PY16038 |
| 3 | TBD | New Perspectives in Health Program Evaluation | Smith, ch. 3<br>Abraham Wandersman,<br>[1]Kassandra Ann Alia, Brittany Cook, and Rohit Ramaswamy<br>BMJ Qual Saf. 2015 Oct; 24(10): 645–652.<br>Published online 2015 Jul 15. doi: 10.1136/bmjqs-2014-003525.<br>Integrating empowerment evaluation and quality improvement to achieve healthcare improvement outcomes.<br>https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4602254/<br>Glasgow, R. E. & Emmons, K. M. (2007). How can we increase translation of research into practice? Types of evidence needed. Annual Review of Public Health, 28, 413-433. doi:10.1146/annurev.publhealth.28.021406.144145 |
| 4 | TBD | Describing the Program | Smith, Ch. 4<br>CDC manual pages 21-25,<br>https://www.cdc.gov/eval/guide/cdcevalmanual.pdf |
| 5 | TBD | Needs Assessment | Moscosoa, Chavesa , Vidalb, & Argilagac, Reporting a program evaluation: Needs, program plan, intervention, and decisions, International Journal of Clinical and Health Psychology (2013) 13, 58–66. http://www.elsevier.es/en-revista-international-journal-clinical-health-psychology-355-articulo-reporting-program-evaluation-needs-program-X1697260013849765?referer=buscador<br><br>Thein, K., Zaw, K. T., Teng, R. E., Liang, C., & Julliard, K. (2009). Health needs in Brooklyn"s Chinatown: A pilot assessment using Rapid Participatory appraisal. *Journal of Health Care of the Poor and Underserved, 20,* 378-394. doi:10.1353/hpu.0.0140<br><br>Smith, Ch. 5 |

| | | | |
|---|---|---|---|
| 6 | TBD | Determining Program Goals | Smith, Ch. 6 |
| 7 | TBD | Formative and Process Evaluations | Smith, Ch. 7<br>Berkowitz et al (2008). Overview of formative, process & outcome evaluation methods used in the VERB campaign. Am J Prev Med 2008, 34:6S, 224- 229). https://www.ajpmonline.org/article/S0749-3797(08)00255-9/fulltext<br><br>Forsetlund L, Talseth KO, Bradley P, Nordheim L, Bjorndal A. Many a slip between cup and lip: process evaluation of a program to promote and support evidence-based public health practice. Evaluation Review 2003;27(2):179-209. |
| 8 | TBD | Program Evaluation Designs- Quasi-Experimental and Experimental Designs | Grembowski, Ch. 6<br>Reynolds KD, West SG. A multiplist strategy for strengthening nonequivalent control group designs. Evaluation Review 1987;11:691-714.<br>Craig P, Cooper C, Gunnell, Haw S, Lawson K, Macintyre S, Ogilvie D, Petticrew M, Reeves, Sutton M, Thompson S. Using natural experiments to evaluate population health interventions: new Medical Research Council guidance. J Epidemiol Community Health 2012;66:1182-86.<br><br>Jefferson T, Demicheli V (1999). Relation between experimental and non-experimental study designs. HB vaccines: A case study. *J Epidemiol Community Health* 53:51-54. https://jech.bmj.com/content/jech/53/1/51.full.pdf |
| 9 | TBD | Cost Effectiveness Analysis<br><br>(Critique Paper is Due) | Grembowski, Ch. 6<br>Walker, D. G., & Jan, S. (2005). How do we determine whether community health workers are cost-effective? Some core methodological issues. *Journal of Community Health, 30*(3), 221-229. |
| 10 | TBD | Population and Sampling<br><br>(Midterm Exam is Due) | Grembowski, Ch. 7<br><br>Wellisch & Jordan, Sampling and Data Collection in Natl Nutrition, Am J Clin Nutr 40 1984 368-381 |
| 11 | TBD | Measurement and Data Collection | Grembowski, Ch. 8<br><br>Kozinetz CA, Warren RW, Berseth CL, Aday LA, Sachdeva R, Kirkland RT (1999). Health status of children with special health care needs: Measurement issues and instruments. *Clinical Pediatrics (Phila)* 38:525-533. |
| 12 | TBD | Quantitative Data Analysis | Grembowski, Ch. 9<br><br>Grembowski D, Milgrom PM. Increasing access to dental care among Medicaid preschoool children: the access to baby and child dentistry (ABCD) Program. *Public Health Reports.* 2000; 115(5):448-59.<br><br>https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2266968/ |

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|---|---|---|---|
| 13 | TBD | Qualitative and Mixed Methods Analysis | Grembowski, Ch. 9<br><br>Washington TA. The homeless need more than just a pillow, they need a pillar: an evaluation of a transitional housing program. Families in Society: The Journal of Contemporary Human Services 2002;83(2):18388.<br><br>Creswell JW, Klassen AC, Plano Clark VL, Smith KC for the Office of Behavioral and Social Sciences Research (OBSSR) of the National Institutes of Health (NIH). Chapter 3: The nature and design of mixed methods research, pages 4-10 only. https://obssr.od.nih.gov/training/mixed-methods-research/<br><br>Waitzkin H, Schillaci M, Willging CE. Multimethod evaluation of health policy change: an application to Medicaid managed care in a rural state. Health Serv Res. 2008;43(4):1325-47. |
| 14 | TBD | Report Writing and Disseminating Results (Oral Reports Due) | Grembowski, Ch. 10 |
| 15 | TBD | Review for Final Exam<br><br>(Design Paper is Due) | All readings listed above |
| 16 | TBD | Final Exam Due | All readings listed above |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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: COHP | Dept/Division: Public Health | Alpha Designator/Number: PH 663 | (•) Graded ( ) CR/NC

Contact Person: Dr. Anthony Woart | Phone: (304) 696-5772

**NEW COURSE DATA:**

New Course Title: Health Behavior

Alpha Designator/Number: P H 6 6 3

Title Abbreviation: H E A L T H B E H A V I O R

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
This course introduces students to the models of health behavior as it applies to public health.

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

Prerequisite(s): None | Credit Hours: 3

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

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

| | |
|---|---|
| Dept. Chair/Division Head | Date 9/13/2018 |
| Registrar 5.2201 | Date 9/14/18 |
| College Curriculum Chair | Date 9/20/18 |
| Graduate Council Chair | Date 10/22/18 |

# Request for Graduate Course Addition - Page 2

College: COHP | Department/Division: Public Health | Alpha Designator/Number: PH 663

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.

Dr. Robert Lowinger

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 deparment(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 syllabus.

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

Week1 : Introduction to the course; Health Behavior at the Individual Level
Week 2: Health Behavior at the Individual Level
Week 3: Health belief model
Week 4: Health belief model
Week 5: Theory of Reasoned Action; Theory of Planned Behavior
Week 6: Theory of Reasoned Action; Theory of Planned Behavior
Week 7: Social learning theory/social cognitive theory
Week 8: Social learning theory/social cognitive theory
Week 9: Stress, Coping, and Health Behavior
Week 10: Ecological Models of Health Behavior
Week 11: Transtheoretical Model of Behavior Change
Week 12: Transtheoretical Model : Intimate Partner Violence
Week 13: Cultural Aspects of Health Behavior
Week 14: Behavioral Economics & Health
Week 15: Review for Final Exam
Week 16: Final Exam

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

- Glanz, K., Rimer, B.K., & Lewis, F.M. (2008). Health Behavior and Health Education: Theory, Research, and Practice. (4th ed.) San Francisco, CA: Jossey-Bass.
- National Cancer Institute (2005). Theory at a Glance: A Guide for Health Promotion Practice. U.S. Department of Health and Human Services, National Institutes of Health

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

Lectures, videos, discussions

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

Oral presentation, paper submission, mid-term and final exams.

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

Not Applicable

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

1. Glanz, K., Rimer, B.K., & Lewis, F.M. (2008). Health Behavior and Health Education: Theory, Research, and Practice. (4th ed.) San Francisco, CA: Jossey-Bass.
2. National Cancer Institute (2005). Theory at a Glance: A Guide for Health Promotion Practice. U.S. Department of Health and Human Services, National Institutes of Health
3. Cynthia D. Belar, William W. Deardorff, (2009). Clinical Health Psychology in Medical Settings, American Psychological Association.
4. Baum, A, Revenson, TA, & Singer, JE. Handbook of Health Psychology. New York: Psychology Press; 2012.
5. Brannon, L, Updegraff, JA, & Feist, J. Health Psychology: An Introduction to Behavior and Health. Boston, MA: Cengage Learning; 2014.
6. Faith MS, Fontaine KR, Baskin ML, Allison DB. (2007) Toward the reduction of population obesity: macrolevel environmental approaches to the problems of food, eating, and obesity. Psych Bull. , 133:205–26

# Request for Graduate Course Addition - Page 5

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: Public Health
Course Number and Title: PH 663-Health Behavior
Catalog Description: This course introduces students to the models of health behavior as it applies to public health.
Prerequisites: None
First Term Offered: Spring 2019
Credit Hours: 3

# PH 663 Syllabus – Health Behavior

**Spring 2019**

## Course & Instructor Information

**Course Number and Title:** PH 663 Health Behavior
**Term/Year:** Spring 2019
**Days/Time:** TBD
**Location:** TBD
**Credit Hours:** 3
**Prerequisites**: None
**Instructor:** Dr. Robert Lowinger
**Office:** Prichard Hall 215
**Phone:** 304-696-5769
**Email:** Lowinger@marshall.edu (Preferred contact)
**Office Hours:** Monday and Wednesday 10AM- 12 noon, Tuesday and Thursday 10AM-11AM. You may also schedule an appointment with me.
**Academic Calendar:**
For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar.

***University Policies:***
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 related to Academic Dishonesty/ Excused Absence Policy for graduates/ 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 directly by going to http://www.marshall.edu/academic-affairs/?page_id=802

## Course Description: From Catalog

This course introduces students to the models of health behavior as it applies to public health.

## Course Outcomes

Upon completion of the course, students will:

1. Understand the role of behavioral science in public health.
2. Be able to differentiate between types and functions of behavioral theories.
3. Be able to describe key elements, overall function, general utility, and appropriate application of behavioral theories/models.
4. Be able to critically evaluate current research literature in regard to strength and weakness of behavioral theory.
5. Identify controversial issues in the use of various behavioral theories/models.
6. Identify key theoretical concepts relevant to behavioral intervention in public health.
7. Understand how behavioral theory is applied in public health practice as a function of other core disciplines such as epidemiology, health services management, and environmental health.

| 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 |
|---|---|---|
| Objective 1. Provide an overview of the theoretical approaches in behavioral health science to the study | Lectures, discussions, | Term Paper, Oral Presentation, Midterm and |

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| and practice of public health. | presentation. | Final Exam. |
| Objective 2. Conceptualize and synthesize behavioral health theories in their application to public health. | Lectures, discussions, presentation | Term Paper, Oral Presentation, Midterm and Final Exam. |
| Objective 3. Critically evaluate the public health literature using psychosocial theories. | Lectures, discussions, presentation | Term Paper, Oral Presentation, Midterm and Final Exam. |
| Objective 4. Identify strategies to use behavioral health theory in developing and evaluating public health programs. | Lectures, discussions, presentation | Term Paper, Oral Presentation, Midterm and Final Exam. |

## Required Texts/Readings/Other Materials

- Glanz, K., Rimer, B.K., & Lewis, F.M. (2008). Health Behavior and Health Education: Theory, Research, and Practice. (4th ed.) San Francisco, CA: Jossey-Bass.
- National Cancer Institute (2005). Theory at a Glance: A Guide for Health Promotion Practice. U.S. Department of Health and Human Services, National Institutes of Health

### Additional References:

1. Cynthia D. Belar, William W. Deardorff, (2009). Clinical Health Psychology in Medical Settings, American Psychological Association.
2. Baum, A, Revenson, TA, & Singer, JE. Handbook of Health Psychology. New York: Psychology Press; 2012.
3. Brannon, L, Updegraff, JA, & Feist, J. Health Psychology: An Introduction to Behavior and Health. Boston, MA: Cengage Learning; 2014.
4. Faith MS, Fontaine KR, Baskin ML, Allison DB. (2007) Toward the reduction of population obesity: macrolevel environmental approaches to the problems of food, eating, and obesity. Psych Bull. , 133:205–26
5. Personal computer and smartphone (iPhone or Android) are required.
6. Students will be provided outlines, PowerPoint slides and selected recordings and readings.

## Syllabus Information

- You have 48 hours from the time this syllabus is provided online via blackboard to identify any possible errors to the attention of the instructor of this course.
- For any given reason if you happen to download a wrong/incorrect/outdated syllabus – It is completely your responsibility to bring this to the attention of the instructor. Failure to do so and following a wrong syllabus/due dates and seeking extension/s after assignment/s are overdue will not be entertained.

## Communication

- You must use your Marshall email when communicating with me. Do not use the Course Messages or Mail (Internal) tool in Blackboard.
- FERPA rules and regulations require you to use your Marshall email when communicating about a class. I will not speak to a family member or friend on your behalf regarding coursework so kindly do not ask them to communicate with me.
- If you are confused by an email, it is the responsibility of the student to seek clarification of that email, in writing, within 24 hours. If you do not notify me within 24 hours, I will not discuss or entertain changes to that email.
- All course related announcements will be sent to your Marshall email.
- When you send the instructor an email account, turn on a "read receipt" if possible.
- It is the student's responsibility to check their email regularly (2-3) times a day and follow email instructions.

## Grading Policy

| | |
|---|---|
| Class attendance & participation | 20% |
| Oral Presentation | 20% |
| Midterm | 20% |
| Term paper | 20% |

Final 20%

## COURSE REQUIREMENTS / DUE DATES

1. Oral Presentation #1 (Weeks 12-14)
2. Midterm Exam (Week 10)
3. Term Paper (Week 15)
4. Final exam (Week 16)

**Term Paper and Oral Presentation of the Paper:** The term paper will require you to compare two theories that were discussed in class, as applied to a health behavior or public health intervention of your choice. Prior approval of the instructor is required for selection of the topic. Students are encouraged to decide early in the semester if they wish to earn a grade of "A" and if so, to discuss the term paper topic with the instructor. Deadlines are described below. The student should select a health behavior or public health intervention that is of interest to him or her and review the literature to determine which health behavior theories have been applied to address it most fruitfully. Two of these theories should be selected and the student should develop a critical analysis of the application of these theories to the health issue or public health intervention. The student is free to focus on whichever critical issues are most appropriate; examples of issues to address are: What are the similarities and differences between each of the theories as applied to this health issue or public health intervention? To what extent have the constructs of each theory been faithfully applied to the health issue/public health intervention and shown to mediate it? Have critical tests of the theories been applied to this health issue or intervention? If "yes" to the preceding question, what is your verdict regarding the usefulness of the theory for explanation and prediction of the health issue under study? If "no," what are the critical tests that need to be applied? Overall, how strong is the evidence that the theories usefully explain and predict relevant behavior change? The term paper should be approximately 10-12 pages (double spaced) exclusive of references, tables, or figures, one-inch margins all around, 12-point font, formatted in Microsoft Word. The purpose of the term paper is to provide a coherent, thorough, but relatively brief critical analysis comparing the usefulness of two theories to explain and predict a specific public health intervention regarding changing a behavior. As such, get right to the point and do not waste your time providing a lengthy review of theory components or other tangential issues.

**Oral Presentation:** The oral presentation is a twenty-minute presentation of your term paper using Powerpoint. You will be expected to provide your PowerPoint presentation at least one week before you present so that I can upload it to Blackboard for your classmates.

**Midterm and Final Exams:** The midterm and final exam will be non-cumulative take-home assessing all learning outcomes for the course. They will contain a series of essays from which you will select 6 to answer with a response required of approx. one page for each essay. The essays will target your understanding of aspects of the material that you might not have covered in your papers. For example, you might be asked specifically to address how the health belief model might be used in the formation of health programs to encourage the use of prostate screening tests in African American males.

## Grading Scale

**A** (90 – 100); **B** (80 – 89); **C** (70 – 79); **D** (60 – 69); **F** (<60)

- No curving; grades ending in .5 will be rounded up; grades ending in .4 or lower will round down.
- No extra credit will be offered.
- No incompletes will be given in this class unless an extraordinary circumstance, accompanied by a University Excused Absence, warrants it. Please make sure you inform the instructor immediately if applicable.
- Turning in late work or late posts will result in loss of points.

***The Honor Code – Academic Dishonesty***

– is a very important and serious matter, so please do not jeopardize your grades or academic status by violating it. A violation of the Honor Code involves cheating, plagiarism, collusion, academic negligence, or other acts of dishonesty in the area of academics. The most frequent violations of the Honor Code are cheating, collusion and plagiarism:

- Taking credit for work another person has done.
- Using notes, textbooks, or reference materials on a test, quiz, or exam, unless the professor specifically permits the use.
- Giving or receiving facts or ideas either verbally or in writing during a test.
- Working on an assignment with others for any work meant to be completed individually.

*The professor will, without exception, immediately report any perceived violation to the Marshall University Honor Council.*

## Graded Activities

***Late Work***

- No makeup exams or extensions will be provided unless you supply a University Excused Absence.

***Athletes***

- You must provide the instructor a copy of your travel and game schedule at the beginning of the semester.
- Assignments will not be accepted late unless prior arrangements have been made with the instructor.

***Activities - Assessments***

- The Course Schedule contains topic information and activity due dates (located on Syllabus).
- Problem sets and exams are not open book.

## University Policy on Disability

Marshall University is committed to equal opportunity in education for all students, including those with physical, learning and psychological disabilities. University policy states that it is the responsibility of student with disabilities to contact the Office of Disability Services (ODS) in Prichard Hall 117 (304) 696-2271 to provide documentation of their disability. Following this, the ODS Director will send a letter to each of the students' instructors outlining the academic accommodations he/she will need to ensure equality in class experiences, outside assignments, testing and grading. The instructor and student will meet to discuss how the accommodation(s) requested will be provided.

**ATTENDANCE POLICY**

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| This class meets weekly. Attendance is mandatory. More than 2 unexcused absences will result in a penalty of full grade deducted from the final grade. |

## Technical Skills

Minimum Technical Skills required:

- Microsoft Office (Word and PowerPoint)
- Marshall email access and use
- Adobe Reader
- General understanding of Blackboard and how to navigate
- High-speed internet access and access to a computer on a regular basis (Please do not attempt to complete this course will a tablet or mobile device alone).

- Students may be required to submit assignments as Microsoft Word documents (.docx), using the most recent Microsoft Office suite. Office 365 is available at no extra charge to students enrolled at MU. For information visit Marshall IT: Office 365 (URL: http://www.marshall.edu/it/office365/).
- See the Tech Support tab in Blackboard for additional information on browsers, technology, and apps.

**Technology Assistance**

- If you have technical problems, please contact one or more of the following:
- Blackboard Support Center (URL: http://marshall.edusupportcenter.com)
- Marshall Information Technology (IT) Service Desk (Help Desk) (URL: http://www.marshall.edu/it/departments/it-service-desk/ )
  - Huntington: (304) 696-3200
  - South Charleston: (304) 746-1969
  - Email the IT Service Desk (itservicedesk@marshall.edu)

## Marshall University E-Mail Accounts

You must have and use your MU email account. Your personal email accounts will not be used for official communication with Marshall University programs and personnel. You may redirect your MU email to your own personal email account, but you must sign in to your MU account to do that. Marshall University uses Office 365 email. For more information, visit Marshall IT: Office 365 (URL https://www.marshall.edu/it/office365/).

***Marshall University Writing Center***

If you would like assistance with your writing, the Writing Center is available to all students, including distance students. The Writing Center is a free tutoring service, provided by the English Department, in conjunction with Reference Librarians. If you need help with any aspect of writing, including citation methods, or if you are struggling to understand how library resources or reference works, you should contact the Writing Center:

http://www.marshall.edu/writingcenter/

## Course Schedule

| Week | Date | Topic | Readings |
|---|---|---|---|
| 1 | TBD | Introduction to the course;<br>Health Behavior at the Individual Level | NCI: Theory at a Glance: A Guide for Health Promotion Practice. 2nd Edition. pp. 52. Bethesda MD: National Cancer Institute; 2005:52. Part 1, Foundations of Theory, Pages 3 to 8<br>Part 2 (first section), Theories and Applications, Pages 9 to 14.<br>Pay particular attention to Table 2 on Page 14<br><br>Coreil J: Chapter 4: Behavioral and Social Science Theory. In: Social and Behavioral Foundations of Public Health. 2nd edition. Edited by Coreil J. Thousand Oaks, CA: Sage Publications; 2009: 69-88. |
| 2 | TBD | Health Behavior at the Individual Level | Textbook, ch. 4<br><br>Munro S, Lewin S, Swart T, Volmink J. A review of health behaviour theories: how useful are these for developing interventions to promote long-term medication adherence for TB and HIV/AIDS? BMC Public Health. 2007;7:104.<br><br>Elder JP, Ayala GX, Harris S. Theories and intervention approaches to health-behavior change in primary care. American Journal of Preventive Medicine. 1999;17(4):275-84. |

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| 3 | TBD | Health belief model | Buglar ME, White KM, Robinson NG: The role of self-efficacy in dental patients' brushing and flossing: testing an extended Health Belief Model. Patient Educ Couns 2010; 78:269-272.<br>Downing-Matibag TM, Geisinger B. Hooking up and sexual risk taking among college students: a Health Belief Model perspective. Qual Health Res 2009, 19:1196-1209.<br>Textbook, ch. 5 |
| 4 | TBD | Health belief model | Lindsay JJ, Strathman A. Predictors of recycling behavior: An application of a modified Health Belief Model. J Appl Soc Psych 1997; 27(20): 1799-1823.<br><br>Phuanukoonnon S, Brough M, Bryan JH. Folk knowledge about dengue mosquitoes and contributions of Health Belief Model in dengue control promotion in Northeast Thailand. Acta Trop 2006;99(1):6-14.<br>Textbook, Ch. 5 |
| 5 | TBD | Theory of Reasoned Action; Theory of Planned Behavior | Montano DE, Kasprzyk D. The Theory of Reasoned Action, Theory of Planed Behavior, and the Integrated Behavioral Model. In: Glanz K, Rimer BK, Viswanath K, editors. Health Behavior and Health Education: Theory, Research, and Practice 4th ed. San Francisco: Jossey-Bass; 2008. p.67-96.<br>NCI: Theory at a Glance: A Guide for Health Promotion Practice. 2nd Edition. pp. 52. Bethesda MD: National Cancer Institute; 2005:52.<br>Part 2 (second section), Theories and Applications, Pages 15 to 18.<br>Pay particular attention to Figure 3 on Page 18<br><br>Textbook, ch. 6 |
| 6 | TBD | Theory of Reasoned Action; Theory of Planned Behavior | Lifflander A, Gaydos LM, Hogue CJ: Circumstances of pregnancy: low income women in Georgia describe the difference between planned and unplanned pregnancies. Matern Child Health J 2007, 11:81-89.<br>Munoz-Silva A, Sanchez-Garcia M, Nunes C, Martins A. Gender differences in condom use prediction with Theory of Reasoned Action and Planned Behaviour: the role of self-efficacy and control. AIDS Care. 2007;19(9):1177-81. |
| 7 | TBD | Social learning theory/social cognitive theory | NCI: Theory at a Glance: A Guide for Health Promotion Practice. 2nd Edition. pp. 52. Bethesda MD: National Cancer Institute; 2005:52.<br>Part 2 (third section), Theories and Applications, Pages 19 to 21<br>Pay particular attention to Table 5 on Page 20<br>Textbook, ch. 8 |
| 8 | TBD | Social learning theory/social cognitive theory | Anderson-Bill ES, Winett RA, Wojcik JR, Williams DM. Aging and the social cognitive determinants of physical activity behavior and behavior change: evidence from the guide to health trial. J Aging Res. 2011;2011:505928.<br><br>Bandura A. Social cognitive theory: an agentic perspective. Annual Review of Psychology 2001;52:1-26.<br><br>Gaines A, Turner LW. Improving Fruit and Vegetable Intake Among Children: A Review of Interventions Utilizing the Social Cognitive Theory. Californian Journal of Health Promotion 2009; 7(1): 52-66. |
| 9 | TBD | Stress, Coping, and Health Behavior | Textbook, Ch. 12<br><br>Lackner JM, Brasel AM, Quigley BM, Keefer L, Krasner SS, Powell C, Katz LA, Sitrin MD. (2010). The ties that bind: perceived social support, |

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| | | | stress, and IBS in severely affected patients. Neurogastroenterol Motil. 22(8):893-900.<br><br>ACrystal L. Park &Megan O. Iacocca (2013). Stress and coping perspective on health behaviors: theoretical and methodological considerations, Anxiety, Stress, & Coping, Vol. 27(2). Pp. 123-137. |
| 10 | TBD | Ecological Models of Health Behavior | Textbook, Ch. 3<br><br>Fleury, J. & Lee, S.M. (2006). The social ecological model and physical activity in African American women. American Journal of Community Psychology, 13, 129-140.<br><br>Naar-King, S., Arfken, C., Frey, M., Harris, M., Secord, E. and Ellis, D.(2006) Psychosocial factors and treatment adherence in paediatric HIV/AIDS. AIDS Care,18:6,621 — 628 |
| 11 | TBD | Transtheoretical Model of Behavior Change | Textbook, Ch. 7<br><br>Basta, T., Reece, M., & Wilson, M. (2008). The transtheoretical model and exercise among individuals living with HIV. American Journal of Health Behavior, 32(4), 356-367.<br><br>Sealy YM, Farmer GL (2011) Parents' Stage of Change for Diet and Physical Activity: Influence on Childhood Obesity. Social Work in Health Care, 50:4, 274-291 |
| 12 | TBD | Transtheoretical Model : Intimate Partner Violence | Prochaska JO, DiClemente CC, Norcross JC. In search of how people change. Applications to addictive behaviors. American Psychologist 1992;47(9):1102-14.<br>Burke JG, Denison JA, Gielen AC, McDonnell KA, O'Campo P. Ending intimate partner violence: an application of the transtheoretical model. American Journal of Health Behavior 2004;28(2):122-33. |
| 13 | TBD | Cultural Aspects of Health Behavior | NCI: Theory at a Glance: A Guide for Health Promotion Practice. 2nd Edition edition. pp. 52. Bethesda MD: National Cancer Institute; 2005:52.<br>Pages 9-21.<br>Harris M. History and significance of the emic/etic distinction. Ann Rev Anthropol. 1976; 5:329-50.<br>JUCKETT, G. (2005). Cross-Cultural Medicine, *Am Fam Physician,* 72(11):2267-2274. |
| 14 | TBD | Behavioral Economics & Health | Textbook, ch. 20<br><br>Faith MS, Fontaine KR, Baskin ML, Allison DB. (2007) Toward the reduction of population obesity: macrolevel environmental approaches to the problems of food, eating, and obesity. Psych Bull. , 133:205–26<br><br>Frieden, T. R., & Bloomberg, M. R. (2007). How to prevent 100 million deaths from tobacco. Lancet, 369(9574), 1758-1761. |
| 15 | TBD | Review for Final Exam | All readings listed above |
| 16 | TBD | Final Exam Due | All readings listed above |

Chair: Tracy Christofero | **GC#6: Course Addition**

# 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: Applied Sci&Tech Alpha Designator/Number: SFT561 (•) Graded ( ) CR/NC

Contact Person: Jian Liu Phone: 304-696-3067

**NEW COURSE DATA:**

New Course Title: Workers Compensation

Alpha Designator/Number: S F T 5 6 1

Title Abbreviation: W O R K E R S C O M P

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
Introductory principles of workers' compensation and how it relates to the safety professional.

Co-requisite(s): NA First Term to be Offered: Spring 2019

Prerequisite(s): NA 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 | Date 9-12-18 |
| Registrar 150701 | Date 9-14-18 |
| College Curriculum Chair | Date 9/24/18 |
| Graduate Council Chair | Date 10/27/18 |

# Request for Graduate Course Addition - Page 2

College: CITE | Department/Division: Applied Sci&Tech | Alpha Designator/Number: SFT561

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.

Toney Stroud

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 deparment(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)

The course will provide a basic understanding of workers' compensation. Students will learn how workers' compensation impacts the safety professional, how to investigate injuries, return-to-work issues and culture issues within the workplace.

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

| | |
|---|---|
| Week 1 | Introduction to the Course (Syllabus) |
| Week 2 | Workers' Compensation History/Compensability "Arising Out Of" |
| Week 3 | Compensability "Course of Employment"/ Personal Injury |
| Week 4 | Occupational Diseases/Mental Injuries |
| Week 5 | Benefits in General – Project Assignment |
| Week 6 | Safety Culture – Identification and Response |
| Week 7 | Accident Investigation |
| Week 8 | Mid Term |
| Week 9 | Deliberate Intent/Project Assignment |
| Week 10 | Drug Testing/Return toWork |
| Week 11 | No Class – Spring Break |
| Week 12 | Coverage Issues |
| Week 13 | Project Presentations |
| Week 14 | Project Presentations |
| Week 15 | Rules and Regulations/ DOL Claims |
| Week 16 | Review for Final Exam |
| Week 17 | Final Exam |

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

The Insurance Professional's Practical Guide to Workers' Compensation, Chris Boggs, 2015, Wells Publishing, Inc
Workers Compensation: A Reference and Guide, Peter Lenses, 1998, Praeger
A Guide to Successful Workers' Compensation Case Management, Dorothy Consonery-Fairnot, 2012, BookLogix
The Insurance Professional's Practical Guide to Workers' Compensation, Christopher J. Boggs, 2015, Wells Media Group, Inc.

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

Lecture

# Request for Graduate Course Addition - Page 4

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

Exam, project

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

Class project will be individual project for graduate students.

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

The Insurance Professional's Practical Guide to Workers' Compensation, Chris Boggs, 2015, Wells Publishing, Inc
Workers Compensation: A Reference and Guide, Peter Lenses, 1998, Praeger
A Guide to Successful Workers' Compensation Case Management, Dorothy Consonery-Fairnot, 2012, BookLogix
The Insurance Professional's Practical Guide to Workers' Compensation, Christopher J. Boggs, 2015, Wells Media Group, Inc.

# Request for Graduate Course Addition - Page 5

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: Applied Science & Technology
Course Number and Title: SFT561 - Workers Compensation
Catalog Description: Introductory principles of workers' compensation and how it relates to the safety professional.
Prerequisites: None
First Term Offered: Spring 2019
Credit Hours: 3

Marshall University
Syllabus

| | |
|---|---|
| **Course Title/ Number** | SFT561 / Workers Compensation |
| **Semester/Year** | Spring 2018 |
| **Days/Time** | TBD |
| **Location** | TBD |
| **Instructor** | **H. Toney Stroud, Esq.** |
| **Office** | TBD |
| **Phone** | **(304) 941-1022 (Office)** |
| **E-Mail** | **toney.stroud@brickstreet.com** |
| **Office Hours** | By appointment |
| **University Policies** | 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 |

**Course Description: From Catalog**

| |
|---|
| Introductory principles of workers' compensation and how it relates to the safety professional. |

**The table below shows the following relationships: How each student learning outcome will be practiced and assessed in the course.**

| 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 |
|---|---|---|
| Students will be able to demonstrate a basic understanding of workers' compensation. | Assigned reading, in class discussion | Midterm |

| | | |
|---|---|---|
| Students will be able to understand how workers' compensation impacts the safety professional. | Class discussion | Final exam |
| Students will be able to understand how to investigate injuries, return-to-work issues. | Class exercise | Class project |

**Required Texts, Additional Reading, and Other Materials**

The Insurance Professional's Practical Guide to Workers' Compensation, Chris Boggs, 2015, Wells Publishing, Inc

Workers Compensation: A Reference and Guide, Peter Lenses, 1998, Praeger

A Guide to Successful Workers' Compensation Case Management, Dorothy Consonery-Fairnot, 2012, BookLogix

The Insurance Professional's Practical Guide to Workers' Compensation, Christopher J. Boggs, 2015, Wells Media Group, Inc.

**Course Requirements/Due Dates**

One mid-term and one final exam are scheduled. Both the mid-term and final examination will be a combination of multiple choices, short answer fill in the blanks and short essays.

An individual project will be required. You will be responsible to prepare a safety report based upon a fact pattern related to a workplace injury that has resulted in a civil lawsuit.
One deliberate intent project. Details to be announced.
Subjective Instructor Evaluation: contribution to class discussions will be evaluated.

## Grading Policy

The grading scale is as follows.

**A** 90-100%
**B** 80-89%
**C** 70-79%
**D** 60-69%
**F** below 59%

The grade will be determined from the following.

Classroom

| | |
|---|---|
| 1. Mid Term Exam | 30% |
| 2. Final Exam | 30% |
| 3. Project | 10% |
| 4. Deliberate Intent Project | 20% |
| 5. Subjective Instructor Evaluation | 10% |
| | **TOTAL 100 %** |

## Attendance Policy

Role will not be taken. Attending class and participating in class discussions are part of the course and is your responsibility. **There will be no make up quizzes or in class group assignments!!!** University excused absence paperwork will be required to allow for assignments or missed exams to completed outside of the scheduled time. Please be prompt in notifying me if you have an excused absence.

## Course Schedule

| | |
|---|---|
| Week 1 | Introduction to the Course (Syllabus) |
| Week 2 | Workers' Compensation History/Compensability "Arising Out Of" |
| Week 3 | Compensability "Course of Employment"/ Personal Injury |
| Week 4 | Occupational Diseases/Mental Injuries |
| Week 5 | Benefits in General – Project Assignment |
| Week 6 | Safety Culture – Identification and Response |
| Week 7 | Accident Investigation |

| | |
|---|---|
| Week 8 | Mid Term |
| Week 9 | Deliberate Intent/Project Assignment |
| Week 10 | Drug Testing/Return toWork |
| Week 11 | No Class – Spring Break |
| Week 12 | Coverage Issues |
| Week 13 | Project Presentations |
| Week 14 | Project Presentations |
| Week 15 | Rules and Regulations/ DOL Claims |
| Week 16 | Review for Final Exam |
| Week 17 | Final Exam |

Chair: Tracy Christofero | **GC#7: Course Change**

# Request for Graduate Course Change

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: Applied Sci&Tech Current Alpha Designator/Number: SFT599

Contact Person: Jian Liu Phone: 304-696-3067

**CURRENT COURSE DATA:**

Course Title: Occupational Safety Program Management

Alpha Designator/Number: S F T 5 9 9

Title Abbreviation: O c c u p P r o g S a f e t y M g m t

1. Complete this **five** page form in its entirety and route through the departments/committees below for changes to a course involving: course title, alpha designator, course number, course content, credit hours, or catalog description.
2. If this change will affect other departments that require this course, please send a memo to the affected department and include it with this packet, as well as the response received from the affected department.
3. If the changes made to this course will make the course similar in title or content to another department's courses, please send a memo to the affected department and include it with this packet as well as the response received from the affected department.
4. List courses, if any, that will be deleted because of this change (*must submit course deletion form).*
5. If the faculty requirements and/or equipment need to be changed upon approval of this proposal, attach a written estimate of additional needs.

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

| | |
|---|---|
| Dept. Chair/Division Head A. Sy | Date 9-17-18 |
| Registrar Sonya H C | Date 9.14.18 |
| College Curriculum Chair Mark | Date 9/28/18 |
| Graduate Council Chair Lori Hunt | Date 10/27/18 |

# Request for Graduate Course Change - Page 2

College: CITE | Department/Division: Applied Sci&Tech | Alpha Designator/Number: SFT599

Provide complete information regarding the course change for each topic listed below.

**Change in CATALOG TITLE:** ☒ YES ☐ NO

From: Occup Safety Prog Mgmt (limited to 30 characters and spaces)

To: Dev & Mgmt of Occup Safety Prog

If Yes, Rationale: After reviewing the course content, the faculty felt that the new course title is more appropriate and is consistent with similar courses at other institutions.

**Change in COURSE ALPHA DESIGNATOR:**

From: ☐☐☐☐ To: ☐☐☐☐ ☐ YES ☒ NO

If Yes, Rationale:

**Change in COURSE NUMBER:** ☐ YES ☒ NO

From: ☐☐☐☐ To: ☐☐☐☐

If Yes, Rationale:

Change in COURSE GRADING

From ☐ Grade To ☐ Credit/No Credit

Rationale:

**Change in CATALOG DESCRIPTION:** ☐ YES ☒ NO IF YES, fill in below:

From:

To:

If Yes Rationale:

**Change in COURSE CREDIT HOURS:** ☐ YES ☒ NO If YES, fill in below:

NOTE: If credit hours increase/decrease, please provide documentation that specifies the adjusted work requirements.

From

To

**Change in COURSE CONTENT:** ☐ YES ☒ NO

From

To

Rationale

# Request for Graduate Course Change-Page 4

College: CITE

Department: Applied Sci&Tech

Course Number/Title SFT599 / Occupational Safety Program Management

1. REQUIRED COURSE: If this course is required by another department(s), identify it/them by name and attach the written notification you sent to them announcing to them the proposed change and any response received. Enter NOT APPLICABLE if not applicable.

NOT APPLICABLE

2. COURSE DELETION: List any courses that will be deleted because of this change. A *Course Deletion* form is also required. Enter NOT APPLICABLE if not applicable.

NOT APPLICABLE

3. ADDITIONAL RESOURCE REQUIREMENTS: If your department requires additional faculty, equipment, or specialized materials as a result of this change, attach an estimate of the time and cost etc. 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

# Request for Graduate Course Change - Page 5

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

| COURSE DESCRIPTION CHANGE | COURSE NUMBER CHANGE | COURSE TITLE CHANGE |
|---|---|---|
| Department: | Department: | Department: |
| Course Number and Title: | Current Course Number/Title: | Current Course Number/Title: |
| Rationale: | New Course Number: | New Course Title: |
| Course Description (old) | Rationale: | Rationale: |
| Course Description: (new) | Catalog Description: | Catalog Description: |
| Catalog Description: | Credit hours: | |

COURSE TITLE CHANGE
Department: Applied Science & Technology
Current Course Number/Title: SFT599 / Occupational Safety Program Management
New Course Title: Development & Management of Occupational Safety Program
Rationale: After reviewing the course content, the faculty felt that the new course title is more appropriate and is consistent with similar courses at other institutions.
Catalog Description: A study of safety programs at the state and local levels including the administrative, instructional, and protective aspects of a comprehensive safety program in schools, occupations, home and public.

Chair: Tracy Christofero | **GC#7: Course Change**

# Request for Graduate Course Change

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: Applied Sci&Tech Current Alpha Designator/Number: SFT610

Contact Person: Jian Liu Phone: 304-696-3067

**CURRENT COURSE DATA:**

Course Title: Philosophical and Psychological Concepts of Occupational Safety and Health

Alpha Designator/Number: S F T 6 1 0

Title Abbreviation: P H I L & P S Y C H C O N C E P T S

1. Complete this **five** page form in its entirety and route through the departments/committees below for changes to a course involving: course title, alpha designator, course number, course content, credit hours, or catalog description.
2. If this change will affect other departments that require this course, please send a memo to the affected department and include it with this packet, as well as the response received from the affected department.
3. If the changes made to this course will make the course similar in title or content to another department's courses, please send a memo to the affected department and include it with this packet as well as the response received from the affected department.
4. List courses, if any, that will be deleted because of this change (*must submit course deletion form).*
5. If the faculty requirements and/or equipment need to be changed upon approval of this proposal, attach a written estimate of additional needs.

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

| | |
|---|---|
| Dept. Chair/Division Head A. Syl | Date 9-12-18 |
| Registrar Sonya HC | Date 9-14-18 |
| College Curriculum Chair Nicole | Date 9/28/18 |
| Graduate Council Chair Lori Howard | Date 10/27/18 |

# Request for Graduate Course Change - Page 2

College: CITE | Department/Division: Applied Sci&Tech | Alpha Designator/Number: SFT610

Provide complete information regarding the course change for each topic listed below.

**Change in CATALOG TITLE:** ☒ YES ☐ NO

From: P H I L & P S Y C H C O N C E P T S (limited to 30 characters and spaces)

To: I n t r o t o p r o f s a f e t y & h e a l t h

If Yes, Rationale: After reviewing the course content, the faculty felt that the new course title is more appropriate and is consistent with similar courses at other institutions.

**Change in COURSE ALPHA DESIGNATOR:**

From: ☐☐☐☐ To: ☐☐☐☐ ☐ YES ☒ NO

If Yes, Rationale:

**Change in COURSE NUMBER:** ☐ YES ☒ NO

From: ☐☐☐☐ To: ☐☐☐☐

If Yes, Rationale:

Change in COURSE GRADING

From ☐ Grade To ☐ Credit/No Credit

Rationale:

**Change in CATALOG DESCRIPTION:** ☐ YES ☒ NO IF YES, fill in below:

From:

To:

If Yes Rationale:

**Change in COURSE CREDIT HOURS:** ☐ YES ☒ NO If YES, fill in below:

NOTE: If credit hours increase/decrease, please provide documentation that specifies the adjusted work requirements.

From

To

**Change in COURSE CONTENT:** ☐ YES ☒ NO

From

To

Rationale

# Request for Graduate Course Change-Page 4

College: CITE

Department: Applied Sci&Tech

Course Number/Title SFT610 / Philosophical and Psychological Concepts of Occupational Safety and Health

1. REQUIRED COURSE: If this course is required by another department(s), identify it/them by name and attach the written notification you sent to them announcing to them the proposed change and any response received. Enter NOT APPLICABLE if not applicable.

NOT APPLICABLE

2. COURSE DELETION: List any courses that will be deleted because of this change. A *Course Deletion* form is also required. Enter NOT APPLICABLE if not applicable.

NOT APPLICABLE

3. ADDITIONAL RESOURCE REQUIREMENTS: If your department requires additional faculty, equipment, or specialized materials as a result of this change, attach an estimate of the time and cost etc. 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

# Request for Graduate Course Change - Page 5

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

COURSE DESCRIPTION CHANGE
Department:
Course Number and Title:
Rationale:
Course Description (old)
Course Description: (new)
Catalog Description:

COURSE NUMBER CHANGE
Department:
Current Course Number/Title:
New Course Number:
Rationale:
Catalog Description:
Credit hours:

COURSE TITLE CHANGE
Department:
Current Course Number/Title:
New Course Title:
Rationale:
Catalog Description:

COURSE TITLE CHANGE
Department: Applied Science & Technology
Current Course Number/Title: SFT610 / Philosophical and Psychological Concepts of Occupational Safety and Health
New Course Title: Introduction to Professional Safety and Health
Rationale: After reviewing the course content, the faculty felt that the new course title is more appropriate and is consistent with similar courses at other institutions.
Catalog Description: An analysis of the educational philosophies and the application of these philosophies to occupational safety. A study of the effect of occupational safety on modern living.