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: Forensic Science | Alpha Designator/Number: DFIA420/CFD520 | (•) Graded ( ) CR/NC

Contact Person: John Sammons | Phone: 304-696-7241

NEW COURSE DATA:

The corrected course description is attached - Note - Alpha Designator is CFS.

New Course Title: Incident Response

Alpha Designator/Number: ~~C F D~~ 5 2 0
CFS
LH 11/23/19

Title Abbreviation: I n c i d e n t R e s p o n s e

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
see attached revised description LH -

This course examines the forensic and investigative aspects of incident response. Topics include pre-incident preparation, developing leads, scoping an incident, data collection and forensic duplication, evidence from hosts (Windows), networks, applications, and enterprise environments. We will also examine the steps and actions taken during response and remediation.

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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*): N/A

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

Dept. Chair/Division Head	Date 10-28-19
Registrar 430464	Date 10-29-19
College Curriculum Chair DEAN	Date 10-31-19
Graduate Council Chair	Date 11/23/19

Request for Graduate Course Addition - Page 2

College: Science | Department/Division: | Alpha Designator/Number: CFD520

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.

Sammons
Gardner
Brunty

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 syllabus.

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

See attached syllabus.

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

See attached syllabus.

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

See attached syllabus.

Request for Graduate Course Addition - Page 4

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

See attached syllabus.

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

Additional assignments including papers and projects.

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

See attached.

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:

Forensic Science
CFD 520
This course examines the forensic and investigative aspects of incident response. Topics include pre-incident preparation, developing leads, scoping an incident, data collection and forensic duplication, evidence from hosts (Windows), networks, applications, and enterprise environments. We will also examine the steps and actions taken during response and remediation.
No PRs
Spring 2020
3 CR Hours

Course Description for CFS 520

Course examines forensic and investigate aspects of incident response. Topics include pre-incident preparation, developing leads, scoping an incident, data collection, forensic duplication, evidence from hosts, networks, application and enterprise environments.

MARSHALL DIGITAL FORENSICS INFORMATION ASSURANCE	**Digital Forensics and Information Assurance 420/520** Incident Response Course Syllabus Spring 2020

Spring 2020
M,W,F 1:00 - 1:50
WAEC 1232

Instructor – John Sammons
Office – WAEC 2003
Office Phone – 304-696-7241
eMail Address – john.sammons@marshall.edu

Office Hours:
Mon, Weds, Fri – 11:00 – 12:00
T,TH – 1:00 – 2:00

* Other times by appointment

Textbook

This is the course textbook and it **IS REQUIRED**:

Incident Response and Computer Forensics 3rd Edition, Jason Luttgens, Matthew Pepe, McGraw-Hill, San Francisco, CA. ISBN 13: 978-0071798686

Required (and suggested) Materials

Each student must obtain a spiral-bound sketchbook 9"x 12". We will be doing quite a bit of sketchnoting during this course. Your finished notebook will be submitted at the end of the semester.

You're also encouraged to obtain a ruler, and some decent pens, pencils, highlighters, markers, etc. These will enhance with your sketchnoting experience. I am happy to provide some recommendations if you like.

Course Description

This course examines the forensic and investigative aspects of incident response. Topics include pre-incident preparation, developing leads, scoping an incident, data collection and forensic duplication, evidence from hosts (Windows), networks, applications, and enterprise environments. We will also examine the steps and actions taken during response and remediation.

Credit

The course is three (3) credit hours.

Pre/co-requisites

DFIA 400 Introduction to Digital Forensics

Course Learning Objectives For Undergraduates

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 effectively **explain** and **plan** an incident response process.	PowerPoint/Prezi development, peer & instructor review, journal assignments, Quizlets, sketchnotes	Presentations, test questions, concept map, sketchnotes
Students will correctly **apply** and **elaborate** on the fundamental principles of incident response.	Case studies and practical exercises, journal assignments, peer teaching, Quizlets	Presentations, test questions, concept map,
Students will **demonstrate** their ability to communicate effectively both orally and in writing by **designing** presentations and **composing** reports.	PowerPoint/Prezi development, peer & instructor review, journal assignments, Quizlets, sketchnotes	Presentations, test questions, concept map, sketchnotes
Students will be able to **define, describe**, and **differentiate** different types of malware and malware features and function.	PowerPoint/Prezi development, peer & instructor review, journal assignments, Quizlets, sketchnotes	Presentations, test questions, concept map,
Students will correctly ***locate***, ***analyze***, and ***interpret*** common artifacts associated with a network intrusion.	Journal exercises, in-class team assignments, Quizlets, Practical exercises, journal assignments	Tests and practical assessments
Students will be able to **define, differentiate**, and **build** upon the 11 tactics found in the Enterprise Matrix of the MITRE ATT&CK.	Journal exercises, in-class team assignments, Quizlets, Practical exercises, journal assignments	Presentations, test questions, concept map, sketchnotes
Students will **assemble** and **arrange** key course content into a comprehensive, detailed concept map that clearly	Module concept maps	Mid-Term & Final Concept Maps

demonstrates the relationship of one concept to another.		

Course Learning Objectives For Graduate Students

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 **demonstrate** an incident response process.	PowerPoint/Prezi development, peer & instructor review, journal assignments, Quizlets, sketchnotes	Presentations, test questions, concept map, sketchnotes
Students will correctly **explain** and **elaborate** on the fundamental principles of incident response.	Case studies and practical exercises, journal assignments, peer teaching, Quizlets	Presentations, test questions, concept map,
Students will **demonstrate** their ability to communicate effectively both orally and in writing by **designing** presentations and **composing** reports that **describes** the Incident Response process.	PowerPoint/Prezi development, peer & instructor review, journal assignments, Quizlets, sketchnotes	Presentations, test questions, concept map, sketchnotes
Students will be able to **define, describe,** and **differentiate** different types of malware and malware features and function.	PowerPoint/Prezi development, peer & instructor review, journal assignments, Quizlets, sketchnotes	Presentations, test questions, concept map,
Students will correctly ***locate***, ***analyze***, and ***interpret*** common artifacts associated with a network intrusion.	Journal exercises, in-class team assignments, Quizlets, Practical exercises, journal assignments	Tests and practical assessments
Students will be able to **define, differentiate**, and **build** upon the 11 tactics found in the Enterprise Matrix of the MITRE ATT&CK.	Journal exercises, in-class team assignments, Quizlets, Practical exercises, journal assignments	Presentations, test questions, concept map, sketchnotes
Students will **assemble** and **arrange** key course content into a comprehensive, detailed concept map that clearly	Module concept maps	Mid-Term & Final Concept Maps

demonstrates the relationship of one concept to another.		

Blackboard

Unless otherwise stated, ALL assignments must be submitted on time through Bb. It's your responsibility to know how to do this. Late work will not be accepted without a verified or University approved excuse. Should you have some issue that prohibits you from meeting the deadline, you should email the assignment to me via my Bb email account. This should be before the due date and time of the assignment. If for some reason you cannot email the assignment through Bb email you will need to submit the assignment through my MU email account. This should be before the due date and time as well. If not, it will not be accepted. If you are submitting an assignment to me via email you will need make sure the assignment is clearly identified and make note of the reason the assignment is not submitted in Bb. If you cannot submit the assignment through either Bb or MU email, students are expected to leave a voice mail on the Instructors office phone. In ALL instances, any email or voicemail MUST have a date/time stamp that is BEFORE the due date/time of the assignment.

Assignments not turned in to Bb (or following the above policy) or turned in late without an approved excuse will get a grade of zero.

Grade Appeals

Should you feel an assignment/test question was graded in error, you may appeal. However, your appeal MUST FOLLOW THIS PROCEDURE and FORMAT. You will submit the appeal through Bb email only. Appeals sent elsewhere will not receive a response. The subject line MUST say this "APPEAL – Test/Assignment Name." In the body of the email list the entire question, your answer, and why you think you deserve credit.

Instruction Method

There will be 3 contact hours of classroom instruction per week. Coursework will include classroom lectures, a learning journal, and exams along with a variety of low, med and high stakes writing assignments. You are expected to take an active role in your learning. Discussions and writing assignments play significant roles in the conduct of the course.

This course will be taught using active learning methodologies. This means that lectures, as a delivery method will be limited. For students, this means that you will be expected to complete all assigned "pre-work" before the start of class, participate in group assignments, and complete in-class exercises.

Evaluation method

Course grades will be based on a total points system. Your grade will be based on a percentage of the total points possible.

Course Point Distribution

Assignment/Assessment	Points Possible
Midterm & Final Exam (Concept Map)	200
Projects & Assignments	200 (Approx. Subject to change based on progress)
Chapter Tests	500 (Approx. Subject to change based on progress)

Learning Journals	330 (Approx. Subject to change based on progress)
Sketchnotes	200 (Approx. Subject to change based on progress)
Total	**1430** (Approx. Subject to change based on progress)

Final letter grades are determined based on the following grading scale:

Undergraduate Grading Scale:

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

Graduate Grading Scale:

92-100	A
85-91	B
70-84	C
60-69	D
0-59	F

The instructor reserves the right to change these values depending on the overall class performance and/or extenuating circumstances. Please note that your final grade will be calculated by hand, NOT from the totals/weights that you may see on Bb. Grades will be posted as quickly as possible into Bb. However, please keep in mind that those times will vary.

Policy Statement

My Academic Dishonesty Policy

Academic Dishonesty is defined as any act of a dishonorable nature which gives the student engaged in it an unfair advantage over others engaged in the same or similar course of study and which, if known to the classroom instructor in such course of study, would be prohibited. Academic Dishonesty will not be tolerated as these actions are fundamentally opposed to "assuring the integrity of the curriculum through the maintenance of rigorous standards and high expectations for student learning and performance" as described in Marshall University's Statement of Philosophy.

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

In this course, STUDENTS ARE NOT TO "COPY & PASTE" MATERIAL FROM A SOURCE INTO ANY ASSIGNMENT UNLESS SPECIFICALLY AUTHORIZED BY THE INSTRUCTOR.

If you are found cheating on projects or plagiarizing answers from the Internet or other sources (among other things), there will be no second chance. Your penalty is that you will receive a failing grade for the course. In those cases in which the offense is particularly flagrant or where there are other aggravating circumstances, additional, non-academic,

sanctions may be pursued through the Office of Judicial Affairs. Notice of an act of academic dishonesty will be reported to the Department Chair, Dean of the College of Science, and to the Office of Academic Affairs. Please refer to the Marshall University Undergraduate Catalog for a full definition of academic dishonesty.

Your assignments may be analyzed using the anti-plagiarism suite of tools powered by Turnitin. Please visit http://turnitin.com for more information.

Assignments

The course includes a number of writing assignments. All assignments are due **BY THE BEGINNING OF CLASS** on their due date. **NO LATE ASSIGNMENTS WILL BE ACCEPTED**. There are VERY specific cutoff dates/times for submission. Please do not procrastinate. If you wait until the last night to start a writing assignment, chances are, you will fail. All (or the majority of) assignments MUST be submitted through Bb. Should some technical issue arise that makes this impossible submit the clearly labeled assignment through Bb email. If for some reason, you cannot submit the assignment through Bb email the instructors University email address will serve as a backup means of submission. Should submission prove to be impossible, students are expected to leave a voice mail on the Instructors office phone. In ALL instances, any email or voicemail MUST have a date/time stamp that is BEFORE the due date/time of the assignment. Submissions that do not will be rejected.

Assignments should be labeled as follows:

File Names: All electronic submissions must follow this file naming convention:
DFIA 420_Last Name_First Initial_Assignment Name.doc ("DFIA420_sammons_j_researchpaper.doc")

Make-up Quizzes/Assignments and Late Penalty: Make-up exams will not be given except under unusual circumstances and with satisfactory written justification. Any student who misses a quiz/assignment due to an unexcused absence will receive a grade of zero with no opportunity for make-up or substitution. Only University excused absences or those occurring with a good reason (and that reason must be given prior to missing the quiz/assignment) will be accepted. Make up quizzes/assignments must be taken within one week of the original scheduled date. The decision to allow a make-up quiz or accept late work rests with the instructor. Please note, your university excuse MUST be received by me within TWO weeks of the missed assignment/test. Excuses received after that time will not be accepted.

Attendance Statement & Policy

Attendance is absolutely vital to your success in this course and your ability to learn and retain this material. As such, attendance is mandatory. You will be permitted **three** unexcused absences for the entire semester. Each unexcused absence after that will result in a one letter reduction of your grade. Top Hat will be used to collect attendance every day in class.

Excused Absence

1. University-sponsored academic activities (performing arts, debate and individual events, honors classes, ROTC); official athletic events; other university activities (student government).

2. Student Illness or Critical Illness/Death in the Immediate Family:" Immediate Family" is defined as a spouse/life partner, child, parent, legal guardian, sibling, grandparent or grand- child. ***Routine doctor appointments are not excused. Appointments should be scheduled around your classes.**

3. Short-Term Military Obligation

4. Jury Duty or Subpoena for Court Appearance

5. Religious Holidays

Unexcused Absences

· If you miss two classes, I will issue a warning.

· If you miss a third class: You will receive an automatic one letter grade deduction in the course.

· We will conference to discuss your standing and develop a plan of improvement. If you meet its criteria, you may have the chance to earn back the letter grade deduction.

· If you miss a fourth class, the previous letter grade deduction stands, regardless of improvement plan results.

· Subsequent missed classes will result in an additional letter grade deduction for each absence.

Graduate Final Paper:

The paper must be 8-15 pages in length and written in APA style. The research must include a problem statement, a literature review, relevant theory (if applicable), and analysis.

Graduate Final Paper Rubric:

	Expert	Proficient	Apprentice	Novice
Integration of Knowledge	**The paper demonstrates that the author fully understands and has applied concepts learned in the course. Concepts are integrated into the writer's own insights. The writer provides concluding remarks that show analysis and synthesis of ideas.**	**The paper demonstrates that the author, for the most part, understands and has applied concepts learned in the course. Some of the conclusions, however, are not supported in the body of the paper.**	**The paper demonstrates that the author, to a certain extent, understands and has applied concepts learned in the course.**	**The paper does not demonstrate that the author has fully understood and applied concepts learned in the course.**
Topic focus	**The topic is focused narrowly enough for the scope of this assignment. A thesis statement provides direction for the paper, either by statement of a position or hypothesis.**	**The topic is focused but lacks direction. The paper is about a specific topic but the writer has not established a position.**	**The topic is too broad for the scope of this assignment.**	**The topic is not clearly defined.**

Depth of discussion	**In-depth discussion & elaboration in all sections of the paper.**	**In-depth discussion & elaboration in most sections of the paper.**	**The writer has omitted pertinent content or content runs-on excessively. Quotations from others outweigh the writer's own ideas excessively.**	**Cursory discussion in all the sections of the paper or brief discussion in only a few sections.**
Cohesiveness	**Ties together information from all sources. Paper flows from one issue to the next without the need for headings. Author's writing demonstrates an understanding of the relationship among material obtained from all sources.**	**For the most part, ties together information from all sources. Paper flows with only some disjointedness. Author's writing demonstrates an understanding of the relationship among material obtained from all sources.**	**Sometimes ties together information from all sources. Paper does not flow - disjointedness is apparent. Author's writing does not demonstrate an understanding of the relationship among material obtained from all sources.**	**Does not tie together information. Paper does not flow and appears to be created from disparate issues. Headings are necessary to link concepts. Writing does not demonstrate understanding any relationships**
Spelling and grammar	**No spelling &/or grammar mistakes.**	**Minimal spelling &/or grammar mistakes.**	**Noticeable spelling & grammar mistakes.**	**Unacceptable number of spelling and/or grammar mistakes.**
Sources	**More than 5 current sources, of which at least 3 are peer-review journal articles or scholarly books. Sources include both general background sources and specialized sources. Special-interest sources and popular literature are acknowledged as such if they are cited. All web sites utilized are authoritative.**	**5 current sources, of which at least 2 are peer-review journal articles or scholarly books. All web sites utilized are authoritative.**	**Fewer than 5 current sources, or fewer than 2 of 5 are peer-reviewed journal articles or scholarly books. All web sites utilized are credible.**	**Fewer than 5 current sources, or fewer than 2 of 5 are peer-reviewed journal articles or scholarly books. Not all web sites utilized are credible, and/or sources are not current.**
Citations	**Cites all data obtained from other sources. APA citation style is used in both text and bibliography.**	**Cites most data obtained from other sources. APA citation style is used in both text and bibliography.**	**Cites some data obtained from other sources. Citation style is either inconsistent or incorrect.**	**Does not cite sources.**

Source: https://www.cornellcollege.edu/LIBRARY/faculty/focusing-on-assignments/tools-for-assessment/research-paper-rubric.shtml

Student's Responsibility

- Provide appropriate documentation to Dean of Student Affairs for excused absence. Learn how the process works here: http://www.marshall.edu/student-affairs/excused-absence-form/
- Request opportunity to complete missed work **immediately upon return to class.**
- Be aware that excessive absences—whether excused or unexcused—may affect your ability to earn a passing grade.
- Regardless of the nature of the excused absence, you are responsible for completing all coursework **prior to the end of the semester**.

Top Hat
Students will need to create Top Hat user account and purchase a Top hat subscription plan for use within this course. Subscription plans vary from 4-month access, semester access, to lifetime access. Top Hat can either be purchased online or through MU Bookstore.

Top Hat will be used not just to track attendance, but for class quizzes, reviews, etc. The join code for this course is 063618. Top Hat can be used from either a PC or via the Android/iOS app on a mobile device. Students can also text-in answers to +1 (315) 636-0905 via SMS. This is ideal for poor Wi-Fi or older mobile devices.

All students must have Top Hat available for use by Monday, January 21, 2019.

Class Cancellation

There may come a time during the semester when class could be cancelled (illness, weather, etc.). Should that occur, I will notify everyone through their official University email as well as post an announcement on Bb. You are responsible for checking these early and often to ensure that class will be held as scheduled. Should there be some technological issue that prevents me from doing that, a sign should be posted on the classroom door.

Professionalism

In this course you will be treated as professionals and will be expected to behave and perform as such. As professionals, you will be expected to attend class, be on time, complete all of your assignments, meet deadlines, ask questions when you don't understand, and participate. Participating in class means that you are not on your cell phone or surfing the Internet. If you can't be in class, I expect you to let me know ahead of time. Your classroom language and demeanor should also be professional all times. Written communication with me must also be professional. You are expected to follow the guidelines in the "How to Email My Professor" article.

Expectations

1. Work/Think Hard
2. Participate
3. Act with Integrity
4. Embrace the Challenges
5. Tell Me if You Have a Problem
6. Own Your Mistakes and Shortcomings
7. Help Your Fellow Students
8. Be Willing to Work Outside Your Comfort Zone
9. Have FUN!
10. Treat Everyone with Respect
11. Read the Syllabus
12. Check Bb and Your Email Very Often
13. Check Bb for Due Dates and Assignment Specifics
14. Read All of the Assigned Materials

Technical Competencies

Students are expected to be proficient working with AD Forensic Toolkit, FTK Imager, Registry Viewer, Password Recovery Toolkit, and Microsoft Office products or their equivalent. In addition, students will need to an application to create concept maps. VUE, from Tufts University is the recommended tool for this purpose. Use of a different tool for creation of the concept map requires the instructor's permission. It's a free, open source tool that works well on Windows or Macintosh computers. It can be downloaded here: http://vue.tufts.edu/. VUE is very simple to use with a very short learning curve. Students are also expected to be proficient using the Blackboard system (submitting assignments, navigating the class space, taking tests, etc.).

Topics and Methodology

The following outline delineates the **tentative** class schedule with topics to be addressed during the course. It could vary based on class progress and performance.

Week	Dates	Lecture Topics	Reading
1	Jan 14-18	Intro/ Real World Incidents	Bb
2	Jan 21-25	Real World Incidents	Chap 1
3	Jan 28-Feb 1	Incident Response	Chap 2
4	Feb 4-8	Pre-Incident Prep	Chap 3
5	Feb 11-15	Starting the Investigation	Chap 4
6	Feb 18-22	Developing Leads	Chap 5
7	Feb 25 – Mar 1	Mid-Term	Chap
8	Mar 4-8	Scoping the Incident	Chap 6
9	Mar 11-15	Live Data Collection	Chap 7
10	Mar 18-22	MITRE ATT&CK	
11	Mar 25-30	Spring Break	
12	Apr 1-5	MITRE ATT&CK	
13	Apr 8-12	Cyber Threat Intelligence	

14	Apr 15-19	Investigating Windows	Chap 12
15	Apr 22-26	Malware	Chap 15
16	Apr 29- May 3	Malware / Dead Week	
17	May 6-10	Final Exams	Chap 17

Every student is responsible for all materials presented in class, including lectures, notes, and handouts. In case you are not present for a class, it is your responsibility to contact the instructor and receive information about the material presented in that class. Class attendance is VERY IMPORTANT.

Effort Required

This course requires significant effort both in and out of class. Outside of class students will be expected to keep pace with the reading/videos and come to class prepared. If you come to class unprepared it will negatively impact your ability to complete the lab exercises. For every one hour in class, the student is expected to put in an effort of at least 3 hours outside the class for studying and completing writing assignments. Depending upon background and preparedness, some students may have to put in additional effort. **DO NOT PROCRASTINATE.**

Prioritize, schedule, and take responsibility for your actions and you should do very well in this class. To be successful in this course, you **MUST** take an active role in the learning process. To be successful in the course, you must do the work. You must also manage your time effectively. Throughout the semester you may be given time in class to work on various assignments. I STRONGLY encourage you take full advantage of this opportunity.

Blackboard

You are expected to read and familiarize yourself with all the material in Bb and its location. You should go through Bb and see what resources and information are available to you. From time to time, you may find assignments, etc. that are left over from a previous semester. Check the dates. Unless the dates are current, those assignments aren't applicable. You may also ask me for clarification. In regard to due dates, they should be clearly listed in Bb. The date in Bb is the date we will go by. If you need to know when something is due, check Bb. I don't commit to memory every due date for every assignment in all the classes I teach.

Learning Journal

As part of this course, each student must maintain a learning journal. This journal will contain a variety of low stakes assignments, many to be done in class. It is your responsibility to keep it current. It will be turned in at the end of each learning module as a single document. Do NOT procrastinate. The journals are graded **ALL OR NONE**. If you complete all entries, you will receive full credit. **ANY** missing entries will result in a 0.

You will need your journal during almost every class therefore you must ensure it's available when you need it. It is your responsibility to ensure that it's kept safe. You would be wise to make frequent back-ups of your journal. You may want to consider using Dropbox (www.dropbox.com) or Google Drive.

Tests & Readings

The number of quizzes/tests will vary, depending on class progress, participation, and how well students keep up with assignments, readings, etc. Generally, there will be a quiz for each module. Students are expected to keep up with all reading assignments and come to class prepared to discuss the material.

Communication

Private E-mail (Marshall email) will be used to make any general announcements, last minute changes, etc. It is **mandatory** that you monitor your email messages at least once a day.

You should use Bb email to turn in assignments if you have technical difficulties (see the section on Blackboard), if I give you an opportunity to correct or resubmit an assignment, or to make grade appeals. PLEASE ONLY USE MY MARSHALL EMAIL ADDRESS FOR ANY OTHER CORRESPONDENCE. If you need a question answered quickly or need to get information to me in a timely manner MU email is or voicemail is the method of communication to use. Messages left on Blackboard will result in extremely delayed/no response. Please read and follow the guidelines outlined in the "How to Email Your Professor" article. There is a link to it posted on Bb.

All written communications, including discussion postings, emails and written assignments Format, structure, organization, tone, clarity, spelling and punctuation all contribute to effective communications and are expected in all student communications. Any communication not deemed an appropriate business communication may be disregarded by the instructor or points may be taken off, at the sole discretion of the instructor. Students are expected to thoroughly proofread all communications

Using my University email for urgent communication ensures you get a response and the course run smoothly. During periods of inclement weather, check your email and Bb the night before, and the morning of class to see if it has been cancelled.

There is a great deal of information in Bb regarding the conduct of the course, additional resources, etc. You are expected to read and navigate through this material.

Note about cell phones and Internet in class

Please set your cell phone ringer to "Vibrate Only" mode (or turn it off) before you enter the classroom. While in class, you will be expected to work on class related materials/assignments. Please do not surf the Internet and work on other assignments unless authorized by the instructor.

During tests, cell phones MUST be put away. No exceptions.

Disclaimer

The instructor reserves that right to modify the course schedule and evaluation system should it become necessary for the effective conduct of the course.

Extra Credit

Extra credit MAY be offered during the semester. These assignments would be considered optional. Do NOT count on extra credit to save you from a failing grade.

Social Networking

I often receive friend requests from students via Facebook. It is my policy however, not to accept these requests from current students. This is absolutely nothing personal, so please do not take it as such. You are welcome to follow me on Twitter and or join my network on Linked-In. Please join us on the MU Digital Forensics Facebook page. There is lots of good information there including job and internship opportunities.

Please participate in our social media channels:

Facebook - Marshall Digital Forensics & Appalachian Institute of Digital Evidence

Twitter - @ MUDigForensics & @AppyIDE

Instagram - MarshallUDigForensics

Get Involved!

There are tremendous opportunities here beyond your coursework. Student organizations such as the Collegiate Cyber Defense (CCDC) competition team, Hackers for Charity, internships, and research are just some of the possibilities. Involvement in these activities is what can separate your resume from the others. Do not miss this opportunity. See me for details. Also, get to know the faculty. Introduce yourself, stop by and see us. The more we communicate and get to know you, the more we can help you.

Recommendations

I am very happy to write recommendations for students. My only requirement is that you give me a basis/foundation for a recommendation. Here's what I mean. If you don't get involved, earn average grades, show up late for class, do the bare minimum, don't do research, etc. I have nothing to write about.

NOTES:

Bibliography

Incident Response and Computer Forensics 3rd Edition, Jason Luttgens, Matthew Pepe, McGraw-Hill, San Francisco, CA. ISBN 13: 978-0071798686

Doyle, T. *Learner-Centered Teaching. Putting the Research on Learning Into Practice. Sylus Publishing.* 2011. ISBN: 9781579227425

Dutt, Maneesh. Mind Maps for Effective Project Management. Notionpress.com, 2018.

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: Forensic Science | Alpha Designator/Number: DFIA445/CFD545 | (•) Graded ( ) CR/NC

Contact Person: John Sammons | Phone: 304-696-7241

NEW COURSE DATA:

Alpha Designator
CFS
3 credit -

New Course Title: Mobile and Web Penetration and Attack

Alpha Designator/Number: CFS — LH 11/23/19 ~~C F D~~ 5 4 5

Title Abbreviation: M o b i l e a n d W e b P e n

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
Students will learn advanced techniques, tools and frameworks used for Mobile and Web Penetration and Attack.

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

Prerequisite(s): None | Credit Hours: ~~3~~ 3 LH 11/23/19 per mty parcement

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

COS DEAN'S OFFICE 2019 OCT 29 P 2:36

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

Dept. Chair/Division Head	Date 10-28-19
Registrar 436404	Date 10-29-19
College Curriculum Chair / DEAN	Date 10-31-19
Graduate Council Chair	Date 11/23/19

Request for Graduate Course Addition - Page 2

College: Science | Department/Division: Forensic Science | Alpha Designator/Number: DFIA 454/CFD 545

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.

Gardner

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 Syllabus

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

See Attached Syllabus

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

See Attached Syllabus

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

See Attached Syllabus

Request for Graduate Course Addition - Page 4

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

See Attached Syllabus

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

Additional Learning Outcomes and Course Objectives. Additional assignments and project. Graduate level grading scale.

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

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:

Forensic Science
DFIA 454/CFD 545
Students will learn advanced techniques, tools and frameworks used for Mobile and Web Penetration and Attack.
No PRS
Spring 2020
3 Credit Hours

Digital Forensics and Information Assurance 445 /Cyber Forensics and Defense 545

Mobile and Web Penetration Testing
Course Syllabus

Spring 2020
Lab: F 12:00 pm – 12:50 am, Lecture MW 3:00 pm – 3:45 pm, WEAC 1232

Instructor: Bill Gardner, Assistant Professor
Office: WAEC 2005
Email: gardner62@marshall.edu
Phone: 304-696-2658
Office Hours: Monday 10am-12pm, Tuesday 9am-12 pm, Wednesday 9am-12pm, Thursday 9am-12pm

Course Description:

Students will– *Four (4) credit hours*

Graduate Students will receive – Three ~~(3)~~ credit hours

Course Learning Objectives For Undergraduates

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
Demonstrate the use of common tools used in web penetration testing.	Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course.	Midterm, Final Exam, Quizzes, and Exercises.
Explain what a web penetration test is and how it is used to secure networks.	Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course.	Midterm, Final Exam, Quizzes, and Exercises.
Describe how web vulnerabilities are found and how they can impact the financial bottom line of a typical organization	Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course.	Midterm, Final Exam, Quizzes, and Exercises.
Demonstrate the use of the	Textbook and online	Midterm, Final Exam, Quizzes, and

standards in web application testing.	exercises. Creation of a final report based on the final exercise in the course.	
Recognize the difference between web application penetration testing and vulnerability assessment.	Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course.	Midterm, Final Exam, Quizzes, and Exercises.

Course Learning Objectives For Graduate Students

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**
Demonstrate and **Choose** based on OWASP common tools used in web penetration testing.	Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course.	Midterm, Final Exam, Quizzes, and Exercises.
Plan and **Support** a web penetration test is and how it is used to secure networks.	Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course.	Midterm, Final Exam, Quizzes, and Exercises.
Describe how web vulnerabilities are found and how they can impact the financial bottom line of a typical organization	Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course.	Midterm, Final Exam, Quizzes, and Exercises.
Demonstrate the use of the Open Web Application Security Project (OWASP) standards in web application testing.	Textbook and online readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course.	Midterm, Final Exam, Quizzes, and Exercises.
Recognize the difference	Textbook and online	Midterm, Final Exam, Quizzes, and

between web application penetration testing and vulnerability assessment.	readings. Hands-on laboratory and writing exercises. Creation of a final report based on the final exercise in the course.	Exercises.

Required Textbooks:

The Tangled Web: A Guide to Securing Modern Web Applications 1st Edition by Michal Zalewski, No Starch Press (November 26, 2011), ISBN: 978-1593273880

Penetration Testing: A Hands-On Introduction to Hacking, First Edition by Georgia Weidman, No Starch Press (June 2014), ISBN: 978-1-59327-564-8

Additional Required Textbooks for Graduate Students:

MISRA, A. D. (2019). *ANDROID SECURITY: Attacks and defenses*. S.l.: CRC PRESS.

Weidman, G. (2014). *Penetration testing: A hands-on introduction to hacking*. San Francisco: No Starch Press.

Required Software

We will be using the Top Hat (www.tophat.com) classroom response system in class. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message.

You can visit the Top Hat Overview (https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide) within the Top Hat Success Center which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system.

An email invitation will be sent to you by email, but if don't receive this email, you can register by simply visiting their course website:

Note: our Course Join Code is **604792**

Top Hat will require a paid subscription, and a full breakdown of all subscription options available can be found here: www.tophat.com/pricing.

Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email (support@tophat.com), the in-app support button, or by calling 1-888-663-5491.

Topics and Methodologies:

The following outline delineates the tentative class schedule with topics to be addressed during the course.

Week	Topics
Week 1	Module 1- Introduction and Information Gathering
Week 2	Module 1- Introduction and Information Gathering
Week 3	Module 2- Configuration, Identity, and Authentication Testing
Week 4	Module 2- Configuration, Identity, and Authentication Testing
Week 5	Module 3- Injection
Week 6	Module 3- Injection
Week 7	Module 4- JavaScript and XSS
Week 8	**Midterm Exam**, Module 4- JavaScript and XSS
Week 9	Module 5- CSRF, Logic Flaws, and Advanced Tools
Week 10	Module 5- CSRF, Logic Flaws, and Advanced Tools
Week 11	Module 6- Mobile Hacking, Using the Smartphone Pentest Framework
Week 12	Module 6- Mobile Hacking, Using the Smartphone Pentest Framework
Week 13	Module 6 Mobile Hacking, Using the Smartphone Pentest Framework -
Week 14	Module 6 Mobile Hacking, Using the Smartphone Pentest Framework -
Week 15	Module 7- Wrapping up the Pen Test

Assignments:

Students are expected to keep up with all assignments.

Undergraduate Grading Rubric

90-100% = A = sustained creative and critical inquiry of subject

90-89% = B = usually creative and critical inquiry of subject

70-79% = C = substantial understanding and integration of material

60-69% = D = adequate general understanding of material

00-59% = F = below what is expected of a undergraduate student

Undergraduate Grading Rubric

92-100% = A = sustained creative and critical inquiry of subject

91-85% = B = usually creative and critical inquiry of subject

70-84% = C = adequate general understanding of material

60-69% = D = poor understanding of material

00-59% = F = below what is expected of graduate student

In this course you will be given hands-on exercise and writing exercises to complete. In some cases you might have problem completing the assignment because of technical issues. It is important that you document all the steps in the exercise and document what didn't work for you as well as what did work for you. Complete and well-written documentation is a key part of this course.

Projects and Exams:

There are two Projects: the Midterm Project and the Final Project. They cover all the course material to that particular point.

Graduate students will be assigned a Final Paper as well as a Final Project

Graduate Final Paper:

The paper must be 8-15 pages in length and written in APA style. The research must include a problem statement, a literature review, relevant theory (if applicable), and analysis.

Graduate Final Paper Rubric:

	Expert	**Proficient**	**Apprentice**	**Novice**
Integration of Knowledge	The paper demonstrates that the author fully understands and has applied concepts learned in the course. Concepts are integrated into the writer's own insights. The writer provides concluding remarks that show analysis and synthesis of ideas.	The paper demonstrates that the author, for the most part, understands and has applied concepts learned in the course. Some of the conclusions, however, are not supported in the body of the paper.	The paper demonstrates that the author, to a certain extent, understands and has applied concepts learned in the course.	The paper does not demonstrate that the author has fully understood and applied concepts learned in the course.
Topic focus	The topic is focused narrowly enough for the scope of this assignment. A thesis statement provides direction for the paper, either by	The topic is focused but lacks direction. The paper is about a specific topic but the writer has not established a	The topic is too broad for the scope of this assignment.	The topic is not clearly defined.

	Expert	Proficient	Apprentice	Novice
	statement of a position or hypothesis.	position.		
Depth of discussion	In-depth discussion & elaboration in all sections of the paper.	In-depth discussion & elaboration in most sections of the paper.	The writer has omitted pertinent content or content runs-on excessively. Quotations from others outweigh the writer's own ideas excessively.	Cursory discussion in all the sections of the paper or brief discussion in only a few sections.
Cohesiveness	Ties together information from all sources. Paper flows from one issue to the next without the need for headings. Author's writing demonstrates an understanding of the relationship among material obtained from all sources.	For the most part, ties together information from all sources. Paper flows with only some disjointedness. Author's writing demonstrates an understanding of the relationship among material obtained from all sources.	Sometimes ties together information from all sources. Paper does not flow - disjointedness is apparent. Author's writing does not demonstrate an understanding of the relationship among material obtained from all sources.	Does not tie together information. Paper does not flow and appears to be created from disparate issues. Headings are necessary to link concepts. Writing does not demonstrate understanding any relationships
Spelling and grammar	No spelling &/or grammar mistakes.	Minimal spelling &/or grammar mistakes.	Noticeable spelling & grammar mistakes.	Unacceptable number of spelling and/or grammar mistakes.
Sources	More than 5 current sources, of which at least 3 are peer-review journal articles or scholarly books. Sources include both general background sources and specialized sources. Special-interest sources and popular literature are acknowledged as such if they are cited. All web sites utilized	5 current sources, of which at least 2 are peer-review journal articles or scholarly books. All web sites utilized are authoritative.	Fewer than 5 current sources, or fewer than 2 of 5 are peer-reviewed journal articles or scholarly books. All web sites utilized are credible.	Fewer than 5 current sources, or fewer than 2 of 5 are peer-reviewed journal articles or scholarly books. Not all web sites utilized are credible, and/or sources are not current.

	Expert	Proficient	Apprentice	Novice
	are authoritative.			
Citations	Cites all data obtained from other sources. APA citation style is used in both text and bibliography.	Cites most data obtained from other sources. APA citation style is used in both text and bibliography.	Cites some data obtained from other sources. Citation style is either inconsistent or incorrect.	Does not cite sources.

Source: https://www.cornellcollege.edu/LIBRARY/faculty/focusing-on-assignments/tools-for-assessment/research-paper-rubric.shtml

Evaluation Method:

Course grades will be based on a total points system. Your grade will be based on a percentage of the total points possible.

Undergraduate Course Point Distribution

Midterm Project	200 pts
Final Project	200 pts
Lab Exercises	200 pts

Total Points Possible: 600 points

Undergraduate Course Point Distribution

Midterm Project	200 pts
Final Project/Paper	400 pts
Lab Exercises	200 pts

Total Points Possible: 800 points

Grading Policy:

Instructor reserves the right to adjust these values based on the overall class performance. Student materials and grades will be returned as soon as graded to the student and can be viewed via MUOnline

Example:

Total 578 points

578 divided by 600 = 0.961. In the example your grade would be 96%

Undergraduate Grading Scale: Final letter grades will be based on the following scale:

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

In the above example your final grade would be 96, which would be a A.

Graduate Grading Scale:

92-100	A
85-91	B
70-84	C
60-69	D
0-59	F

Grading Policy:

Instructor reserves the right to adjust these values based on the overall class performance.

UNIVERSITY POLICIES: http://www.marshall.edu/academic-affairs/policies/
Important Dates: http://www.marshall.edu/academic-calendar/academic/spring2018/

Attendance Policy

Regular attendance in this class is crucial to your success as a student. The only way to benefit from class discussions and hands-on learning activities is to be here. Being present and on time for all class meetings is expected. Period.

EXCUSED ABSENCES

1. University-sponsored academic activities (performing arts, debate and individual events, honors classes, ROTC); official athletic events; other university activities (student government).
2. Student Illness or Critical Illness/Death in the Immediate Family:" Immediate Family" is defined as a spouse/life partner, child, parent, legal guardian, sibling, grandparent or grand- child. ***Routine doctor appointments are not excused. Appointments should be scheduled around your classes.**
3. Short-Term Military Obligation
4. Jury Duty or Subpoena for Court Appearance
5. Religious Holidays

Student's Responsibility

- Provide appropriate documentation to Dean of Student Affairs for excused absence. Learn how the process works here: http://www.marshall.edu/student-affairs/excused-absence-form/
- Request opportunity to complete missed work **immediately upon return to class.**
- Be aware that excessive absences—whether excused or unexcused—may affect your ability to earn a passing grade.
- Regardless of the nature of the excused absence, you are responsible for completing all coursework **prior to the end of the semester.**

Make-up work for Excused Absences

Because this course is an interactive class, students who miss class due to University-excused activities will be provided with an alternative assignment that connects to the activities in the missed class session.

UNEXCUSED ABSENCES

- If you miss two classes, I will issue a warning.
- If you miss a third class you will receive an automatic letter grade deduction in the course.
- Subsequent missed classes will result in an additional letter grade deduction for each absence.
- You are responsible for keeping track of your attendance for the course.
- If you have questions or problems please contact me.

Class Grade Appeals:

Should you wish to appeal a grade, test question, etc, you MUST follow this procedure. You should send an email to me. The title of the email must read "GRADE APPEAL – Assignment Name" (i.e. Storage Quiz, Mid-Term, etc). The body of the email must include the question, question number, your answer, and why you think you deserve credit. For tests and quizzes in Blackboard, this should be done immediately after completion, before you leave class. You can copy and paste this information to make things simple. I will get back to you as soon as possible.

Electronic Submission Format:

File Names: All electronic submissions must follow this file naming convention: DFIA357_Last Name_First Initial_Assignment Name.doc Example: DFIA445_gardner_b_researchpaper.doc

Communications

Private E-mail will be used to make any general announcements, last minute changes, etc. It is ***mandatory*** that you monitor your email messages at least once a day. ***PLEASE ONLY USE MY MARSHALL EMAIL ADDRESS FOR CORRESPONDENCE:*** gardner62@marshall.edu.

Disclaimer

The instructor reserves that right to modify the course schedule and evaluation system should it become necessary for the effective conduct of the course.

COS IT Agreement

You must agree to the COS IT Agreement to access the labs in the course: http://www.marshall.edu/cosweb/agreements/?a=j3qw3.

COS Software Store

The College of Science and Marshall University maintains agreements with various software publishers to provide software for its computer labs as well as for its faculty, staff, and students. Students enrolled in COS courses are eligible to receive a variety of software applications at no cost for use in their academic endeavors. This includes many of the same applications used in COS courses. You can find this information and more on the COS Web site at http://www.marshall.edu/cos/software/

Social Networking:

Follow me on: Facebook: https://www.facebook.com/oncee Twitter: @oncee Linkedin: www.linkedin.com/in/304blogs/

Other Twitter accounts to follow:

Twitter:: @MUDigForensics and @AppyIDE

Other websites of interest:

Appalachian Institute of Digital Evidence - http://www.appyide.org

Department of Forensic Sciences - http://www.marshall.edu/forensicsciences/

Bibliography

MISRA, A. D. (2019). *ANDROID SECURITY: Attacks and defenses*. S.l.: CRC PRESS.

Penetration Testing: A Hands-On Introduction to Hacking, First Edition by Georgia Weidman, No Starch Press (June 2014), ISBN: 978-1-59327-564-8

The Tangled Web: A Guide to Securing Modern Web Applications 1st Edition by Michal Zalewski, No Starch Press (November 26, 2011), ISBN: 978-1593273880

Reply all | Delete Junk | •••

Proposed Cyber Defense Program

Howard, Lori
Yesterday, 3:52 PM
Cantrell-Johnson, Sonja; Johnson, Tammy; Somerville, Chuck; Pittenger, David; Sam

Reply all |

Inbox

Action Items

Hi all,

Sonja, Tammy, and I met over the phone and discussed the following items. Several of them are time sensitive and we need to resolve them quickly.

1. The first issue that should be resolved is will the granting entity allow the students to be admitted into a current College of Science graduate program? (If so, we can use this program as a "holding program" until we can get approval for the Cyber Defense program.)
2. The issue with needing a holding program is that we have to get federal Department of Education approval for the Cyber Defense program before students can be enrolled due to an issue with financial aid. The state of WV is required to have this approval before we can enroll students into a new program. Current estimates are 1-3 months for this approval. (This would come after BOG approval in December.)
3. Tammy Johnson needs the admission criteria to be sent to her for review. Please get this to her.
4. If the students can be enrolled in a sister COS program "i.e. holding program" , we need to identify this program. This program must be able to admit students with "conditional" status. Once we get approval from the Department of Education for the Cyber Defense program, the students can then by switched into the Cyber Defense Program.
5. Potential students for this program, must start completing applications for graduate admissions in the next 2 weeks. The application is online, but they will need to know what program to apply to.
6. Once you know who the students are, please forward their names and 901s to Tammy Johnson.
7. Regarding registration, please use the special topics number for the new course you are creating and then make sure to complete the new course addition paperwork.
8. For the courses that will be used in the Cyber Defense program, make sure to make it by instructor permission so that only the students who have applied for this program can register. My understanding is that you have 8 students who should be admitted and registered.
9. Registration will open in November but students can be registered until the first day of class in January.

Lori Howard, Ph.D.
Associate Professor of Special Education
MU ACCESS Team
howardl@marshall.edu
304-746-2076

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: Forensic Sciences | Alpha Designator/Number: CFD 481 | (●) Graded ( ) CR/NC

Contact Person: John Sammons | Phone: 304-696-7241

NEW COURSE DATA:

New Course Title: ~~Sp Tp OSINT Practicum~~ I Special Topics

Alpha Designator/Number: ~~CFD~~ CFS ~~481~~ 581 LH 11-23-19 changed by request of Lori Howard. See attached email.

Title Abbreviation: ~~SP TP OSINT Practicum I~~ SPECIAL TOPICS

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
Students will work in the Open Source Intelligence Lab using advance Open Source Intelligence tools.

Co-requisite(s): N/A | First Term to be Offered: Spring 2020

Prerequisite(s): N/A | Credit Hours: 3

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

Alpha Designator CFS Agreed to this as part of name change.
LH

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

Dept. Chair/Division Head	Date 10-29-19
Registrar 430404	Date 10-29-19
College Curriculum Chair / DEAN	Date / 10-31-19
Graduate Council Chair	Date 11/23/19

Request for Graduate Course Addition - Page 2

College: Science | Department/Division: Forensic Sciences | Alpha Designator/Number: CFD 481

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.

Bill Gardner

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)

N/A

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

See Attached Sample Syallabus

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

See Attached Sample Syallabus

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

See Attached Sample Syallabus

Request for Graduate Course Addition - Page 4

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

See Attached Sample Syallabus

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

Additional assignment or project.

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

See Attached Bibliography

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: Forensic Sciences
Course Number and Title: Sp Tp CFD 481 Sp Tp OSINT Practicum I
Catalog Description: Students will work in the Open Source Intelligence Lab using advance Open Source Intelligence tools.
Prerequisites: NA
First Term Offered: Spring 2020
Credit Hours: 3

Bibliography

Google Hacking For Penetration Testers, Third Edition by Johnny Long, Bill Gardner, and Justin Brown, Syngress (December 2015), ISBN: 978-0-12-802982-4

Hassan, N. A., & Hijazi, R. (2018). *Open source intelligence methods and tools: A practical guide to online intelligence*. New York: Apress.

Open Source Intelligence Techniques: Resources For Searching and Analyzing Online Information, Fifth Edition by Michael Bazzell Create Space Independent Publishing Platform; 4th edition (March 2015), ISBN-13: 978-1508636335

Lloyd, Sandee

From: Howard, Lori
Sent: Thursday, December 12, 2019 9:49 AM
To: Lloyd, Sandee
Subject: Re: Minutes

Yes and do you want me to initial something?

L

Sent from my iPhone

On Dec 12, 2019, at 9:44 AM, Lloyd, Sandee <lloyd@marshall.edu> wrote:

> There is no mention of the number change for 481/581. The approved paperwork says 481 and the minutes say 581. Do I make the change on the paperwork before I upload the file to the webpage?
>
> The noncurricular change in the minutes says- Type of Request: Non-Curricular Change – Repeat course policy
> Effective Date: Fall 2020
> Rationale: Revision of description of Graduate College Repeat Course policy to correct typos, clarify language, and provide more guidance to students.
>
> There is no supporting paperwork, for it.
>
> **From:** Howard, Lori <howardl@marshall.edu>
> **Sent:** Thursday, December 12, 2019 9:34 AM
> **To:** Lloyd, Sandee <lloyd@marshall.edu>
> **Subject:** Re: Minutes
>
> S
>
> The 481 is the 581. It should have 581 on the paperwork and the minutes I thought noted we changed the number.
>
> What is the no. Curricular change?
>
> L

Sent from my iPhone

On Dec 12, 2019, at 9:31 AM, Lloyd, Sandee <lloyd@marshall.edu> wrote:

> Hi Lori,
>
> I have a couple of questions about the November GC minutes.
>
> There is an approval for a noncurricular change in the Graduate College but no paperwork was sent.
> There is an approval for CFS 581, but the paperwork says CFS 481, which is an undergraduate level class. Is there paperwork for 581?
>
> Thank you!
>
> Sandee

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: Forensic Science | Alpha Designator/Number: CFD 680 | ◉ Graded ○ CR/NC

Contact Person: John Sammons | Phone: 304-696-7241

NEW COURSE DATA:

Note:
Alpha Designator
Agreed to
CFS
L

New Course Title: Special Topics ~~- Advanced Cyber Defense~~

LH 11/23/19 CFS 680

Alpha Designator/Number: C F D ~~6 5 0~~

SPECIAL TOPICS

Title Abbreviation: ~~S P~~ ~~A d v a n c e d C y b e r~~ [illegible]

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
Students will learn advanced tools and methods using in Advanced Cyber Defense though hands-on exercises in Purple Teaming, End-User Education, Physical Security, and Incident Response.

Co-requisite(s): N/A | First Term to be Offered: Spring 2020

Prerequisite(s): N/A | Credit Hours: 3

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

COS DEAN'S OFFICE
2019 OCT 29 P 2:36

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

Dept. Chair/Division Head	Date 10-29-19
Registrar Sonya Lacy 430404	Date 10-29-19
College Curriculum Chair DEAN	Date 10-30-19 / 10-31-19
Graduate Council Chair	Date 11/23/19

Request for Graduate Course Addition - Page 2

College: Science | Department/Division: Forensic Sciences | Alpha Designator/Number: CFD680

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.

Bill Gardner

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 Sample Syllabus

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

See Attached Sample Syllabus

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

See Attached Sample Syllabus

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

See Attached Sample Syllabus

Request for Graduate Course Addition - Page 4

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

See Attached Sample Syllabus

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

Additional assignment or project.

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

See Attached Bibliography

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: Forensic Sciences
Course Number and Title: CFD 680 Special Topics - Advanced Cyber Defense
Catalog Description: Students will learn advanced tools and methods using in Advanced Cyber Defense.
Prerequisites: N/A
First Term Offered: Spring 2020
Credit Hours: 3

CFD 680 Special Topics - Advanced Cyber Defense

Course Description: Students will learn advanced tools and methods using in Advanced Cyber Defense though hands-on exercises in Purple Teaming, End-User Education, Physical Security, and Incident Response.

Textbook

Brotherston, L., & Berlin, A. (2017). *Defensive security handbook: Best practices for securing infrastructure*. Sebastopol, CA: OReilly Media. ISBN-10: 9781491960387; ISBN-13: 978-1491960387

Course Learning Objectives

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 **Apply** and **Improve** the principles of Cyber Defense to properly secure networks.	Learning Modules, Readings, Hands-on Exercises	Hands- on Labs and Exercises: Midterm Project; Writing Assignments; Final Project
Students will effectively **identify** and **plan** responses to advanced network attacks and threat actors.	Learning Modules, Readings, Hands-on Exercises	Hands- on Labs and Exercises: Midterm Project; Writing Assignments; Final Project
Students will effectively **identify** and react to advanced network attacks and threat actors.	Learning Modules, Readings, Hands-on Exercises	Hands- on Labs and Exercises: Midterm Project; Writing Assignments; Final Project

Students will **demonstrate** the ability to identify best practices and advanced tools used to **defend** networks.	Learning Modules, Readings, Hands-on Exercises	Hands- on Labs and Exercises: Midterm Project; Writing Assignments; Final Project
Students will **identify**, **defend**, and **formulate plans** to deal with advanced threats against digital information.	Learning Modules, Readings, Hands-on Exercises	Hands- on Labs and Exercises: Midterm Project; Writing Assignments; Final Project

Week	Topic
1	Creating a Security Program
2	Asset Management and Documentation
3	Policies
4	Standards and Procedures
5	User Education
6	Incident Response
7	Disaster Recovery
8	Industry Compliance Standards and Frameworks
9	Physical Security
10	Defending Microsoft Windows Infrastructure and Networks Infrastructure
11	Defending Unix Application Servers
12	Defending Endpoints
13	Password Management and Multifactor Authentication
14	Vulnerability Management
15	Purple Teaming

Assignments:
Students are expected to keep up with all assignments.

Grading Rubric

90-100%	= A	= sustained creative and critical inquiry of subject
90-89%	= B	= usually creative and critical inquiry of subject
70-79%	= C	= substantial understanding and integration of material
60-69%	= D	= adequate general understanding of material
00-59%	= F	= below what is expected of a graduate student

In this course you will be given hands-on exercise and writing exercises to complete. In some cases you might have problem completing the assignment because of technical issues. It is important that you document all the steps in the exercise and document what didn't work for you as well as what did work for you. Complete and well-written documentation is a key part of this course.

Exams:
There are two major projects: the Midterm Project and the Final project. They cover all the course material to that particular point in the course.

Evaluation Method:
Course grades will be based on a total points system. Your grade will be based on a percentage of the total points possible.
Course Point Distribution

Midterm Project 200 pts
Final Project 200 pts
Lab Exercises/Quizzes 200 pts
Total Points Possible: 600 points

Grading Policy:
Instructor reserves the right to adjust these values based on the overall class performance. Student materials and grades will be returned as soon as graded to the student and can be viewed via MUOnline

Example:
Total Point Achieved in the Course: 578 points
578 divided by 600 = 0.961. In the example your grade would be 96%

Grading: Final letter grades will be based on the following scale:
92 - 100 A
85 - -91 B
75 - 84 C
74 - 69 D
0- - 59 F

In the above example your final grade would be 96, which would be a A.
Grading Policy:

UNIVERSITY POLICIES: http://www.marshall.edu/academic-affairs/policies/
Important Dates: http://www.marshall.edu/academic-calendar/academic/spring2018/

Attendance Policy
Regular attendance in this class is crucial to your success as a student. The only way to benefit from class discussions and hands-on learning activities is to be here. Being present and on time for all class meetings is expected. Period.

EXCUSED ABSENCES
1. University-sponsored academic activities (performing arts, debate and individual events, honors classes, ROTC); official athletic events; other university activities (student government).
2. Student Illness or Critical Illness/Death in the Immediate Family:" Immediate Family" is defined as a spouse/life partner, child, parent, legal guardian, sibling, grandparent or grand- child. *Routine doctor appointments are not excused. Appointments should be scheduled around your classes.
3. Short-Term Military Obligation
4. Jury Duty or Subpoena for Court Appearance
5. Religious Holidays

Student's Responsibility
- Provide appropriate documentation to Dean of Student Affairs for excused absence. Learn how the process works here: http://www.marshall.edu/student-affairs/excused-absence-form/
- Request opportunity to complete missed work immediately upon return to class.
- Be aware that excessive absences—whether excused or unexcused—may affect your ability to earn a passing grade.
- Regardless of the nature of the excused absence, you are responsible for completing all coursework prior to the end of the semester.

Make-up work for Excused Absences

Because this course is an interactive class, students who miss class due to University-excused activities will be provided with an alternative assignment that connects to the activities in the missed class session.

UNEXCUSED ABSENCES

- If you miss two classes, I will issue a warning.

- If you miss a third class you will receive an automatic letter grade deduction in the course.
- Subsequent missed classes will result in an additional letter grade deduction for each absence.
- You are responsible for keeping track of your attendance for the course.
- If you have questions or problems please contact me.

Class Grade Appeals:
Should you wish to appeal a grade, test question, etc, you MUST follow this procedure. You should send an email to me. The title of the email must read "GRADE APPEAL – Assignment Name" (i.e. Storage Quiz, Mid-Term, etc). The body of the email must include the question, question number, your answer, and why you think you deserve credit. For tests and quizzes in Blackboard, this should be done immediately after completion, before you leave class. You can copy and paste this information to make things simple. I will get back to you as soon as possible.

Electronic Submission Format:
File Names: All electronic submissions must follow this file naming convention:
CFD650_Last Name_First Initial_Assignment Name.doc
CFD650_gardner_b_researchpaper.doc

Communications
Private E-mail will be used to make any general announcements, last minute changes, etc. It is mandatory that you monitor your email messages at least once a day. PLEASE ONLY USE MY MARSHALL EMAIL ADDRESS FOR CORRESPONDENCE: gardner62@marshall.edu.

Disclaimer
The instructor reserves that right to modify the course schedule and evaluation system should it become necessary for the effective conduct of the course.

COS IT Agreement
You must agree to the COS IT Agreement to access the labs in the course: http://www.marshall.edu/cosweb/agreements/?a=j3qw3.

COS Software Store
The College of Science and Marshall University maintains agreements with various software publishers to provide software for its computer labs as well as for its faculty, staff, and students. Students enrolled in COS courses are eligible to receive a variety of software applications at no cost for use in their academic endeavors. This includes many of the same applications used in COS courses. You can find this information and more on the COS Web site at
http://www.marshall.edu/cos/software/

Social Networking:
Facebook: https://www.facebook.com/oncee
Twitter: @oncee
Linkedin: www.linkedin.com/in/304blogs/
Twitch: https://www.twitch.tv/therealoncee
Other Twitter accounts to follow:
Twitter:: @MUDigForensics and @AppyIDE

Other websites of interest:
Appalachian Institute of Digital Evidence - http://www.appyide.org
Department of Forensic Sciences - http://www.marshall.edu/forensicsciences/
DFIA Slack Channel -
https://join.slack.com/t/mudfia/shared_invite/enQtNzM2OTI1Mjc4MTgwLWUzNTZhYjhkODhlODcwZTczZDVlM2Y1YjE4ZmQ5OTk1NmE3MTE4MWRlYTQ2MzRkODNhN2RlMmQ5YWFkZWQzNTg

Bibliography

Brotherston, L., & Berlin, A. (2017). *Defensive security handbook: Best practices for securing infrastructure.* Sebastopol, CA: OReilly Media. ISBN-10: 9781491960387; ISBN-13: 978-1491960387

Diogenes, Y., & Ozkaya, E. (2018). *Cybersecurity - attack and defense strategies: Infrastructure security with Red team and Blue team tactics.* Packt.

Tanner, N. H. (2019). *Cybersecurity Blue Team.* Wiley & Sons.

White, A., & Clark, B. (2017). *BTFM: Blue team field manual.* North Charleston, SC: CreateSpace.

Reply all | Delete Junk | •••

Proposed Cyber Defense Program

Howard, Lori
Yesterday, 3:52 PM
Cantrell-Johnson, Sonja; Johnson, Tammy; Somerville, Chuck; Pittenger, David; Sam

Reply all |

Inbox

Action Items

Hi all,

Sonja, Tammy, and I met over the phone and discussed the following items. Several of them are time sensitive and we need to resolve them quickly.

1. The first issue that should be resolved is will the granting entity allow the students to be admitted into a current College of Science graduate program? (If so, we can use this program as a "holding program" until we can get approval for the Cyber Defense program.)
2. The issue with needing a holding program is that we have to get federal Department of Education approval for the Cyber Defense program before students can be enrolled due to an issue with financial aid. The state of WV is required to have this approval before we can enroll students into a new program. Current estimates are 1-3 months for this approval. (This would come after BOG approval in December.)
3. Tammy Johnson needs the admission criteria to be sent to her for review. Please get this to her.
4. If the students can be enrolled in a sister COS program "i.e. holding program" , we need to identify this program. This program must be able to admit students with "conditional" status. Once we get approval from the Department of Education for the Cyber Defense program, the students can then by switched into the Cyber Defense Program.
5. Potential students for this program, must start completing applications for graduate admissions in the next 2 weeks. The application is online, but they will need to know what program to apply to.
6. Once you know who the students are, please forward their names and 901s to Tammy Johnson.
7. Regarding registration, please use the special topics number for the new course you are creating and then make sure to complete the new course addition paperwork.
8. For the courses that will be used in the Cyber Defense program, make sure to make it by instructor permission so that only the students who have applied for this program can register. My understanding is that you have 8 students who should be admitted and registered.
9. Registration will open in November but students can be registered until the first day of class in January.

Lori Howard, Ph.D.
Associate Professor of Special Education
MU ACCESS Team
howardl@marshall.edu
304-746-2076

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

Text

Contact Person: Wook-Sung Yoo

Phone: x5452

Degree Program: Data Science

Check action requested: ☒ Addition ☐ Deletion ☐ Change

LH 11/23/19 - Program to start Fall 2020

Effective Term/Year: Fall 20 ~~28~~ 20 Spring ~~29~~ 20 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 [signature]	Date Oct. 31, '19
College Curriculum Chair [signature]	Date 10/31/19
College Dean Wael Zatar	Date 11/1/19
Graduate Council Chair [signature]	Date 11/23/19
Provost/VP Academic Affairs	Date
Presidential Approval	Date
Board of Governors Approval	Date

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

Data scientists are among the most sought-after positions in America. With 163 zettabytes of data to be created by 2025 (10 times the amount of data in the digital universe in 2016), employers will have an extensive need for data experts who can manage and analyze the vast amount of information they collect. IBM predicts that by 2020, the number of jobs for all U.S. data professionals will increase by 364,000 openings to 2,720,000 jobs. This data boom is challenging businesses in every industry to hire professionals with a master's degree in data science who are skilled at data management and governance. Nearly 40% of advanced data and business analytic positions require a master's degree or Ph.D. according to a research study performed by IBM. The M.S. in Data Science will strengthen existing programs at Marshall University creating productive new paths promoting interdisciplinary education and research. Collaborative cutting-edge research in data science will be conducted in partnership with other universities and research institution. Please see attachment for more information of the "Rationale" for degree program addition.

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)

See attachment for course information of the curriculum of newly proposed M.S. in Data Science program curriculum.
Two new STA courses below will be offered by Mathematics department:
STA 535 Statistical Data Mining, 3 credits, NEW, required
STA 634 Statistical Methods for Researchers, 3 credits, NEW, required

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.

No additional instructional resources are required - courses in the division of computer science are already being offered by division of computer science, and will continue to be taught by existing instructors. New math courses will be handled by existing faculty in math department.
No additional library or instructional materials will be required beyond those already in place to support other undergraduate and graduate computer science programs.
No additional support services will be required.
No additional facilities will be required; existing instructional and lab spaces in the WAEC are adequate for the program.
No additional operating resources are required. Please see p. 10 - 13 in attachment of "Rationale" for additional information.

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. See attached confirmation letters from Dean of College of Science and Dean of School of Business

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.
MS in Data Science is a new program.

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)

Please see attachment of "New Catalog".

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: Masters of Science in Data Science
Credit Hours: 30 Credit Hours
Type of Change: Addition
Rationale: Data scientists are among the most sought-after positions in America. With 163 zettabytes of data to be created by 2025 (10 times the amount of data in the digital universe in 2016), employers will have an extensive need for data experts who can manage and analyze the vast amount of information they collect. IBM predicts that by 2020, the number of jobs for all U.S. data professionals will increase by 364,000 openings to 2,720,000 jobs. This data boom is challenging businesses in every industry to hire professionals with a master's degree in data science who are skilled at data management and governance. Nearly 40% of advanced data and business analytic positions require a master's degree or Ph.D. according to a research study performed by IBM. The M.S. in Data Science will strengthen existing programs at Marshall University creating productive new paths promoting interdisciplinary education and research. The students in the M.S. in Data Science will have many opportunities to learn advanced technologies and research. Collaborative cutting-edge research in data science will be conducted in partnership with other universities and research institution.

COMPUTER SCIENCE

MARSHALL UNIVERSITY

College of Information Technology and Engineering

Weisberg Division of Computer Science

October 25, 2019

Master of Science in Data Science

Effective Date: Spring 2020

Contact Person:

Dr. Wael Zatar, Dean

College of Information Technology and Engineering

and

Dr. Wook Sung Yoo, Chair

Weisberg Division of Computer Science

Rationale for Addition of Degree

M.S. in Data Science

Executive Summary

Data science is a concept to unify statistics, data analysis, data mining, machine learning and their related techniques and theories to extract meaningful insight from various data sources to forecast the future. This information can then be used to optimize the processes to increase the overall efficiency of a business or system. The proposed M.S. in Data Science provides students with technical expertise in computational modeling, data collection and integration, data storage and retrieval, data processing, modeling and analytics, and visualization.

International Data Corp. (IDC) expects worldwide revenue for big data and business analytics (BDA) solutions to reach $260 billion in 2022, with a compound annual growth rate (CAGR) of 11.9 percent. As a result, there is a strong need of data scientists who are skilled in organizing and analyzing massive amounts of data and data scientists are among the most sought-after positions in these days and nearly 40% of advanced data and business analyst positions require a master's degree or Ph.D.

The proposed Master of Science in Data Science (MSDS) with 30 credits course degree requirement provides students with technical expertise in computational modeling, data collection and integration, data storage and retrieval, data processing, modeling and analytics, and visualization. Students graduating from this program will be able to handle large data sets, write software to work with these large data sets, and apply the statistical skills to model and analyze sub-data sets of interest. We believe the proposed 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 proposed program does not anticipate any need of additional faculty lines, major funding, or other resources to establish the program. 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 Data Science in the fifth year of the program. The projected net revenue in the fifth year is estimated at $955,528. The program will generate close to $3.2 million in new revenue during its first five years.

1. Introduction

Data scientists extract meaningful insight from various data sources using techniques such as data mining, machine learning, and many other data sources to forecast the future. This information can then be used to optimize the processes to increase the overall efficiency of a business, reduce business costs by identifying more efficient ways of doing business, and make more informed business decisions, leading to better products and services. In order to understand and analyze actual phenomena with data, data science employs techniques and theories drawn from many fields with the goal of discovering useful information and supporting decision-making with the aid of specialized systems and software and follow the process of inspecting, cleansing, transforming, and modeling data.

The proposed M.S. in Data Science degree program provides students with technical expertise in computational modeling, data collection and integration, data storage and retrieval, data processing, modeling and analytics, and visualization. Students graduating with an M.S. degree in Data Science will have the ability to handle large data sets, write software to work with large data sets, apply statistical skills to model, and analyze sub-data sets of interest. The Data Science degree program offers a holistic approach to data science education and takes advantage of the strong related programs in the Weisberg Division of Computer Science and Mathematics department as well as other programs at Marshall University. The Data Science degree program prepares graduates to succeed in professional careers in a rapidly growing data science field, thus leading to technological changes in the industry and research fields both locally and nationally. The following sections provide additional details of the proposed M.S. in the Data Science degree program.

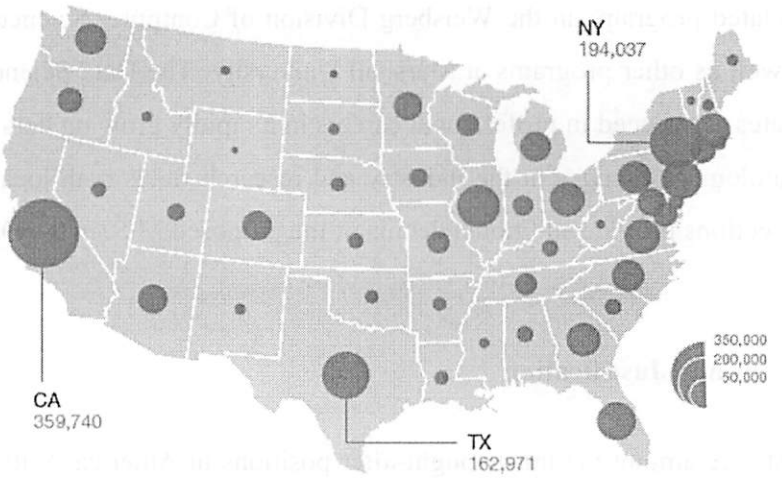
2. Program Needs and Justification

Data analysts are among the most sought-after positions in America. With 163 zettabytes of data to be created by 2025 (10 times the amount of data in the digital universe in 2016) employers will have an extensive need for data experts who can manage and analyze the vast amount of information they collect. IBM predicts that by 2020, the number of jobs for all U.S. data professionals will increase by 364,000 openings to 2,720,000 jobs. This data boom is challenging businesses in every industry to hire professionals with a master's degree in data science who are

skilled at data management and governance. Nearly 40% of advanced data and business analytic positions require a master's degree or Ph.D. according to a research study performed by IBM.

- Top 5 jobs by Google Careers are related to data science.
- According to the U.S Bureau of Labor and Statistics, the average wage of the U.S data scientists in 2016 is $130,000.
- McKinsey & Co. estimates that big data science revenue will be $325 billion by 2020.

Data scientist has been named the best job in America for three years running, according to Glassdoor's 2018 Rankings, with a median base salary of $110,000. Common data science jobs are Chief Executive Officer, Chief Data Officer, Director of IT, Human Resources Manager, Financial Manager and Marketing Manager. On October 1, 2018 a search on indeed.com for data science careers in West Virginia showed statistics for 231 different positions (https://www.indeed.com/jobs?q=data+analyst&l=WV) in various industries including government, health industries, IT, bank, engineering, education, etc. Figures in the USA map below shows the number of jobs in states in the US. Although the job of data science in WV is still under the growth, WV is located in the middle of very hot states of data science job market.



Source: PwC analysis based on Burning Glass Technologies data, January 2017.

For existing programs in Data Science, Shepherd University provides a B.S. in Data Analytics Comprehensive degree program. An online M.S. degree program in Business Data

Analytics is offered at West Virginia University as summarized in Table 1.

Table 1: Data Science or Related Degree Programs in the State of West Virginia

Institution	Degree	Public	Distance from MU
Shepherd University	B.S. in Data Analytics Comprehensive	Yes	353 miles
West Virginia University	Online M.S. in Business Data Analytics	Yes	207 miles

A few educational institutions within the surrounding 300 miles offers data Science related degrees or certificates as shown in table 2.

Table 2: Data Science or Related Programs in Surrounding Area

Institution	Degree	Public	Distance from MU
Case Western University	B.S. Degree in Data Science	No	278 Miles
Miami University of Ohio	Minor in Data Analytics	Yes	188 Miles
Northern Kentucky University	B.S. Degree in Data Science	Yes	144 Miles
The Ohio State University	B.S. Degree in Data Analytics	Yes	150 Miles
Virginia Tech	B.S. Degree in Computational Modeling and Data Analytics	Yes	188 Miles

At a national level, there is a growing list of undergraduate and graduate programs in data science and related areas and the proposed M.S. in Data Science degree program is very timely for West Virginia.

3. Program Development Plan

With exponentially increasing amounts of data accumulating in real-time, every business and entrepreneur in today's society needs data scientist with the ability to turn data into a competitive advantage to augment their competitive position relative to others in the field. Although the skills needed to be a competent data scientist could be different depending on the business, the elite data scientist must master five essential skills: programming, quantitative skills, technologies, domain knowledge, and critical thinking. Data scientists should know how to code and have mathematical

knowledge to include probability and statistics in order to conduct numerical and statistical analysis. They should also be familiar with a wide range of technologies to include analytical tools, platforms, hardware, and software. Analysis of data would be useless if it cannot be applied to a business setting. All data scientists need to have a strong understanding of the business and domain knowledge they operate in, which enables data scientists to have insight and communicate effectively with different stakeholders. Data scientists need to be critical thinkers with creativity, to be able to apply objective analysis of facts on a given topic or problem before formulating opinions or rendering judgments.

The Weisberg Division of Computer Science currently houses five programs (B.S. in Computer Science, B.S. in Computer and Information Security, M.S. in Computer Science, M.S. in Information Systems, and M.S. in Cybersecurity) and has already offered various data science courses to develop expertise in data science. The curriculum of the proposed M.S. in Data Science program consists of the courses from the Weisberg Division of Computer Science and statistics courses from Mathematics department to build the skills necessary to become an elite data analyst to analyze, discover, and innovate in a data-rich world. A total of 30 credit hours are required for graduation: 18 credit core courses provide opportunities for students to build programming skills, quantitative skills, knowledge of statistics, technologies, and critical thinking, 12 credits domain emphasis will build domain knowledge with 6 credit thesis option to provide opportunities for students to build research opportunities or areas of additional expertise (see attached catalog in this document).

Required core courses include four existing computer science courses and two new statistics courses as below:

- STA 535 Statistical Data Mining (*NEW*)
- STA 634 Statistical Methods for Researchers (*NEW*)
- CS 511 Advanced Programming
- CS 630 Machine Learning
- CS 660 Big Data Systems
- CS 670 Visual Analytics

Domain Emphasis gives students a good understanding of a particular domain. A student is required to take 9 credits hours in one domain emphasis and 3 credit hours of free elective in any

of the three domain areas. Courses for three domain emphases are listed below:

- *Computing*

  This domain emphasis tackles computing areas including cloud computing, web, IoT, Artificial Intelligence, algorithms, bioinformatics, etc.

  - CS 505 Computing for Bioinformatics
  - CS 539 Introduction to Artificial Intelligence
  - CS 540 Digital Image Processing
  - CS 600 Advanced Web Technology
  - CS 601 The Internet of Things
  - CS 602 Cloud Computing
  - CS 620 Applied Algorithms
  - CS 645 Advanced Topics in Bioinformatics

- *Information Systems*

  This domain emphasizes the use of information technology and the expected utility of information systems.

  - IS 545 Health Care Data Analytics
  - IS 600 Management Information Systems
  - IS 610 Systems Quality Assurance
  - IS 621 Information Structures I
  - IS 622 Emerging Tech in Info Systems
  - IS 623 Database Management
  - IS 624 Data Warehousing
  - IS 665 Health Care Enterprise Info Syst

- *Predictive Analytics*

  This domain emphasis gives students the opportunity to learn the use of various statistical modelling techniques that are applicable to predictive analytics.

  - STA 512 Regression Analysis
  - STA 513 Experimental Designs
  - STA 520 Nonparametric Statistics
  - STA 564 Statistical Computing
  - STA 570 Applied Survival Analysis

- STA 662 Applied Multivariate Statistical Methods (Course Change)
- STA 663 Time Series Forecasting
- STA 664 Bayesian Statistics (NEW)
- STA 665 Advanced Statistical Learning (NEW)
- STA 681 Thesis

Although the proposal includes only three domain emphases (*Computing* domain, *Information Systems domain, and Predictive Analytics* domain), we expect the number of domain emphasis to be increased with various domain knowledge courses offered by different programs at Marshall University as the program matures.

When the M.S. in Data Science is successfully launched, the 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 data science
- pursuing research and grant opportunities in data science related areas
- coordinating availability of data Science coursework to assist not only West Virginia, but the rest of the nation to meet the demand for data science professionals
- providing outreach opportunities to interested parties and organizations

We expect the M.S. in Data Science will make Marshall University a recognized leader in education, research and practice in data science fields. The program will attract traditional and non-traditional students from West Virginia, the Tri-State region and the surrounding states. The delivery of the M.S. in Data Science will be following classical instructional mechanisms at this time; however, the program can include online/hybrid courses and may be extended to an online degree program.

The M.S. in Data Science will strengthen existing undergraduate, graduate degree, and certificate programs at Marshall University such as Computer Science, Information System, Mathematics, Technology Management, Electrical and Computer Engineering, Management Information Systems, Health Informatics, and Bioinformatics by offering the students additional electives that can enrich their academic experience. Students in the M.S. in Data Science may choose to get another major in any of the closely-related fields or may add a minor in one of these fields. The proposed program opens the door for graduates from different undergraduate major to pursue a master's degree in the M.S. in Data Science program after successful completion of the

three bridge courses. As a result, the M.S. in Data Science will create exciting and productive new paths, which will eventually promote interdisciplinary education and research. The students in the M.S. in Data Science will have many opportunities to learn and implement advanced technologies working with interdisciplinary faculty team in graduate research at Marshall University and collaborative cutting-edge research in data science will be conducted in partnership with other universities and research institutions.

The Weisberg Division of Computer Science has strong partnerships with several industry partners and state government agencies. The proposed Data Science program has the strongest support of the local, state and Tri-State 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 are in supportive providing suitable employment opportunities for the students and graduates of this proposed degree program. In addition, the advisory board members have committed to facilitating the pursuit of less formal relationships earlier in the students' curriculum through field experiences, internships, and co-ops.

The proposed M.S. in Data Science degree program at Marshall University will be the first established non-online M.S. in Data Science in the state of West Virginia. The needs of the stakeholders and the huge regional, national and international shortage of qualified graduates and experts in this specialized field shaped the process of identifying the program curriculum, learning objectives and learning outcomes, and deciding on the curriculum. There are no alternatives to the proposed degree program at Marshall University.

4. Projected Resource Requirements.

The Weisberg Division of Computer Science of College of Information Technology and Engineering will house the M.S. in Data Science degree program. By leveraging already existing resources available at the Weisberg Division of Computer Science, the proposed program does not require additional resources and can be sustainable at almost no cost upon its initiation. 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.

4.1. Estimated Projections:

Based upon the number of student inquiries and interest of the proposed degree, it is conservatively estimated that the M.S. in Data Science program will have 20 full-time equivalent students in its first year, with an additional 20% annual growth and approximately 20% withdrawal (transferring out) from the program in the next 5 subsequent years as shown in Table 3. The anticipated program graduation rate should reach at least 28 full-time equivalent students in 5th year.

Table 3: Student Enrollment Projection

Academic Year		2019-20	2020-21	2021-22	2022-23	2023-24
2019-2020	First Year Students	20				
	Second Year Students	0				
2020-2021	First Year Students		24			
	Second Year Students		16			
2021-2022	First Year Students			29		
	Second Year Students			19		
2022-2023	First Year Students				35	
	Second Year Students				23	
2023-2024	First Year Students					42
	Second Year Students					28
Estimated Total Student Enrollment		**20**	**40**	**48**	**58**	**70**

4.2 Faculty Instructional Requirements

The College of Information Technology and Engineering has the administrative system and necessary faculty to support the proposed M.S. in Data Science degree program. The faculty in the Weisberg Division of Computer Science possess the technical expertise to support the program with excellent research and publication records. Two required core courses (STA 535 Statistical Data Mining and STA 634 Statistical Methods for Researchers) are new courses to be taught by professors in Mathematic department at the College of Science. Four required core courses for the M.S. in Data Science have been offered in the M.S. in Computer Science (MSCS) program since the start of the MSCS program as below:

Table 4. Data Science Courses and Faculty Assignment

Data Science Courses	Term	Faculty
CS 511 Advanced Programming	FA/SP	Dr. Cong Pu/Dr. Husnu Narman
CS 630 Machine Learning	SP	Dr. Sanghoon Lee / Dr. Paulus Wahjudi
CS 660 Big Data Systems	FA/SP	Dr. Haroon Malik

CS 670 Visual Analytics	SP	Dr. Husnu Narman/Dr. Edward Aractingi

The history of enrollment of four core courses of M.S. in Data Science is shown in table 5.

Table 5. Enrollment History of Five Required Courses in Data Science

Data Science Courses	FA/17	SP/18	FA/18	SP/19	FA/19
CS 511 Advanced Programming (former CS 580: SpTp-Advanced Object Oriented Programming)	13	12	13	12	8
CS 630 Machine Learning (former CS 483/583 SpTp: Machine Learning)	9			0 (cancelled)	
CS 660 Big Data Systems	17	14	21	0 (cancelled)	13
CS 670 Visual Analytics	19	26		26	

With current low enrollment of the MS in Computer Science program, there has been less than 15 students in four computer science core courses in average. If the number of students in the proposed M.S. in Data Science grows as estimated, there will be 42 students in first year and 28 students in second year in program's 5th year. In the case of CS 511 course, assuming one half of 42 students in first year will take CS 511 in each semester (21 in Fall and 21 in Spring in average) in each semester, it is not necessary for the program to add additional section(s) or hire instructor(s) as the additional 21 students can be easily accommodated. It is similar to several courses in Domain Emphasis and Electives offered every semester. Table 6 shows the history of the number of students in computing and information science domain courses in last two years. MSCS and MSIS programs offers enough domain courses. However, the number of students in two programs is low and additional students from the proposed M.S. in Data Science will be a great boost of enrollment to current courses in both programs.

Table 6. Enrollment History of Domain/Elective Courses in Data Science

Data Science Elective Courses	FA/17	SP/18	FA/18	SP/19	FA/19
CS 505 Computing for Bioinformatics		14		n/a	
CS 539 Introduction to Artificial Intelligence (or CS 583 SpTp: Artificial Intelligence)		n/o		8	
CS 540 Digital Image Processing		5		n/o	
CS 600 Advanced Web Technology (Former CS 581 SpTp: Web Engineering)	16	13	7	6	8
CS 601 The Internet of Things (Former CS 650 SpTp: Development of IoT)	8		37		8

CS 602 Cloud Computing (or CS 651 SpTp: Cloud Computing)	16		18		n/o
CS 620 Applied Algorithms	17	10	13	7	5
CS 645 Advanced Topics in Bioinformatics	n/o		n/o		1
IS 545 Health Care Data Analytics				2	1
IS 600 Management Information Systems	10	12	13	1	4
IS 610 Systems Quality Assurance	n/o	22	2	18	3
IS 621 Information Structures I	13	13	8	6	6
IS 622 Emerging Tech in Info Systems (Former Information Structures II)	12	15	12	5	4
IS 623 Database Management	7	27	18	10	n/o
IS 624 Data Warehousing		7		12	
IS 665 Health Care Enterprise Info Syst	20	14	22	8	4

New and existing statistics courses will be offered by mathematics department without any additional faculty line need at the College of Science. In conclusion, if the program is extremely successful in recruiting a large number of students beyond current estimate in the future reaching 100 students, additional faculty/adjuncts may be needed to offer more section(s) using pre-existing pool of quality adjunct instructors including staffs in MU IT departments. Based on current estimate, however, it is not necessary for the program to request an additional faculty line.

4.3 Library Resources and Instructional Materials:

Marshall University Libraries have the majority of the resources needed to support the proposed degree program. The Computer Science programs in CITE share the library resources; however, a few additional library collections may need to be added over time to support the Data Science program.

4.4. Support Service Requirements:

No special support will be needed unless the program acquires a critical mass.

4.5.Facilities Requirements:

Marshall University Computing Services currently supports all computing needs of the users on campus. The College of Information Technology and Engineering has fully equipped state-of-the-art computer labs and classrooms within the 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 division and will support the addition of other programs in the division, including the proposed M.S. in Data Science degree program. The Data Science program will have access to the available computer workstations and Wi-Fi in the WAEC. As the program continues to grow, a Data Science specialized lab/classroom will be considered through the conversion of one of the existing spaces of the division.

4.6 Operating Resource Requirements:

Since the Data Science program will be a part of the Weisberg Division of Computer Science, it will share the operating resources with the other programs offered by the division. Table 7 shows the estimated revenue generated by the proposed program during its first five years, as shown based on the number of students in the program summarized in Table 3.

Table 7. Revenue Generated by the Proposed Program in 5 years

	Tuition & Fees	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**

New Catalog Description

(M.S. in Data Science)

DATA SCIENCE, M.S.

Program Description

The Master of Science in Data Science (MSDS) provides students with technical expertise in computational modeling, data collection and integration, data storage and retrieval, data processing, modeling and analytics, and visualization. Students graduating from this program will be able to handle large data sets (big data), write software to work with these large data sets, and apply the statistical skills to model and analyze sub-data sets of interest. The job opportunities in this field are rapidly growing.

Admission Requirements

Minimum admission requirement for full admission includes completion of a four-year bachelor's degree in Data Science, Computer Science, Statistics, Mathematics, or related program with GPA of 2.75 or higher on 4.0 scale. Applicants with a baccalaureate degree in a major other than computer science or related program may be admitted to the program and must successfully complete the following three additional bridge courses with a grade of B or above in the first two semesters of the program:

- Data Structure and Algorithms (CS 210)
- Data Engineering (CS 410)
- Applied Probability and Statistics (STA 345)

Whether an applicant meets the above requirements will be based on the information provided in the admission application and transcripts. International students must meet MU English proficiency standards and all other admission criteria prior to registering for the first semester of courses.

Degree Requirements

The MSDS degree requires 30 credit hours (CR) of graduate work. The 30 CR is comprised of the following components:

- *Required Core courses (18 CR)*
  CS 511 Advanced Programming
  CS 630 Machine Learning
  CS 660 Big Data Systems
  CS 670 Visual Analytics
  STA 535 Statistical Data Mining
  STA 634 Statistical Methods for Researchers

- *Domain Emphasis (12 CR)*
  Domain Emphasis gives students a good understanding of a particular domain. A student is required to take 9 credits hours in one domain emphasis and 3 credit hours of free elective in any of the three domain areas:

  - Computing Domain
    This domain emphasis tackles computing areas including high performance computing, cloud computing, IoT, Artificial Intelligence, Cybersecurity, bioinformatics, etc. Students in Computing Domain should take any three courses from the list below:

    CS 505 Computing for Bioinformatics
    CS 539 Introduction to Artificial Intelligence CS 540 Digital Image Processing
    CS 600 Advanced Web Technology
    CS 601 The Internet of Things
    CS 602 Cloud Computing
    CS 620 Applied Algorithms
    CS 645 Advanced Topics in Bioinformatics
    CS 681 Thesis

  - Information Systems
    This domain emphasizes the use of information technology and their expected utility of their information systems. Students in Information Systems Domain should take any three courses from the list below:

    IS 545 Health Care Data Analytics
    IS 600 Management Information Systems IS 610 Systems Quality Assurance
    IS 621 Information Structures I
    IS 622 Emerging Tech in Info Systems IS 623 Database Management
    IS 624 Data Warehousing
    IS 665 Health Care Enterprise Info Syst
    IS 681 Thesis

  - Predictive Analytics
    This domain emphasis gives students the opportunity to learn the use of various statistical modelling techniques that are applicable to predictive analytics. Students in Predictive Analytics Domain should take any three courses from the list below:

    STA 512 Regression Analysis
    STA 513 Experimental Designs
    STA 520 Nonparametric Statistics
    STA 564 Statistical Computing
    STA 570 Applied Survival Analysis
    STA 662 Applied Multivariate Statistical Methods

STA 663 Time Series Forecasting
STA 664 Bayesian Statistics
STA 665 Advanced Statistical Learning
STA 681 Thesis

Thesis Option in Domain Emphasis

Student may choose a thesis option replacing two courses from in the Domain Emphasis. The thesis option (Thesis 1 and 2) offers students an opportunity for in-depth understanding and investigation into an area of interest. 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. The thesis option can be taken after the completion of 12 credit hours. The 6 CR of the thesis option cannot be combined in a semester. If a student in the thesis option wishes to switch to the non-thesis option, the credit hours for the thesis will not count toward fulfilling the graduation requirement.

Plan of Study

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

Year	Term	Course	Credit
1st	FA	CS 511 Advanced Programming	3
		STA 634 Statistical Methods for Researchers	3
		Domain Emphasis Course 1	3
	SP	CS 630 Machine Learning	3
		STA 535 Statistical Data Mining	3
		Domain Emphasis course 2	3
2nd	FA	CS 670 Visual Analytics	3
		CS 660 Big Data Systems	3
		Domain Emphasis course 3 or Thesis 1	3
	SP	Domain Emphasis course 4 or Thesis 2	3

Note: All required core courses will be offered every semester. However, some elective courses may only be offered one semester a year. Students should work closely with advisors in developing a study plan.

List course number, title, credit hours

(M.S. in Data Science)

COURSES of M.S. in DATA SCIENCE PROGRAM

The MSDS degree requires 30 credits (or 10 courses) for graduation.

- *Six required courses* (4 existing CS courses and 2 new STA courses):
  CS 511 Advanced Programming, 3 credits, required
  CS 515 Data Mining, 3 credits, required
  CS 630 Machine Learning, 3 credits, required
  CS 660 Big Data Systems, 3 credits, required
  CS 670 Visual Analytics, 3 credits, required
  STA 535 Statistical Data Mining *(NEW)*
  STA 634 Statistical Methods for Researchers *(NEW)*

- *Domain Emphasis Courses in Computing* from existing CS courses listed below:
  CS 505 Computing for Bioinformatics, 3 credits, optional
  CS 539 Introduction to Artificial Intelligence, 3 credits, optional
  CS 540 Digital Image Processing, 3 credits, optional
  CS 600 Advanced Web Technology, 3 credits, optional
  CS 601 The Internet of Things, 3 credits, optional
  CS 602 Cloud Computing, 3 credits, optional
  CS 620 Applied Algorithms, 3 credits, optional
  CS 645 Advanced Topics in Bioinformatics, 3 credits, optional

- *Domain Emphasis Courses in Information Systems* from existing IS courses listed below:
  IS 545 Health Care Data Analytics, 3 credits, optional
  IS 600 Management Information Systems, 3 credits, optional
  IS 610 Systems Quality Assurance, 3 credits, optional
  IS 621 Information Structures I, 3 credits, optional
  IS 622 Emerging Tech in Info Systems, 3 credits, optional
  IS 623 Database Management, 3 credits, optional
  IS 624 Data Warehousing, 3 credits, optional
  IS 665 Health Care Enterprise Info System, 3 credits, optional

- *Domain Emphasis Courses in Predictive Analytics* listed below:
  STA 512 Regression Analysis
  STA 513 Experimental Designs
  STA 520 Nonparametric Statistics
  STA 564 Statistical Computing
  STA 570 Applied Survival Analysis
  STA 662 Applied Multivariate Statistical Methods
  STA 663 Time Series Forecasting
  STA 664 Bayesian Statistics
  STA 665 Advanced Statistical Learning
  STA 681 Thesis

Supporting Letters/Email from Dean of Colleges at MU

(M.S. in Data Science)

Brad D. Smith
Schools of Business

Memorandum

TO: Dr. Lori Howard
Chair, Marshall University Graduate Council

CC: Dr. Jaime Taylor
Provost & Senior Vice President for Academic Affairs

Dr. Wael Zatar
Dean, College of Information Technology & Engineering

FROM: Dr. Avi Mukherjee
Dean, Lewis College of Business
Brad D. Smith Schools of Business

DATE: September 24, 2019

RE: Lewis College of Business Endorsement for CITE's MS Program in Data Science

We in the Brad D. Smith Schools of Business enthusiastically support the College of Information Technology and Engineering's proposed addition of the Master of Science degree in Data Science (MSDS). The rapid rise of big data collection and the concomitant need for developing effective tools to analyze such big data has certainly created a huge workforce demand for employees with advanced data computing, programming and data management skills. I am confident that Marshall's MSDS students will address this demand- supply gap in the marketplace. While data applications and inference-building belong to the context being studied, the quality of data analysis and organization are constrained by the capabilities of current data science tools and software. Graduating students from the MSDS program with the ability to write software and develop tools to be used in the analysis of data is exciting, and we applaud CITE's initiative in this area. We are in the process of developing a Masters in Supply Chain and Business Analytics, where Data Science courses could add value as optional electives.

Lewis College of Business
One John Marshall Drive
Huntington, WV 25755-2314
Tel: 304-696-2314
marshall.edu

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

Text

Contact Person: Wook-Sung Yoo

Phone: x5452

Degree Program: Data Science

Check action requested: ☒ Addition ☐ Deletion ☐ Change

Effective Term/Year: Fall 20 ☐ Spring 20 ☐ 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 _____
College Curriculum Chair _____	Date _____
College Dean _____	Date _____
Graduate Council Chair _____	Date _____
Provost/VP Academic Affairs _____	Date _____
Presidential Approval _____	Date _____
Board of Governors Approval _____	Date _____

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: CITE Dept/Division: Weisberg Div. of Engineering

Contact Person: Asad Salem Phone: 304-696-5450

Rationale for Request:

We are standardizing our admissions procedures for all engineering graduate degrees (M.S.E., M.S.E.E., and M.S.M.E).

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 ~~Spring 2020 semester~~ 10-11-19

Registrar _____ Date 10-11-19

College Curriculum Committee Chair _____ Date 10/15/19
(or Dean if no college curriculum committee)

Graduate Council Chair _____ Date 11/23/19

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

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

2018-2019 Graduate Catalog Pages158, 160, and 167:
Page 158:
Admission Requirements
Applicants should follow the admissions process described in this catalog or at the Graduate Admissions website: www.marshall.edu/graduate/admissions. Each applicant for admission to the M.S. in Engineering degree program must have an undergraduate engineering degree from either an accredited ABET curriculum or an internationally recognized program and meet one of the following (A, B, or C) admission requirement options:
A. Pass the PE exam, or
B. Have an undergraduate cumulative GPA of 3.00 or greater, or
C. Have an undergraduate cumulative GPA of 2.50 or greater. and satisfy at least two of the following:
(1) Pass the FE exam;
(2) Verbal GRE score of at least 145;
(3) quantitative GRE score at least 150; and/or
(4) analytical writing GRE score at least 3.0.

Additionally, to be considered for admission, international students must have an iBT TOEFL score of at least 85 or a Paper-Based TOEFL score of at least 527, or hold a degree from an accepted, accredited university within the United States.

Students who do not meet admission requirement options A, B, or C are welcome to apply, and their applications will be considered for admission on a case-by-case basis. The program admission recommendation will be decided by the M.S.E. (or M.S.E.E. or M.S.M.E. respectively) degree program coordinator based on a combination of GRE scores and level of performance in undergraduate engineering coursework.

A current non-degree or degree-seeking Marshall University student who holds an undergraduate engineering degree, may apply to be considered for admission to the M.S.E. degree program if s/he has at least a minimum cumulative graduate GPA of 3. 30 in his or her first 9 credit hours of MU CITE M.S.E. courses. For international students, the English requirements stated above must still be satisfied.

Eligibility to take the PE exam is based primarily on completion of an ABET-accredited undergraduate engineering degree in most states. Completion of a M.S.E. graduate degree at an institution with an ABET-accredited undergraduate degree does not fulfill that requirement to take the PE exam.

NOTE: Pages 160 and 167 are similar, but with M.S.E. being everywhere replaced by M.S.E.E. and M.S.M.E. respectively.

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.

Section 4 of the degree change request: Marked changes.

Admission Requirements:

Applicants should follow the admissions process described in this catalog or at the Graduate Admissions website: www.marshall.edu/graduate/admissions. Each applicant ~~for admission to the M.S. in Engineering degree program~~ must have an undergraduate engineering degree from either an accredited ABET curriculum or an internationally recognized program.

~~and meet one of the following (A, B, or C) admission requirement options:~~

~~A. Pass the PE exam, or~~

~~B. Have an undergraduate cumulative GPA of 3.00 or greater, or~~

~~C. Have an undergraduate cumulative GPA of 2.50 or greater. and satisfy at least two of the following:~~

~~(1) Pass the FE exam;~~

~~(2) Verbal GRE score of at least 145;~~

~~(3) quantitative GRE score at least 150; and/or~~

~~(4) analytical writing GRE score at least 3.0.~~

~~Additionally, to be considered for admission, international students must have an iBT TOEFL score of at least 85 or a Paper-Based TOEFL score of at least 527, or hold a degree from an accepted, accredited university within the United States.~~

~~Students who do not meet admission requirement options A, B, or C are welcome to apply, and their applications will be considered for admission on a case-by-case basis. The program admission recommendation will be decided by the M.S.E. degree program coordinator based on a combination of GRE scores and level of performance in undergraduate engineering coursework.~~

1- If applicants have an undergraduate 2.5 or higher GPA on a 4.0 scale and have already passed the PE exam in the major for which they are applying (official copy of certificate to be sent to the M.U. Graduate Admissions Office), their applications will be accepted.

2- If applicants have an undergraduate GPA of 3.0 or higher on a 4.0 scale in an engineering major closely related to that for which they are applying, their applications will be evaluated on a case-by-case basis.

3- If applicants have an undergraduate GPA between a 2.5 and a 3.0 on a 4.0 scale in an engineering major closely related to that for which they are applying, applicants must take the GRE exam or pass the FE exam, and have their official GRE scores or official FE certificate sent to the M.U. Graduate Admissions Office. The applications will be evaluated on a case-by-case basis.

Note 1: At least one letter of recommendation is required for all applicants.

Note 2: International applicants must provide proof of English proficiency with a minimum score of 6.5 on IELTS, a score of 80 on the TOEFL IBT (or 550 paper-based), or by holding an approved degree from an accepted, accredited university within the United States. International applicants must meet all other admission criteria prior to being admitted to the program and registering for the first semester of courses.

A current non-degree or degree-seeking Marshall University student who holds an undergraduate engineering degree, may apply to be considered for admission to the M.S.E. degree program if s/he has at least a minimum cumulative graduate GPA of 3. 30 in his or her first 9 credit hours of MU CITE M.S.E. courses. For international students, the English requirements stated above must still be satisfied.

Eligibility to take the PE exam is based primarily on completion of an ABET-accredited undergraduate engineering degree in most states. Completion of a M.S.E. graduate degree at an institution with an ABET-accredited undergraduate degree does not fulfill that requirement to take the PE exam.

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.

Admission Requirements:

Applicants should follow the admissions process described in this catalog or at the Graduate Admissions website: www.marshall.edu/graduate/admissions. Each applicant must have an undergraduate engineering degree from either an accredited ABET curriculum or an internationally recognized program.

1- If applicants have an undergraduate 2.5 or higher GPA on a 4.0 scale and have already passed the PE exam in the major for which they are applying (official copy of certificate to be sent to the M.U. Graduate Admissions Office), their applications will be accepted.

2- If applicants have an undergraduate GPA of 3.0 or higher on a 4.0 scale in an engineering major closely related to that for which they are applying, their applications will be evaluated on a case-by-case basis.

3- If applicants have an undergraduate GPA between a 2.5 and a 3.0 on a 4.0 scale in an engineering major closely related to that for which they are applying, applicants must take the GRE exam or pass the FE exam, and have their official GRE scores or official FE certificate sent to the M.U. Graduate Admissions Office. The applications will be evaluated on a case-by-case basis.

Note 1: At least one letter of recommendation is required for all applicants.

Note 2: International applicants must provide proof of English proficiency with a minimum score of 6.5 on IELTS, a score of 80 on the TOEFL IBT (or 550 paper-based), or by holding an approved degree from an accepted, accredited university within the United States. International applicants must meet all other admission criteria prior to being admitted to the program and registering for the first semester of courses.

A current non-degree or degree-seeking Marshall University student who holds an undergraduate engineering degree, may apply to be considered for admission to the M.S.E. degree program if s/he has at least a minimum cumulative graduate GPA of 3. 30 in his or her first 9 credit hours of MU CITE M.S.E. courses. For international students, the English requirements stated above must still be satisfied.

Eligibility to take the PE exam is based primarily on completion of an ABET-accredited undergraduate engineering degree in most states. Completion of a M.S.E. graduate degree at an institution with an ABET-accredited undergraduate degree does not fulfill that requirement to take the PE exam.

Request for Graduate Non-Curricular Changes – Page 5

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

Type of change request: Admission requirements changes for M.S.E., M.S.E.E., and M.S.E.M.

Department: Weisberg Division of Engineering

Degree program: Three: M.S.E., M.S.E.E., and M.S.E.M.

Effective date (fall/spring/summer, year): Spring 2020 semester

Section 4 of the degree change request: Marked changes.

Admission Requirements:

Applicants should follow the admissions process described in this catalog or at the Graduate Admissions website: www.marshall.edu/graduate/admissions. Each applicant ~~for admission to the M.S. in Engineering degree program~~ must have an undergraduate engineering degree from either an accredited ABET curriculum or an internationally recognized program.

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~~and meet one of the following (A, B, or C) admission requirement options:~~

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~~A. Pass the PE exam, or~~

~~B. Have an undergraduate cumulative GPA of 3.00 or greater, or~~

~~C. Have an undergraduate cumulative GPA of 2.50 or greater, and satisfy at least two of the following:~~

~~(1) Pass the FE exam;~~

~~(2) Verbal GRE score of at least 145;~~

~~(3) quantitative GRE score at least 150; and/or~~

~~(4) analytical writing GRE score at least 3.0.~~

~~Additionally, to be considered for admission, international students must have an iBT TOEFL score of at least 85 or a Paper-Based TOEFL score of at least 527, or hold a degree from an accepted, accredited university within the United States.~~

~~Students who do not meet admission requirement options A, B, or C are welcome to apply, and their applications will be considered for admission on a case-by-case basis. The program admission recommendation will be decided by the M.S.E. degree program coordinator based on a combination of GRE scores and level of performance in undergraduate engineering coursework.~~

1- If applicants have an undergraduate 2.5 or higher GPA on a 4.0 scale and have already passed the PE exam in the major for which they are applying (official copy of certificate to be sent to the M.U. Graduate Admissions Office), their applications will be accepted.

2- If applicants have an undergraduate GPA of 3.0 or higher on a 4.0 scale in an engineering major closely related to that for which they are applying, their applications will be evaluated on a case-by-case basis.

3- If applicants have an undergraduate GPA between a 2.5 and a 3.0 on a 4.0 scale in an engineering major closely related to that for which they are applying, applicants must take the GRE exam or pass the

FE exam, and have their official GRE scores or official FE certificate sent to the M.U. Graduate Admissions Office. The applications will be evaluated on a case-by-case basis.

Note 1: At least one letter of recommendation is required for all applicants.

Note 2: International applicants must provide proof of English proficiency with a minimum score of 6.5 on IELTS, a score of 80 on the TOEFL IBT (or 550 paper-based), or by holding an approved degree from an accepted, accredited university within the United States. International applicants must meet all other admission criteria prior to being admitted to the program and registering for the first semester of courses.

A current non-degree or degree-seeking Marshall University student who holds an undergraduate engineering degree, may apply to be considered for admission to the M.S.E. degree program if s/he has at least a minimum cumulative graduate GPA of 3. 30 in his or her first 9 credit hours of MU CITE M.S.E. courses. For international students, the English requirements stated above must still be satisfied.

Eligibility to take the PE exam is based primarily on completion of an ABET-accredited undergraduate engineering degree in most states. Completion of a M.S.E. graduate degree at an institution with an ABET-accredited undergraduate degree does not fulfill that requirement to take the PE exam.

Chair: Tracy Christofero | **GC#4: Major or Degree**

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: Division of Engineering

Contact Person: Dr. Asad Salem

Phone: 304- 696-3207

Degree Program: MS in Engineering, Environmental Engineering Major

Check action requested: ☐ Addition ☐ Deletion ☒ Change

Effective Term/Year: Fall 20 [20] Spring 20 [ ] 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 A. G. S.	Date 10/7/19
College Curriculum Chair	Date 10/15/19
College Dean	Date 10/16/19
Graduate Council Chair	Date 11/23/19
Provost/VP Academic Affairs	Date
Presidential Approval	Date
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)

The proposed change is to adjust the name of the "Environmental Engineering" major within the M.S. in Engineering to a new name of "Civil and Environmental Engineering". The rationale for this change is to more accurately reflect the wide range of relevant graduate engineering courses already being offered at Marshall. Additionally, the new name will enhance the marketability of the degree since it will be wider in scope and applicable to a greater number of disciplines. This could potentially increase the number of students who are interested to enroll.

The supporting modifications to the written degree requirements will make explicit the existing flexibility that students already have in completing the degree. The existing degree requirements give academic advisors wide latitude in which courses to approve as electives. The proposed changes merely elucidate that these elective courses can come from among graduate courses in Environmental Engineering, Civil Engineering, Environmental Science, Engineering Management, or Engineering.

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)

ENVE 615 (Environmental Chemistry) was previously required, and as proposed it would become an elective.
The previous curriculum distinguished between six different sub-categories within Environmental Engineering. This distinction would be eliminated, to permit students to create a plan of study with a depth of focus in a certain sub-discipline, or with a breadth of exposure across sub-disciplines.

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.

The proposed change will not require any additional resources. No additional faculty will be required; no additional instructional space will be needed; no additional lab equipment will be required; no additional support staff will be needed; and no new library support would be required. The proposed change merely expands student access to what is already available.

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)

The Current Catalog Description is attached.

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)

The proposed Catalog Description is attached.

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: Engineering
Major: Environmental Engineering
Type of Change: Change
Rationale: The proposed change is to adjust the name of the "Environmental Engineering" major within the M.S. in Engineering to a new name of "Civil and Environmental Engineering". The rationale for this change is to more accurately reflect the wide range of relevant graduate engineering courses already being offered at Marshall. Additionally, the new name will enhance the marketability of the degree since it will be wider in scope and applicable to a greater number of disciplines. This could potentially increase the number of students who are interested to enroll.

The supporting modifications to the written degree requirements will make explicit the existing flexibility that students already have in completing the degree. The existing degree requirements give academic advisors wide latitude in which courses to approve as electives. The proposed changes merely elucidate that these elective courses can come from among graduate courses in Environmental Engineering, Civil Engineering, Environmental Science, Engineering Management, or Engineering.

CURRENT CATALOG DESCRIPTION

MAJOR: Environmental Engineering

Each Environmental Engineering major must have completed the Foundation Courses listed below (and their associated prerequisites), or their equivalents as approved by their advisor before being fully admitted. Until this requirement is satisfied, the student can only receive Provisional admission to the program. All other admission requirements must still be satisfied.

Foundation Courses:
ENGR 318 Fluid Mechanics
CE 331 Hydraulic Engineering
CE 432 Water/Wastewater Treatment

Coursework Only Option. (30 hours)

Required courses

One of: ENGR 610, ENGR 620, or ME 601			3 hrs
ENVE	615	Environmental Chemistry	3 hrs

Three courses – one per category – from among the following six categories 9 hrs
(1) Engineering Management: EM 660
(2) Water/Wastewater: ENVE 616 or ENVE 617
(3) Solid/Hazardous Waste: ENVE 620 or ENVE 625
(4) Air Pollution: ENVE 611, ENVE 612, ENVE 680, or ES 604
(5) Hydraulics/Hydrology: ENVE 670, ENVE 671, or ENVE 672
(6) Env. Remediation/Risk/Mgmt: ENVE 682, ES 514, ES 620

Elective courses (see approved Environmental Engineering electives below) 15 hrs

Project Option. (30 hours)

Required courses

One of: ENGR 610, ENGR 620, or ME 601			3 hrs
ENVE	615	Environmental Chemistry	3 hrs
TE	699	Comprehensive Project	3 hrs

Three courses – one per category – from among the following six categories 9 hrs
(1) Engineering Management: EM 660
(2) Water/Wastewater: ENVE 616 or ENVE 617
(3) Solid/Hazardous Waste: ENVE 620 or ENVE 625
(4) Air Pollution: ENVE 611, ENVE 612, ENVE 680, or ES 604
(5) Hydraulics/Hydrology: ENVE 670, ENVE 671, or ENVE 672
(6) Env. Remediation/Risk/Mgmt: ENVE 682, ES 514, ES 620

Elective courses (see approved Environmental Engineering electives below) 12 hrs

Thesis Option. (30 hours)

Required courses

One of: ENGR 610, ENGR 620, or ME 601			3 hrs
ENVE	615	Environmental Chemistry	3 hrs
ENGR	682	Research	6 hrs

Three courses – one per category – from among the following six categories 9 hrs
(1) Engineering Management: EM 660
(2) Water/Wastewater: ENVE 616 or ENVE 617
(3) Solid/Hazardous Waste: ENVE 620 or ENVE 625
(4) Air Pollution: ENVE 611, ENVE 612, ENVE 680, or ES 604
(5) Hydraulics/Hydrology: ENVE 670, ENVE 671, or ENVE 672
(6) Env. Remediation/Risk/Mgmt: ENVE 682, ES 514, ES 620

Elective courses (see approved Environmental Engineering electives below) 9 hrs.

Approved Elective Courses for the Environmental Engineering Major

Any ENVE course.
Any course listed above not already taken.
ES 550 Environmental Law
ES 630 Environmental Site Assessment
ES 640 Groundwater Principles and Monitoring
Other courses approved in advance by the student's advisor.

MAJOR: Civil and Environmental Engineering

Each Civil and Environmental Engineering major must have completed the Foundation Courses listed below (and their associated prerequisites), or their equivalents as approved by his or her advisor, before being fully admitted. Until this requirement is satisfied, the student can only receive Provisional admission to the program. All other admission requirements must still be satisfied.

Foundation courses

ENGR	318	Fluid Mechanics
CE	312	Structural Analysis
CE	342	Transportation Engineering
CE	413	Reinforced Concrete or CE 414 Steel Design
CE	331	Hydraulic Engineering
~~CE~~	~~432~~	~~Water/Wastewater Treatment~~
CE	351	Environmental Engineering

Coursework-Only Option (30 hours)

Required courses

One of ENGR 610, ENGR 620, or ME 601 — 3 hrs.

~~ENVE 615 Environmental Chemistry — 3 hrs.~~

~~Three courses - one per category - from among the following six categories — 9 hrs.~~

~~(1) Engineering Management: EM 660~~

~~(2) Water/Wastewater: ENVE 616 or ENVE 617~~

~~(3) Solid/Hazardous Waste: ENVE 620 or ENVE 625~~

~~(4) Air Pollution: ENVE 611, ENVE 612, ENVE 680, or ES 604~~

~~(5) Hydraulics/Hydrology: ENVE 670, ENVE 671, or ENVE 672~~

~~(6) Env. Remediation/ Risk/Mgmt.: ENVE 682, ES 514, ES 620~~

~~*Elective courses*~~

~~See approved Environmental Engineering electivesthat follow. — 15 hrs.~~

EM	660	Project Management	3 hrs
Elective courses			24 hrs

Project Option (30 hours)

Required courses

One of ENGR 610, ENGR 620, or ME 601 — 3 hrs.

~~ENVE 615 Environmental Chemistry — 3 hrs.~~

~~ENGR 699 Comprehensive Project — 3 hrs.~~

~~Three courses - one per category - from among the following six categories: — 9 hrs.~~

~~(1) Engineering Management: EM 660~~

~~(2) Water/Wastewater: ENVE 616 or ENVE 617~~

~~(3) Solid/Hazardous Waste: ENVE 620 or ENVE 625~~

~~(4) Air Pollution: ENVE 611, ENVE 612, ENVE 680, or ES 604~~

~~(5) Hydraulics/Hydrology: ENVE 670, ENVE 671, or ENVE 672~~

~~(6) Env. Remediation/ Risk/Mgmt.: ENVE 682, ES 514, ES 620~~

~~*Elective courses*~~

~~See approved Environmental Engineering electivesthat follow. — 12 hrs.~~

EM	660	Project Management	3 hrs
TE	699	Comprehensive Project	3 hrs
Elective courses			21 hrs

Thesis Option (30 hours)

Required courses

One of ENGR 610, ENGR 620, or ME 601 — 3 hrs.

~~ENVE 615 Environmental Chemistry 3 hrs.~~
~~ENGR 682 Research 6 hrs.~~
~~Three courses - one per category - from among the following six categories: 9 hrs.~~
~~(1) Engineering Management: EM 660~~
~~(2) Water/Wastewater: ENVE 616 or ENVE 617~~
~~(3) Solid/Hazardous Waste: ENVE 620 or ENVE 625~~
~~(4) Air Pollution: ENVE 611, ENVE 612, ENVE 680, or ES 604~~
~~(5) Hydraulics/Hydrology: ENVE 670, ENVE 671, or ENVE 672~~
~~(6) Env. Remediation/ Risk/Mgmt.: ENVE 682, ES 514, ES 620~~
~~*Elective courses*~~
~~See approved Environmental Engineering electivesthat follow. 9 hrs.~~

~~**Approved Elective Courses for the Environmental Engineering Major**~~
~~Any ENVE course:~~
~~Any course listed above not already taken:~~
~~ES 550, Environmental Law;~~
~~ES 630, Environmental Site Assessment;~~
~~ES 640, Groundwater Principles and Monitoring:~~
~~Other courses approved in advance by the student's advisor.~~

EM	660	Project Management	3 hrs
ENGR	682	Research	6 hrs
Elective courses			18 hrs

Elective Courses for the Civil and Environmental Engineering Major
Any CE (Civil Engineering) graduate course approved in advance by the student's advisor
Any ENVE (Environmental Engineering) graduate course approved in advance by the student's advisor.
Any EM (Engineering Management) graduate course approved in advance by the student's advisor.
Any ES (Environmental Science) graduate course approved in advance by the student's advisor.
Any ENGR (Engineering) graduate course approved in advance by the student's advisor.
Other graduate courses approved in advance by the student's advisor, up to 6 credit hours.

New Catalog Description

MAJOR: Civil and Environmental Engineering

Each Civil and Environmental Engineering major must have completed the Foundation Courses listed below (and their associated prerequisites), or their equivalents as approved by their advisor before being fully admitted. Until this requirement is satisfied, the student can only receive Provisional admission to the program. All other admission requirements must still be satisfied.

Foundation Courses:

ENGR 318	Fluid Mechanics		
CE 312	Structural Analysis		
CE 342	Transportation Engineering		
CE 413	Reinforced Concrete	or	CE 414 Steel Design
CE 331	Hydraulic Engineering		
CE 351	Environmental Engineering		

Coursework Only Option (30 hours)

Required courses

One of:	ENGR 610, ENGR 620, or ME 601	3 hrs
EM660	Project Management	3 hrs
Elective courses		24 hrs

Project Option (30 hours)

Required courses

One of:	ENGR 610, ENGR 620, or ME 601	3 hrs
EM660	Project Management	3 hrs
TE 699	Comprehensive Project	3 hrs
Elective courses		21 hrs

Thesis Option (30 hours)

Required courses

One of: ENGR 610, ENGR 620, or ME 601		3 hrs
EM 660	Project Management	3 hrs
ENGR 682	Research	6 hrs
Elective courses		18 hrs

Elective Courses for the Civil and Environmental Engineering Major

Any CE (Civil Engineering) graduate course approved in advance by the student's advisor
Any ENVE (Environmental Engineering) graduate course approved in advance by the student's advisor.
Any EM (Engineering Management) graduate course approved in advance by the student's advisor.
Any ES (Environmental Science) graduate course approved in advance by the student's advisor.
Any ENGR (Engineering) graduate course approved in advance by the student's advisor.
Other graduate courses approved in advance by the student's advisor, up to 6 credit hours.

Chair: Lori Howard

GC#2: Certificate

Request for INTERDISCIPLINARY Graduate Addition, Deletion, or Change of a Certificate

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.***

NOTE: *If proposing a new certificate, please read this first:* www.marshall.edu/graduate/graduatecouncil/certificatespolicy/certificatepolicy.pdf

College: CITE / COB Dept/Division: Technology Management / Human Resource Management

Contact Person: Dr. Tracy Christofero / Dr. Ralph McKinney Phone: 746-2078 /746-1933

Name of Certificate: Accessibility Awareness

Check action requested: ☒ Addition ☐ Deletion ☐ Change

Effective Term/Year Fall 20 ☐ Spring 20 20 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 9-24-19
Dept. Chair/Division Head	Date 10/17/19
College Curriculum Chair	Date 9/27/19
College Curriculum Chair	Date 22 OCT 19
College Dean	Date 10/08/2019
College Dean Avinandan Mukherjee	Date 10/17/2019
Graduate Council Chair Lori Howard	Date 11/23/19
Provost/VP Academic Affairs	Date
Presidential Approval	Date

Request for Graduate Addition, Deletion, or Change of a Certificate-Page 2

Please provide a rationale for addition, deletion, change:

Industry leaders like Adobe, Amazon, Facebook, IBM, Google, Microsoft, Netflix and Verizon Media are actively recruiting people who can create products everyone can use, but they cannot find appropriately trained talent due to a significant skills gap (Teach Access, 2019). The Partnership on Employment and Accessible Technology (PEAT, 2018) found that 63% of companies surveyed said they do not have sufficient accessibility technology skills in their organization or candidates interviewed. Ninety-three percent said demand for accessibility skills will increase in the future. The interdisciplinary Accessibility Awareness Certificate will help students obtain knowledge and skills related to providing technology accessibility for all people, including those with disabilities, to become more employable. Coursework will increase student knowledge and provide learning experiences designed to foster innovation and creative problem-solving with disability perspectives in curriculum and instruction.

PEAT. (2018). Accessible Technology Skills Gap Report. Retrieved from www.peatworks.org/skillsgap/report
Teach Access. (2019). Why Teach Accessibility. Retrieved from www.teachaccess.org/resources/fact-sheet-why-teach-accessibility/.

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.

All Required:
HRM 632 HR for Special Populations (3 CR)
TM 610 Technology and Innovation Management (3 CR)
TM 659 Digital Accessibility Policies and Strategies (3 CR)

Plus Choice from A or B:
A. TM 698 Internship (3 CR) or TM 689 Independent Study (3 CR)
B. MGMT 660 Independent Study (3 CR) or MGMT 671 Internship (3 CR)

1. ADDITIONAL RESOURCE REQUIREMENTS: If your program requires additional faculty, equipment or specialized materials to ADD or CHANGE this certificate, 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.

Current Marshall faculty and adjunct will teach courses

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 Certificate-

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)

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.

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).

The 12-hour interdisciplinary Accessibility Awareness Certificate provides knowledge and skills related to providing technology accessibility for all people, including those with disabilities, to become more employable. Coursework fosters innovation and creative problem-solving with disability perspectives in curriculum and instruction.

Required courses:
HRM 632 HR for Special Populations (3 CR)
TM 610 Technology and Innovation Management (3
CR) TM 659 Digital Accessibility Policies and
Strategies (3 CR)

Plus Choice from A or B:
A. TM 698 Internship (3 CR) or TM 689 Independent Study (3 CR)
B. MGMT 660 Independent Study (3 CR) or MGMT 671 Internship (3 CR)

Request for Graduate Addition, Deletion, or Change of a Certificate-

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:
Name of Certificate:
Credit Hours:
Type of Change: *(addition, deletion, change)*
Rationale:

Department: Technology Management / Human Resource Management Name of Certificate: Accessibility Awareness
Credit Hours: 12
Type of Change: Addition
Rationale: Industry leaders like Adobe, Amazon, Facebook, IBM, Google, Microsoft, Netflix and Verizon Media are actively recruiting people who can create products everyone can use, but they cannot find appropriately trained talent due to a significant skills gap (Teach Access, 2019). The Partnership on Employment and Accessible Technology (PEAT, 2018) found that 63% of companies surveyed said they do not have sufficient accessibility technology skills in their organization or candidates interviewed. Ninety-three percent said demand for accessibility skills will increase in the future. The interdisciplinary Accessibility Awareness Certificate will help students obtain knowledge and skills related to providing technology accessibility for all people, including those with disabilities, to become more employable. Coursework will increase student knowledge and provide learning experiences designed to foster innovation and creative problem-solving with disability perspectives in curriculum and instruction.

PEAT. (2018). Accessible Technology Skills Gap Report. Retrieved from www.peatworks.org/skillsgap/report
Teach Access. (2019). Why Teach Accessibility. Retrieved from www.teachaccess.org/resources/fact-sheet-why-teach-accessibility/.

Chair: Tracy Christofero **GC#9: Non-Curricular**

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: COHP Dept/Division: Social Work

Contact Person: Peggy Proudfoot Harman Phone: 304-696-3146

Rationale for Request:

The MSW program is requesting to increase the total credit hours for the Advanced Standing Program from 30 hours to 36 hours by requiring Advanced Standing students to take two (2) electives. This will additionally change the MSW Generalist total credit hour requirement from 60 to 66. The program originally required Advanced Standing students to take 2 - 3 hour electives. During the 2017-2018 academic year, our accreditor advised that our curriculum could be revised to reflect the new CSWE EPAS (changed in the midst of our self-study) and we changed our Advanced Standing and second year Generalist courses to those focused on behavioral health. We changed the curriculum incorporating a robust selection of behavioral health courses. Since these courses were heavily clinical, we decided that second year Generalist and Advanced Standing students would not need to take the 2 required electives. After instructing 3 cohorts, the MSW faculty decided that students would benefit greatly from the content in two required electives which will enrich the student's knowledge base and employability.

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 Peggy Proudfoot Harman Date ~~Spring 2020~~ Eff Fall Oct 17, 2019

Registrar [signature] Date 10/24/19

College Curriculum Committee Chair [signature] Date 10/29/19
(or Dean if no college curriculum committee)

Graduate Council Chair Lisa Hancock Date 11/23/19

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

Form updated 1/2017

This approval is for Fall 2020.

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 Attachment

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 Attachment

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.

Please see attached New Catalog Description

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 change - addition of required electives for the Specialization year

Department: Social Work

Degree program: MSW

Effective date (fall/spring/summer, year): Spring 2020

2018-2019 Current Catalog Description:
Program Description M.S.W. Generalist Curriculum: The 2-year curriculum promotes a generalist perspective in which the simultaneous impact of many systemic levels (individuals, families, groups, organizations, and communities) on clients' lives is critically analyzed and recognized. The foundation builds upon a liberal arts base that fosters an understanding of society as a complex organization of diverse people and ideas. Social problems are understood as occurring within the nexus of culture, conflict, development, ecology, and systems and as such, efforts to help or intervene must include consideration of these forces. Students will be able to critically identify and assess social problems, specifically attending to 1) how such problems are maintained; 2) how they impact the quality of people's lives; 3) cultural sensitivity and appreciation of marginalized people; and 4) how to actively promote social and economic justice. In the foundation year, the focus is on the development of critical thinking skills in all the areas mentioned. M.S.W. Advanced Curriculum-Advanced Social Work Practice: The advanced practice curriculum seeks to develop the utilization and application of critical thinking, relative to behavioral health, on all levels - in reading professional writing and research, in students' practice, in the classroom, and in the students' own thinking. Consistently monitoring practice ethically, evaluating theoretical principles and epistemologies, and utilizing technological advances become basic practice patterns. Specific skill sets developed include: 1) Creating, organizing and integrating ideas and action on engaging diverse client systems effectively in change; 2) Assessing, conceptualizing and analyzing theoretical, practice and research problems from multiple perspectives and utilize critical thinking skills to formulate impressions based upon the data; 3) Analyzing, synthesizing and evaluating the evidence available to guide advanced social work practice; 4) Synthesizing, formulating and implementing a plan of action for social work practice that addresses complex issues and problems, builds consensus and incorporates multiple-level forces on client systems; 5) Analyzing and evaluating data of client progress and outcomes and sees implications and consequences of this progress and outcomes; 6) Synthesizing, creating, and organizing ideas from theory, research and practice for social justice; 7) Demonstrating the ability to integrate culturally competent skills into all aspects of social work practice; 8) Demonstrating the knowledge of the roles of behavioral health providers working in primary care settings, theories and models of care, and cross-cultural issues; and 9) Demonstrating skills in engagement, assessment, intervention planning and implementation, and practice evaluation in the primary and behavioral health care setting. M.S.W. Practicum Education: All students admitted to the 60 credit hour program are required to satisfactorily complete 900 clock hours in approved practicum sites. If employed in a human services agency meeting the department's criteria as a placement site, the student may apply to undertake the practicum at her/his place of employment. This may be accomplished when the agency is willing to shift the student's work role and supervision in such a manner as necessary to meet the school's educational objectives for practicum instruction. M.S.W. Electives: The Marshall University Department of Social Work provides electives as enrichment to the specialized learning in the advanced year. Social work positions call for skills and knowledge that are broader than any narrowly defined specialization.

For example, behavioral health care workers are asked to know psychopathology, substance abuse, managed care, AIDS, and a range of other substantive areas. Many school social workers share the need for the same content. In addition, it is noted that social workers frequently change jobs, often to another field of practice. Social work education seeks to teach students to think

critically, analyze systematically, and know where to find information and resources within the context of social work history, development and values. It is this type of education that best prepares students to function in a rapidly changing society. Admission Requirements Applicants should follow the admissions process described in this catalog or at the Graduate Admissions website: www. marshall.edu/graduate. Applications are received in the Department of Social Work for the M.S.W. between Jan. 15 and March 30. Students also must provide two recommendations. The letters must be original, must be signed and be sent directly to Graduate Admissions. These may be e-mailed from an identifiable e-mail account of the person providing the reference. Reference letters sent via e-mail need to have the signature of the person providing the reference (signed and scanned). These may be sent to www.services@marshall.edu and cc'd to Leslie Lucas. Applicants are encouraged to submit at least one academic recommendation. If the applicant has not enrolled in classes within the past 5 years, this requirement may be waived and an additional work reference substituted. Evaluations should be submitted from persons who have been directly responsible for assessing and supervising your human service related work/ volunteer experience and academic performance. Avoid personal references (coworkers, advisors, friends, clergy, personal therapists, etc.). The Marshall University Department of Social Work M.S.W. program requires two recommendation forms, however letters accompanying the forms are welcomed and strongly encouraged. It is highly recommended that applicants who wish to be considered for the 30-hour Specialist/Advanced Standing program should submit their field evaluations if available, or one of their two letters of recommendation should be from their Director of Field Education, on-site Practicum Supervisor, or Practicum/Practice Instructor if the field evaluation is not accessible. The school reserves the right to request additional supportive material from persons acquainted with the applicant's academic and/or practice capabilities. Program Requirements For Conditional and/or Provisional admissions: The student and advisor will develop a Plan of Study or blueprint for graduation requirements. The Plan of Study must be on file in the Graduate College office before the student registers for the 12th semester hour. Composition of the Master of Social Work Program Generalist/Foundation
Curriculum.....21 hours
Field..... 9
hours Total .....30 hours
Specialist/Advanced Curriculum
Curriculum.....21 hours
Field Instruction..... 9 hours
Total .....30 hours

INTO Marshall Students: The Graduate Pathway program will require INTO students who are matriculating into social work to begin work toward their degree by taking Social Work 203, Introduction to Social Work.

Generalist The M.S.W. program consists of a foundation-level Generalist curriculum to include the following: SWK 501 Foundations of Generalist Practice I (3 credit hours) SWK 511 Foundations of Human Behavior in the Social Environment (3 credit hours) SWK 521 Foundations of Policy (3 credit hours) SWK 531 Foundations of Generalist Practice II (3 credit hours) SWK 541 Foundations of Research (3 credit hours) SWK 551 Foundation Field Practicum (9 credit hours spread over 3 semesters - 450 work hours). All Generalist 2-year students must complete 60 credits in order to graduate from the program. All students enrolled in

the regular 60 credit program must complete two separate (two semesters each) academic yearlong field placements.

Advanced Standing in the Program: An applicant for admission to the Master of Social Work program who holds a baccalaureate degree from an undergraduate social work program accredited by the Council of Social Work Education may be admitted with advanced standing. SWK 615 Psychopathology (3 credit hours) SWK 631 Integrated Health Care: Models and Practice (3 credit hours) SWK 633 Advanced Clinical Social Work Practice in Behavioral Health Care with Individuals and Families (3 credit hours) The spring semester includes the following courses: SWK 634 Advanced Clinical Social Work Practice in Behavioral Healthcare with Groups, Families and Communities (3 credit hours) SWK 670 Advanced Theory and Practice with Children (3 credit hours) SWK 673 Family and Community Violence in Rural and Underserved Areas (3 credit hours) SWK 655 The Comorbidity of Mental Health and Physical Disorders (3 credit hours) SWK 653 Advanced Field Practicum (9 credit hours, 450 work hours) Students who enter the program with Advanced Standing (30 credit hours total) complete only one (1) academic (two semesters) yearlong field placement (9 credit hours, 450 work hours). Behavioral Health Area of Specialized Practice The Behavioral Health Area of Specialized Practice prepares students to conduct clinical social work practice in assessing, treating, and evaluating mental health, substance abuse, and physical health in relation to one another across practice settings. A focus throughout the specialization will be on understanding the multiple factors that influence health disparities and best practices to increase health equity, particularly for marginalized populations. There will be a special emphasis on effectively serving vulnerable populations with multiple needs. The Behavioral Health specialization integrates Generalist practice by enhancing and expanding on Generalist knowledge, values, and skills in the application of the planned change process across all size systems. The Behavioral Health specialization extends and enhances the Generalist practice skills of engagement, assessment, planning, intervention, evaluation and termination across all sized systems by incorporating clinical courses focused on Advanced Clinical Social Work in Behavioral Health with Individuals and Families. SWK 673 Family and Community Violence in Rural and Underserved Areas SWK 631 Integrated Health Care: Models and Practice Generalist macro practice is enhanced and extended in the Behavioral Health specialization through practice, assessment and evaluation of integrated health care models and practice in SWK 631. Integrated Healthcare Models and Practice prepares students to engage in culturally competent behavioral health practice with diverse client populations with attention to oppressed groups and populations at risk.

EDITS

Program Description M.S.W.

The MSW program has two tracks – Generalist (social work foundation) and Area of Specialization. Generalist are required to complete 2 calendar years to include summers. Those admitted to the one-year Advanced Standing program will be required to complete 1 calendar year to include 1 summer. MSW students will graduate in August of each year and will attend the Marshall University December graduation. Generalist Curriculum: Those who enter the MSW program with other than a Bachelor of Social Work (BSW) degree are eligible to enter the Generalist 2 calendar year program. The 2-year curriculum (66 credit hours – 30 credit hours-generalist and 36 credit hours in the area of specialization) perspective in which the simultaneous impact of many systemic levels (individuals, families, groups, organizations, and communities) on clients' lives is critically analyzed and recognized. The foundation builds upon a liberal arts base that fosters an understanding of society as a complex organization of diverse people and ideas. Social problems are understood as occurring within the nexus of culture, conflict, development, ecology, and systems and as such, efforts to help or intervene must include consideration of these forces. Students will be able to critically identify and assess social problems, specifically attending to 1) how such problems are maintained; 2) how they impact the quality of people's lives; 3) cultural sensitivity and appreciation of marginalized people; and 4) how to actively promote social and economic justice. In the foundation year, the focus is on the development of critical thinking skills in all the areas mentioned. M.S.W. Advanced Curriculum-Advanced Social Work Practice: The advanced practice curriculum seeks to develop the utilization and application of critical thinking, relative to behavioral health, on all levels - in reading professional writing and research, in students' practice, in the classroom, and in the students' own thinking. Consistently monitoring practice ethically, evaluating theoretical principles and epistemologies, and utilizing technological advances become basic practice patterns. Specific skill sets developed include: 1) Creating, organizing and integrating ideas and action on engaging diverse client systems effectively in change; 2) Assessing, conceptualizing and analyzing theoretical, practice and research problems from multiple perspectives and utilize critical thinking skills to formulate impressions based upon the data; 3) Analyzing, synthesizing and evaluating the evidence available to guide advanced social work practice; 4) Synthesizing, formulating and implementing a plan of action for social work practice that addresses complex issues and problems, builds consensus and incorporates multiple-level forces on client systems; 5) Analyzing and evaluating data of client progress and outcomes and sees implications and consequences of this progress and outcomes; 6) Synthesizing, creating, and organizing ideas from theory, research and practice for social justice; 7) Demonstrating the ability to integrate culturally competent skills into all aspects of social work practice; 8) Demonstrating the knowledge of the roles of behavioral health providers working in primary care settings, theories and models of care, and cross-cultural issues; and 9) Demonstrating skills in engagement, assessment, intervention planning and implementation, and practice evaluation in the primary and behavioral health care setting.

M.S.W. Practicum Education: All Generalist students admitted to the ~~60~~ 66 credit hour program are required to satisfactorily complete 900 clock hours (18 credit hours) at approved practicum sites. Advanced Standing students are required to satisfactorily complete 450 clock hours (9

credit hours). If employed in a human services agency meeting the department's criteria as a placement site, the student may apply to undertake the practicum at her/his place of employment. This may be accomplished when the agency is willing to shift the student's work role and supervision in such a manner as necessary to meet the school's educational objectives for practicum instruction.

M.S.W. Electives: The Marshall University Department of Social Work provides electives as enrichment to the specialized learning in the advanced year. MSW students are required to take 2-3 credit hour electives in their Generalist year and 2 -3 credit hour electives in the Specialization year. For example, behavioral health care workers are asked to know psychopathology, substance abuse, managed care, AIDS, and a range of other substantive areas. Many school social workers share the need for the same content. In addition, it is noted that social workers frequently change jobs, often to another field of practice. Social work education seeks to teach students to think critically, analyze systematically, and know where to find information and resources within the context of social work history, development and values. It is this type of education that best prepares students to function in a rapidly changing society. Admission Requirements Applicants should follow the admissions process described in this catalog or at the Graduate Admissions website: www. marshall.edu/graduate. Applications are received in the Department of Social Work for the M.S.W. between Jan. 15 and March 30. Students also must provide two recommendations. The letters must be original, must be signed and be sent directly to Graduate Admissions. These may be e-mailed from an identifiable e-mail account of the person providing the reference. Reference letters sent via e-mail need to have the signature of the person providing the reference (signed and scanned). These may be sent to www.services@marshall.edu and cc'd to Leslie Lucas. Applicants are encouraged to submit at least one academic recommendation. If the applicant has not enrolled in classes within the past 5 years, this requirement may be waived and an additional work reference substituted. Evaluations should be submitted from persons who have been directly responsible for assessing and supervising your human service related work/ volunteer experience and academic performance. Avoid personal references (coworkers, advisors, friends, clergy, personal therapists, etc.). The Marshall University Department of Social Work M.S.W. program requires two recommendation forms, however letters accompanying the forms are welcomed and strongly encouraged. It is highly recommended that applicants who wish to be considered for the ~~30~~-36-hour Specialist/Advanced Standing program should submit their field evaluations if available, or one of their two letters of recommendation should be from their Director of Field Education, on-site Practicum Supervisor, or Practicum/Practice Instructor if the field evaluation is not accessible. The school reserves the right to request additional supportive material from persons acquainted with the applicant's academic and/or practice capabilities. Program Requirements. Conditional and/or Provisional admissions: The student and advisor will develop a Plan of Study or blueprint for graduation requirements. The Plan of Study must be on file in the Graduate College office before the student registers for the 12th semester hour.

Composition of the Master of Social Work Program Generalist/Foundation

Curriculum.....15~~21~~ hours
Field.....9 hours
Electives.....6 hours
Total .....30 hours

Specialist/Advanced Curriculum

Curriculum	21 hours
Field Instruction	9 hours
Electives	6 hours
Total	36 hours

INTO Marshall Students: The Graduate Pathway program will require INTO students who are matriculating into social work to begin work toward their degree by taking Social Work 203, Introduction to Social Work.

Generalist The M.S.W. program consists of a foundation-level Generalist curriculum to include the following:

SWK 501 Foundations of Generalist Practice I (3 credit hours)
SWK 511 Foundations of Human Behavior in the Social Environment (3 credit hours)
SWK 521 Foundations of Policy (3 credit hours)
SWK 531 Foundations of Generalist Practice II (3 credit hours)
SWK 541 Foundations of Research (3 credit hours)
SWK 551 Foundation Field Practicum (9 credit hours spread over 3 semesters - 450 work hours).
All Generalist 2-year students must complete ~~60~~ 66 credit hours in order to graduate from the program. All students enrolled in the regular ~~60~~ 66 credit program must complete two separate (2-3 semesters each) academic yearlong field placements.

Advanced Standing in the Program: An applicant for admission to the Master of Social Work program who holds a baccalaureate degree from an undergraduate social work program accredited by the Council of Social Work Education may be admitted with advanced standing. SWK 615 Psychopathology (3 credit hours) SWK 631 Integrated Health Care: Models and Practice (3 credit hours) SWK 633 Advanced Clinical Social Work Practice in Behavioral Health Care with Individuals and Families (3 credit hours) The spring semester includes the following courses: SWK 634 Advanced Clinical Social Work Practice in Behavioral Healthcare with Groups, Families and Communities (3 credit hours) SWK 670 Advanced Theory and Practice with Children (3 credit hours) SWK 673 Family and Community Violence in Rural and Underserved Areas (3 credit hours) SWK 655 The Comorbidity of Mental Health and Physical Disorders (3 credit hours) SWK 653 Advanced Field Practicum (9 credit hours, 450 work hours) Electives – 6 credit hours.
Students who enter the program with Advanced Standing (30 credit hours total) complete only one (1) academic (two semesters) yearlong field placement (9 credit hours, 450 work hours).

Behavioral Health Area of Specialized Practice: The Behavioral Health Area of Specialized Practice prepares students to conduct clinical social work practice in assessing, treating, and evaluating mental health, substance abuse, and physical health in relation to one another across practice settings. A focus throughout the specialization will be on understanding the multiple factors that influence health disparities and best practices to increase health equity, particularly for marginalized populations. There will be a special emphasis on effectively serving vulnerable populations with multiple needs. The Behavioral Health specialization integrates Generalist practice by enhancing and expanding on Generalist knowledge, values, and skills in the

application of the planned change process across all size systems. The Behavioral Health specialization extends and enhances the Generalist practice skills of engagement, assessment, planning, intervention, evaluation and termination across all sized systems by incorporating clinical courses focused on Advanced Clinical Social Work in Behavioral Health with Individuals and Families. SWK 673 Family and Community Violence in Rural and Underserved Areas SWK 631 Integrated Health Care: Models and Practice Generalist macro practice is enhanced and extended in the Behavioral Health specialization through practice, assessment and evaluation of integrated health care models and practice in SWK 631. Integrated Healthcare Models and Practice prepares students to engage in culturally competent behavioral health practice with diverse client populations with attention to oppressed groups and populations at risk.

New 2019-2020 Catalog Description
Program Description M.S.W.

The MSW program has two tracks – Generalist (social work foundation) and Area of Specialization. Generalist are required to complete 2 calendar years to include summers. Those admitted to the one-year Advanced Standing program will be required to complete 1 calendar year to include 1 summer. MSW students will graduate in August of each year and will attend the Marshall University December graduation. Generalist Curriculum: Those who enter the MSW program with other than a Bachelor of Social Work (BSW) degree are eligible to enter the Generalist 2 calendar year program. The 2-year curriculum (66 credit hours – 30 credit hours-Generalist and 36 credit hours in the Area of Specialization) perspective in which the simultaneous impact of many systemic levels (individuals, families, groups, organizations, and communities) on clients' lives is critically analyzed and recognized. The foundation builds upon a liberal arts base that fosters an understanding of society as a complex organization of diverse people and ideas. Social problems are understood as occurring within the nexus of culture, conflict, development, ecology, and systems and as such, efforts to help or intervene must include consideration of these forces. Students will be able to critically identify and assess social problems, specifically attending to 1) how such problems are maintained; 2) how they impact the quality of people's lives; 3) cultural sensitivity and appreciation of marginalized people; and 4) how to actively promote social and economic justice. In the foundation year, the focus is on the development of critical thinking skills in all the areas mentioned. M.S.W. Advanced Curriculum-Advanced Social Work Practice: The advanced practice curriculum seeks to develop the utilization and application of critical thinking, relative to behavioral health, on all levels - in reading professional writing and research, in students' practice, in the classroom, and in the students' own thinking. Consistently monitoring practice ethically, evaluating theoretical principles and epistemologies, and utilizing technological advances become basic practice patterns. Specific skill sets developed include: 1) Creating, organizing and integrating ideas and action on engaging diverse client systems effectively in change; 2) Assessing, conceptualizing and analyzing theoretical, practice and research problems from multiple perspectives and utilize critical thinking skills to formulate impressions based upon the data; 3) Analyzing, synthesizing and evaluating the evidence available to guide advanced social work practice; 4) Synthesizing, formulating and implementing a plan of action for social work practice that addresses complex issues and problems, builds consensus and incorporates multiple-level forces on client systems; 5) Analyzing and evaluating data of client progress and outcomes and sees implications and consequences of this progress and outcomes; 6) Synthesizing, creating, and organizing ideas from theory, research and practice for social justice; 7) Demonstrating the ability to integrate culturally competent skills into all aspects of social work practice; 8) Demonstrating the knowledge of the roles of behavioral health providers working in primary care settings, theories and models of care, and cross-cultural issues; and 9) Demonstrating skills in engagement, assessment, intervention planning and implementation, and practice evaluation in the primary and behavioral health care setting.

M.S.W. Practicum Education: All Generalist students admitted to the 66 credit hour program are required to satisfactorily complete 900 clock hours (18 credit hours) in approved practicum sites. Advanced Standing students are required to satisfactorily complete 450 clock hours (9 credit hours). If employed in a human services agency meeting the department's criteria as a placement

site, the student may apply to undertake the practicum at her/his place of employment. This may be accomplished when the agency is willing to shift the student's work role and supervision in such a manner as necessary to meet the school's educational objectives for practicum instruction.

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Curriculum.....15hours
Field.....9 hours
Electives.....6 hours
Total .....30 hours
Specialist/Advanced Curriculum
Curriculum.....21 hours

Specialist/Advanced Curriculum

Curriculum	21 hours
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Students who enter the program with Advanced Standing (30 credit hours total) complete only one (1) academic (two semesters) yearlong field placement (9 credit hours, 450 work hours).

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Chair: Tracy Christofero | **GC#4: Major or Degree**

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: Science

Dept/Division: Forensic Science

Contact Person: John Sammons

Phone: 304-696-7241

Degree Program: Cyber Forensics and ~~Defense~~ Security LH 11/23/19

Check action requested: ☒ Addition ☐ Deletion ☐ Change

Effective Term/Year: Fall 20 ☐ Spring 20 x ☐ 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 10-28-19
College Curriculum Chair	Date 10-29-19
College Dean Evelyn Pupplo-Cody for Dean Somerville	Date 10/29/2019
Graduate Council Chair Lori Howard	Date 11/23/19
Provost/VP Academic Affairs	Date 11/26/19
Presidential Approval Jerome A. Gilbert	Date 11-26-19
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)

New Graduate Degree Program. Intent to Plan approved by the Graduate Council on September 27, 2019.

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)

See attached ITP pages 11-13

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.

No additonal resources are needed from the University. We have received a 4.25 million dollar grant from the Department of Homeland Security that will fund a new lab and equipment. This program will be a proforma program that will use the money it brings in to fund addtitional staff and equipment once the program is up and running. Also see attahed documents. Also see the attached ITP page 5.

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.

See attached ITP pages 5-7, also see the attached document entitled MS Cyber Forensics and ~~Defense~~ Security Intent to Plan - Addendum

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)

The Master's Degree in Cyber Forensics and ~~Defense~~ Security (MS CFD) provides students with advanced education and skills in digital forensics and cybersecurity. This advanced, practitioner-focused program is intended to prepare students for the fast moving and ever- changing environment they will work in. Students will learn advanced skills and techniques to solve investigative and cybersecurity problems using science and technology. The program will prepare students to face sophisticated cybersecurity and investigative challenges and take a leadership role within their organization.

Also see the attached ITP pages 7-8.

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:

Forensic Science
Cyber Forensics and ~~Defense~~ Security
Addition
New Graduate Degree Program

Marshall University

College of Science
School of Forensic and Criminal Justice Sciences

Master of Science in Cyber Forensics and ~~Defense~~ Security

Effective Date of Proposed Action : Spring 2020

By:
John Sammons, MS
Chair, Associate Professor

Josh Brunty, MS
Associate Professor

Bill Gardner, MA
Assistant Professor

Please provide a rational for new degree program:

Technology has dramatically changed the way the world lives and works. We rely on technology to communicate, manage our finances, for our healthcare, to shop, and for entertainment, just to name a few. Organizations large and small, public or private, rely heavily on technology. Technology underpins many critical industries including health care, energy, retail, finance, and defense. Modern societies reliance on technology has made our data, systems, and privacy extremely vulnerable.

Individuals and organizations are the targets of cyber-attacks and cybercrime 24 hours a day, 365 days a year. We are targeted by individual criminals, organized criminal enterprises, hacktivist groups, and hostile nation states. The statistics below puts the extent of the cyber threat into context:

- "Cybercrime is estimated to cost the world more than $6 trillion annually by 2021, a $3 trillion increase from 2015" (Morgan, 2017).
- "Research by Cisco showed that 29% of organizations that were hacked lost revenue" (Kauflin, 2017).
- "Global ransomware damage costs are predicted to exceed $5 billion in 2017. That's up from $325 million in 2015 — a 15X increase in two years and expected to worsen" (Morgan, 2018).
- "Cybersecurity spending to exceed $1 trillion from 2017 to 2021" (Morgan, 2018).
- "70 percent of US oil, gas companies hacked last year" (Brooks, 2017).
- "Over 75% of health care industry has been infected with malware over last year" (Brooks, 2017).

As significant as the threat is, it isn't the only concern. Compounding the problem is a dire shortage of qualified cybersecurity professionals. The criticality of this shortage cannot be overstated. For example:

- "There will be a global shortage of 2 million cybersecurity professionals by the year 2019, and that number is expected to rise to a shortage of 3.5 million by the year 2021" (Kauflin, 2017).
- "The current number of U.S. cybersecurity job openings is up from 209,000 in 2015. At that time, job postings were already up 74 percent over the previous five years,

according to a Peninsula Press analysis of numbers from the Bureau of Labor Statistics" (Setalvad, 2015).

- "In 2017 the U.S. employs nearly 780,000 people in cybersecurity positions, with approximately 350,000 current cybersecurity openings, according to CyberSeek, a project supported by the National Initiative for Cybersecurity Education (NICE), a program of the National Institute of Standards and Technology (NIST) in the U.S. Department of Commerce" (Morgan, 2018).

- "More than 85% of global IT professionals believe there is a significant shortage of cybersecurity professionals" (Morgan, 2017).

Figures from the U.S. Bureau of Labor Statistics also supports this conclusion. In their most recent projections (Job Outlook 2016-2016), they forecast a 28% average growth rate for Information Security Analysts. This is 21% higher than the average growth rate for all occupations.

A third critical concern focuses on cybersecurity education itself. Employers are expressing significant concern that recent graduates are seriously lacking hands-on, practical skills as well as the ability to problem solve and communicate. The 2019 Cybersecurity Workforce Gap report from the Center for Strategic & International Studies says the following:

- "According to the recently published Report to the President on Supporting the Growth and Sustainment of the Nation's Cybersecurity Workforce, authored by the U.S. Department of Commerce and Department of Homeland Security, 'employers increasingly are concerned about the relevance of cybersecurity-related education programs in meeting the needs of their organizations'" (CSIS, 2019).

- "According to cybersecurity practitioners, employers are dissatisfied because they perceive the graduates of these programs as lacking practical experience as well as an understanding of the fundamentals of computing and information security. As a result, many graduates require extensive on-the-job training before they can begin work. In addition, employers often find cybersecurity graduates lacking in essential soft skills like teamwork, problem-solving, and communication" (CSIS, 2019).

- "One of the most consistent complaints against cybersecurity education programs is that an over-emphasis on theory and book learning prevents students from building the practical skills they need. Theory alone does not prepare graduates for the tasks they will face once they step onto the job. Practical training and hands-on experience is necessary to equip students with the tangible skills employers expect" (CSIS, 2019).

- "Surveys consistently show that organizations rate hands-on experience above all other factors when evaluating new hires, and the integration of a hands-on learning environment where students work on realistic cybersecurity challenges has been identified as one of the key factors setting apart leading education programs in the eyes of cybersecurity practitioners. The cybersecurity training nonprofit organization U.S. Cyber Challenge notes, "The common thread across the most effective public, private, domestic, or international cyber workforce training programs is hands-on, applied learning methods" (CSIS, 2019).

The primary goal of the proposed MS CFD (and the undergraduate DFIA program before it) is to specifically address this critical shortcoming. Each course in the curriculum will include as many challenging, hands-on exercises as possible. Courses will also include realistic, real-world problems and opportunities for students to practice and refine their communication skills. This practice culminates in the capstone course where students are given large, complex, scenario-driven problems to solve. This largely independent course requires students to work individually (and as a team) to solve these problems using all of the skills and knowledge they have mastered throughout the program. Real-world experience has been a major consideration when hiring faculty for the program.

As clearly evidenced by the scope of the threat and critical shortage of professionals, job prospects for graduates of this program are excellent. There are additional factors that also point to the success of this program.

This new program will be fed primarily by the highly successful Digital Forensics and Information Assurance (DFIA) undergraduate program. As of Fall 2018, the program has 118 majors. This is an increase of 22 students over the Fall 2017 enrollment. This program has grown 330% since 2013.

The West Virginia Forward initiative, a collaborative effort between West Virginia University, the State of West Virginia, and Marshall University, conducted a study to identify areas of economic opportunity in West Virginia. Cybersecurity was identified as one of those sectors. As a result, there is a statewide effort to bring cybersecurity jobs to West Virginia. If these jobs become a reality, this will create an even greater demand for these graduates.

The West Virginia Forward report (https://wvforward.wvu.edu) cautions that developing a cybersecurity sector will take a long-term investment and require growing the State's talent pool. The practitioner-focused Master of Science degree in Cyber Forensics and Defense (MS CFD) will play a significant role in growing the State's cybersecurity workforce.

ADDITIONAL RESOURCE REQUIREMENTS:

If your new program requires additional faculty, equipment or specialized materials, 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.

The program will be delivered in the existing DFIA classroom on Marshall's Huntington campus. While it is possible to deliver this program online, the faculty feel strongly that the overall quality of the practical, hands-on aspects of the curriculum will suffer when delivered online. As an applied program, the importance of hands-on labs in this type of program can't be overstated.

The program will use the pre-existing teaching space and computers of the undergraduate DFIA program. As such, no new equipment or laboratories will be needed.

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.

Even though there are two programs that offer similar coursework, the MS in CFD does not duplicate any current degree programs offered by the University. At first glance, the MS in CFD would appear to be similar to the Master's Degree in Forensic Science and the Master's Degree in Cybersecurity. However, after comparing the curricula and target audiences, they are distinctly different.

The graduate Forensic Science program offers digital forensics as one of four areas of emphasis for its Masters of Forensic Science (MSFS). However, this program isn't a feasible option for the overwhelming majority of our graduates for several reasons, including;

1. The MSFS curriculum in the digital forensics area of emphasis is geared toward someone that is just starting their study of the discipline. MU CFD graduates are much farther along in their study of digital forensics than are the average student entering the MSFS program. The target audience for the MS CFD needs a more advanced digital forensics curriculum.

2. The MSFS curriculum doesn't include any coursework in cybersecurity.

3. A large percentage of the students interested in this program will be working in cybersecurity related positions. The MSFS curriculum is focused almost exclusively on digital forensics. This degree will also service those interested in advancing their skills in cybersecurity. Our graduates need advanced cybersecurity courses in order to expand their existing knowledge and skills upon graduation from our undergraduate program.

4. The overwhelming majority of MU CFD students don't meet the admissions requirements for the MSFS program (specifically the biology, chemistry, and physics courses). DFIA students are required to take more technology related courses as opposed to the large number of natural science courses required by the MSFS program.

The Master's degree in Cybersecurity offered by the Marshall University College of Information Technology and Engineering (CITE) compliments rather than competes with the proposed MS in CFD. Cybersecurity is a broad field comprised of many different focus areas (e.g. secure software development, digital forensics, incident response, penetration testing, security management, etc.). Rather than competing, these degrees serve two complimentary, but distinctly different student populations.

1. Like the undergraduate DFIA degree, the MS CFD is very practioner focused. In contrast, the CITE MS in Cybersecurity takes a decided computer science and management approach. For example, the CITE curriculum includes concentrations in Cybersecurity Management and Application Security. Some of the courses include Applied Cryptography, Risk and Vulnerability, Cybersecurity Policy and Management, Application Security, and IT Disaster Planning and Recovery. Elective options include Software Engineering, High Performance Computing, Applied Algorithms, and AI Principles and Methods.

2. In addition to the traditional admission pathway, the MS CFD provides a clear admission path for nontraditional students with extensive cyber experience and or certifications, but lack the formal academic coursework. The CITE MS in Cybersecurity admission requirements include a bachelor's degree with GPA of 2.75 or higher out of 4.0 in cybersecurity or any computer science related areas or condition of successful completion of the three bridge courses (CS 210 Data Structures and Algorithms, CS 320 Internetworking, and Statistics (STA 225, STA 345, STA 346).

3. The MS in CFD requires 33 hours of coursework, including a six hour practicum or applied research course sequence. The CITE MS in Cybersecurity includes a thesis

option.

4. The MS CFD curriculum includes advanced coursework in digital forensics. The CITE Cybersecurity MS does not.

West Virginia University is offering a Master's Degree in Business Cybersecurity Management. This new degree, which was launched just this fall, will be housed in the College of Business and Economics. Their curriculum, as the name suggests, is quite business centric. For example, the program includes courses in Fraud Data Analysis, Foundations of Business Intelligence, Business Data Visualization, Business Network Security, Business Cybercrime Management, and Business Cybersecurity Practicum. This program does not include any coursework in digital forensics. In contrast, the MU CFD curriculum has a broader focus, giving graduates the knowledge and skills to work in multiple industries including military, law enforcement, intelligence, business, and health care to name a few.

The University of Charleston also offers a Master of Science degree in Cybersecurity. Like the degree offered by WVU, this degree has a decided business focus. Aside from the curricular differences, the UC degree program has some other concerns that make it less attractive for undergraduates of our program. First, UC is a private institution with tuition that is significantly greater than the one we are proposing. Second, this program is delivered entirely online.

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).

Cyber Forensics & Defense, M.S

The Master's Degree in Cyber Forensics and ~~Defense~~ Security (MS CFD) provides students with advanced education and skills in digital forensics and cybersecurity. This advanced, practitioner-focused program is intended to prepare students for the fast moving and ever-changing environment they will work in. Students will learn advanced skills and techniques to solve investigative and cybersecurity problems using science and technology. The program will prepare students to face sophisticated cybersecurity and investigative challenges and take a leadership role within their organization.

Program Mission: How does the program's mission support that of Marshall University and the academic college in which the degree program will reside?

The mission of the MS CFD program fully supports the mission of both Marshall University and

the College of Science. For example, the MU CoS mission states that "Students receive instruction in a learning environment that encourages **competency in written and oral communication skills**..." The MS CFD program emphasizes the critical need for graduates to be effective written, oral, and visual communicators. The CoS mission goes on to say that " Special emphasis is placed on **experiential learning** ..." As an applied, practitioner-focused program, MS CFD courses will be delivered in this hands-on manner.

Program Learning Outcomes: Indicate, in measurable terms, the knowledge and skills expected of students upon completion of the program.

Goal 1: Knowledge

Students in the Cyber Forensics and Defense program will demonstrate advanced knowledge of cyber forensic examination, analysis, along with artifacts from a variety of systems and platforms. Furthermore, they will demonstrate advanced knowledge of both offensive and defensive cybersecurity tactics, techniques, procedures, and strategies.

Objectives:

Upon completion of this program, students will be able to:

1a. Identify, preserve, collect, analyze, and explain various user artifacts associated with OS X and Linux systems.

1b. Identify, preserve, collect, analyze, and explain advanced user artifacts Windows, iOS, and Android systems.

1c. Identify, preserve, collect, analyze, and explain various user artifacts associated with common Internet of Things (IoT) devices.

1d. Create and present a detailed cyber threat intelligence report given a variety of network and host-based evidence from an ongoing network intrusion and information from industry standard cyber threat resources.

1e. Assess network and enterprise vulnerabilities and then develop and present appropriate solutions to mitigate and remediate them.

1f. Identify and mitigate vulnerabilities in common industrial control systems (ICS) and Internet of Things (IoT) devices.

Goal 2: Skills

Students in the Cyber Forensics and Defense program will demonstrate advanced skills in critical thinking, problem solving, oral and written communication, and digital forensic

acquisition, examination, and analysis. Furthermore, students will demonstrate advanced offensive and defensive cybersecurity skills.

Objectives:

Upon completion of this program, students will be able to:

2a. Demonstrate advanced critical thinking skills by 1) analyzing and evaluating digital evidence within the context of a simulated investigation. 2) Evaluating and testing the security of a variety of systems and environments.

2b. Demonstrate oral communication skills by developing and delivering oral presentations in various classes.

2c. Demonstrate written communication skills by developing and submitting written products in various classes.

2d. Demonstrate advanced proficiency with common cyber forensics and security tools, tactics, and procedures.

Additional Program Outcomes: Indicate outcomes the program experts to achieve in addition to student learning. These outcomes may be related to outreach, service, faculty, etc.

Graduate students in this new program will be afforded the opportunity to participate in many of the successful outreach efforts already established in the successful undergraduate DFIA program. These opportunities include internships, the Open Source Intelligence Exchange (OSIX), assisting Operation Underground Railroad in combatting child sex trafficking, attending conferences such as Black Hat, DerbyCon, SecureWV, and AIDE. The annual Appalachian Institute of Digital Evidence (AIDE) conference is entering it's 12th year. Black Hat is one of the two largest cybersecurity conferences in the country. Our students are among the limited number of college students invited each year to work at the conference and attend for free.

The DFIA faculty will continue providing consulting and technical assistance to the public and private sector. These graduate students could assist the faculty in providing these services, depending on the nature of the case.

Admissions and Performance Standards: Describe admissions and performance standard and their relationship to the program's learning outcomes.

Perspective students will apply for the program at various stages of their career. Some students will come straight into the program after completing their undergraduate degree.

Other students will be seeking to further their education after several years in the field. As such, there will be two paths into the program. Option A is for those students having recently graduated with an appropriate 4-year degree. Option B is for those applicants having significant work experience in the field. The details for each option are outlined below.

Option A

Option A is intended for applicants that are recent graduates and have less than three years work experience in digital forensics and/or information assurance.

1. Baccalaureate Degree - Students admitted to the program must have an appropriate baccalaureate degree from a regionally accredited US institution, or US equivalent.

2. Grade Point Average – Students admitted must have an undergraduate GPA of at least 2.8 on a 4.0 scale.

3. GRE Score – Applicants must take the GRE. The GRE will be evaluated in combination with the undergraduate GPA.

4. Personal Statement – In the Personal Statement, the applicant will describe their background and goals as they relate to the study of digital forensics and information assurance. Successful applicants will articulate how their background has prepared them for success in the program as well as how their goals align with the program's learning objectives.

5. Letters of Recommendation - Applicants must submit three letters of recommendation. The letters should attest to the applicant's knowledge, skills, character, and work ethic.

Option B

Option B is intended for applicants that have been out of school for more than three years and have three or more years of documented work experience in digital forensics and/or information assurance/cybersecurity.

1. Baccalaureate Degree - Students admitted to the program must have a baccalaureate degree from a regionally accredited US institution, or US equivalent.

2. Grade Point Average – Students admitted must have an undergraduate GPA of at least 2.5 GPA on a 4.0 scale.

3. Personal Statement – In the Personal Statement, the applicant will describe their background and goals as they relate to the study of digital forensics and information assurance. Successful applicants will articulate how their background and work experience has prepared them for success in the program as well as how their goals align with the program's learning objectives.

4. Letters of Recommendation - Applicants must submit three letters of recommendation. The letters should attest to the applicant's knowledge, skills, character, and work ethic.

5. Current CV/Resume – An updated Resume or Curriculum Vitae that includes a detailed work history, education, training, certifications, awards, publications, professional memberships, etc.

6. Professional Portfolio – The portfolio must include examples of the applicant's work product and is intended to demonstrate their capacity to successfully complete graduate level work in digital forensics and cybersecurity. The portfolio could include things such as:

    - Samples of professional writing (redacted reports, grants, SOPs, etc.)
    - Professional Publications (journals, books, articles, etc.)
    - Presentations (slide decks, conference proceedings, etc.)
    - Research

Program Requirements: Describe course requirements (indicating new courses with asterisks), majors and specializations, credit-hour requirements, research-tool requirements, examination procedures and requirements for a research paper, thesis, or dissertation. Also include field work or similar requirements and any other information that helps to describe the program of study.

The MS CFD requires 33 total hours of graduate-level coursework. Core courses comprise 27 of the 33-hour total. In addition, students are required to complete six hours of DFIA/CFD technical electives. Six new courses need to be created as part of this degree. Those courses include; CFD 630 Cyber Threat Intelligence, CFD 640 Advanced Cyber Forensics, CFD 650 Advanced Cyber Defense, CFD 660 Advanced Red Team Operations, and CFD 690 Capstone.

Required Core

CYBR 530 - Cybersecurity Policies and Management
CYBR 542 - Cyber Operations
CFD 630 (New) – Cyber Threat Intelligence - 3 hrs
CFD 640 (New) – Advanced Cyber Forensics - 3hrs

CFS ~~CFD~~ **650 (New)** – Advanced Cyber Defense - 3hrs
CFS ~~CFD~~ **660 (New)** – Advanced Red Team Operations – 3 hrs
CFS ~~CFD~~ **665 (New)** – Cybersecurity of IoT and Industrial Control Systems – 3 hrs
CFS ~~CFD~~ **670 (New)** – Practicum - 3-6 hrs
CFS ~~CFD~~ **675 (New)** – Adv Research in CFD - 3-6 hrs

and

CFS ~~CFD~~ **690 (New)** – Capstone- 3hrs

Total – 27 hrs

Technical Electives

Students must complete 6 credit hours from the following:

DFIA 405/505 – OSINT Practicum 1
DFIA 406/506 – OSINT Practicum 2
DFIA 400/500 – Intro to Digital Forensics, 3 hrs
DFIA 420/520 – Incident Response, 3 hrs
DFIA 440/540 – Digital Evidence, 4 hrs
DFIA 445/545 – Mobile & Web Pen Testing, 3 hrs
DFIA 448/548 – Forensic Image and Video Analysis, 3 hrs
DFIA 454/554 – Network Defense, 4 hrs
DFIA 460/560 – Applied Digital Evidence, 4 hrs
DFIA 461/561– Cyber Warfare, 3 hrs
DFIA 462/562 – Network Forensics, 4 hrs
DFIA 464/564 – Network Security & Cyber Crime, 3 hrs
DFIA 467/567 – Mobile Device Forensics, 4 hrs

Students may also choose electives from the following courses offered by CITE:

CYBR 500 - Computer Security Design
CYBR 530 - Cybersecurity Policies and Management
CYBR 542 - Cyber Operations
CYBR 615 - Cyber Risk and Vulnerability

Many of the electives are cross-listed with courses in the undergraduate DFIA program.

Like its successful undergraduate counterpart, the MS in CFS ~~CFD~~ will contain significant hands-on and problem-solving experiences. Tables 1, 2, and 3 reflect the first and second years of the sample plan of study.

Sample Plan of Study

Fall 1		Spring 1	
Courses	**Hrs**	**Courses**	**Hrs**
CYBR 530 – Cybersecurity Policies & Management	3	~~**CFD**~~ 640 Advanced Cyber Forensics CFS	3
DFIA/~~CFD~~ Technical Elective CFS	3	**CYBR 542** Cyber Operations	3
		~~**CFD**~~ 665 – Cybersecurity of ICS	3
Total Credit Hours	6	CFS **Total Credit Hours**	9

Table 1. The first year of the sample plan of study.

Summer 1		Summer 2	
Courses	**Hrs**	**Courses**	**Hrs**
CFS ~~**CFD**~~ 675/670 – Adv Research/Practicum	3 CFS	~~**CFD**~~ 675/670 – Adv Research/ Practicum	3
Total Credit Hours	3	**Total Credit Hours**	3

Table 2. The first year of the sample plan of study.

Fall 2		Spring 2	
Courses	**Hrs**	**Courses**	**Hrs**
CFS ~~**CFD**~~ 650 – Adv Cyber Defense	3 CFS	~~**CFD**~~ 690 - Capstone	3
CFS ~~**CFD**~~ 630 – Cyber Threat Intelligence	3 CFS	~~**CFD**~~ 660 – Adv Red Team Operations	3
Total Credit Hours	6	**Total Credit Hours**	6

Table 3. The second year of the sample plan of study.

Program Delivery: Describe any instructional delivery methodologies to be employed, such as compressed video, World Wide Web, etc. Indicate costs associated with distance education or technology-based delivery.

The MS CFD curriculum will be delivered live in the classroom on Marshall's main campus. Cross-listing courses will enable costs to be shifted to the undergraduate program, which is considered a core organization for budgeting purposes.

As an advanced applied program, lab exercises, problem-based learning, and realistic, scenario-driven exercises will play a critical role in the curriculum.

Existing Programs: List similar programs (and their locations) offered by other institutions (public or private) in West Virginia. State why additional programs or locations are desirable.

The University of Charleston offers a MS degree in Cybersecurity. It is also completely online. At present, it appears that program is remotely staffed by a single faculty member that lives in Texas.

Looking internally, CITE launched an MS degree in Cybersecurity in the Fall of 2019. While similar, this program is sufficiently different as to not constitute a duplication of degrees. Cybersecurity is a broad, diverse, and multifaceted discipline.

This diversity affords these two programs the ability to serve two distinct populations of students. The CITE program takes a decided computer science and management approach. That program includes courses such as Applied Cryptography, Risk and Vulnerability, Cybersecurity Policy and Management, Application Security, and IT Disaster Planning and Recovery. Some of the free elective options include Software Engineering, High Performance Computing, Applied Algorithms, and AI Principles and Methods. These topics are either lightly covered in our program or not addressed at all.

Like it's undergraduate counterpart, the MS ~~CFD~~ CFS will be practitioner focused. The industry is in dire need of workers that have solid technical skills in addition to core and theoretical knowledge. The MS ~~CFD~~ CFS degree is designed to challenge students through problem-based learning, enhancing their skillsets as practitioners.

Program Planning and Development: Indicate the history to date of the development and submission of this program proposal. What resources (e.g., personnel, financial, equipment) have already been invested in this program? What planning activities have supported this proposal?

This is the first proposal of this program. As such, there has been no investment in resources.

Clientele and Need: Describe the clientele to be served and state which of their specific needs will be met by the program. Indicate any special characteristics, such as age, vocation, or academic background Indicate manpower needs, interest on the part of industry, research and other institutions, governmental agencies, or other indicators justifying the need for the program.

Technology has dramatically changed the way the world lives and works. Organizations large and small, public or private, rely heavily on technology. Technology underpins many critical industries including health care, energy, retail, financial, and defense, just to name a few. This heavy reliance on technology has made modern society vulnerable in the extreme.

Individuals and organizations are the targets of cyber-attacks and cybercrime 24 hours a day, 365 days a year. We are targeted by individual criminals, organized criminal enterprises, hacktivist groups, and hostile nation states.

We anticipate the successful DFIA undergraduate program to be a major source of students to this program. The undergraduate DFIA program was launched in January 2013. Since that time, enrollment has risen consistently every year. The Fall 2018 semester bagan with 118 students enrolled in the program. Table 4 shows the growing program enrollment since its inception.

	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018
Students	39	49	81	82	99	118
% Increase		25.6%	65.3%	1.2%	20.7%	19.1%

Table 4. Undergraduate DFIA program enrollment by year.

In a poll taken of working professionals and graduates of our program, 92% of the 100 respondents said that they would be interested in pursuing a master's degree in Cyber Forensics and Defense from Marshall University. We have been forced to turn away graduating students and or alumni each semester due to our lack of a graduate program.

Once the MS ~~CFD~~ CFS program has been established, we will seek approval for a BS to MS program. This option could prove quite successful, bolstering demand for both the BS IN DFIA and MS degrees in ~~CFD~~. CFS

Employment Opportunities: **Present a factual assessment of the employment opportunities that are likely to be available to program graduates. Include data and references supporting this assessment. Indicate the types and number of jobs for which such a curriculum is appropriate.**

As evidenced by both the scope of the threat and the severe shortage of qualified workers, job prospects for graduates of this program are excellent. Other factors that point to the potential success of this program include:

- The highly successful Digital Forensics and Information Assurance undergraduate program. As of Fall 2018, the program has 118 majors. This is an increase of 330% in students (or 79) from the date the program launched in 2013. This is also an increase of 22 students (81%) from Fall 2017.

- The program has drawn students from across the country. The DFIA program has seen students enroll from 14 different states and the District of Columbia. These states include: Conneticut, Florida, Indiana, Kentucky, Maryland, North Carolina, New York,

Ohio, Pennsylavania, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

- The practitioner-focused nature of the program which employers in this field find highly attractive. Employers have expressed to us that this is an area they find lacking in many university cybersecurity programs.

- West Virginia Forward, a collaborative effort between West Virginia University, the State of West Virginia, and Marshall University identified the cybersecurity sector as an economic opportunity for the state. As a result, there is a statewide effort to bring cybersecurity jobs to West Virginia. In December 2018, Leidos won a $100 million contract to provide cybersecurity operations for the U.S. Department of Commerce facility in Fairmont, WV. As a result, Leidos will be hiring a significant number of cybersecurity employees to staff the Fairmont facility.

  The report cautions that developing a cybersecurity sector will take a long-term investment and require growing the State's talent pool. The practitioner-focused MS CFD degree will play a significant role in growing the State's cybersecurity workforce.

Program Impact: Describe the impact of this program on other programs that support or are supported by it.

The graduate ~~CFD~~ CFS program will have a tremendous positive impact on its undergraduate counterpart. A graduate program will afford students the opportunity to pursue their education at Marshall University as opposed to going elsewhere. With a graduate degree in place, this opens up the opportunity for a BS to MS program.

Cooperative Arrangements: Describe any cooperative arrangements (including clinical affiliations, internship opportunities, personnel exchanges, and equipment sharing) that have been explored.

The DFIA program has successfully built and leveraged a variety of relationships over the years with local, national, and international companies and organizations. These relationships have led to internships, training, and applied research opportunities for students. These entities include:

- **National White Collar Crime Center** – National organization providing digital forensics and cybersecurity training to state and local law enforcement across the country.

- **AccessData** – One of the top two digital forensic software companies in the world.

- **Magnet Forensics** - A leading digital forensics software company with international reach, based in Canada.

- **Spyder Forensics** – International digital forensics training company servicing clients around the world.

- **Operation Underground Railroad** – International non-profit organization devoted to combating child sex trafficking.

- **Bluegrass State Intelligence Community Center of Academic Excellence** – Academic coalition of collages and universities teaching intelligence based in Kentucky.

- **Appalachian Institute of Digital Evidence** – Regional non-profit that provides training and research to students and practitioners. Delivers a yearly, five-day conference drawing national speakers. Students attend for free.

- **Marshall Health/Cabell Huntington Hospital** – Regional healthcare provider.

- **Marshall University Forensic Science Graduate Program** – Top-ranked, graduate program in the United States.

- **West Virginia Intelligence Fusion Center** – State-level intelligence clearinghouse, providing intelligence support to state and local law enforcement.

- **West Virginia State Police, Digital Forensics Unit** – Located at the Marshall Universty Forensc Science Center, it is one of only two such working labs in the state. Responsible for providing digital forensic examination and analysis for the southern half of the state.

- **Cabell County Prosecuting Attorney's Office** – The DFIA OSIX team has completed open source intelligence collection and analysis on multiple cases at the request of CCPA's office.

Alternatives to Program Development: **Describe any alternatives to the development of this program that have been considered and why they were rejected.**

After careful consideration of existing programs at Marshall, we have concluded that there is no viable alternative to the program proposed in this document. The MSFS and the MU CITE MS in cybersecurity serve distinctly different student populations. The curriculum in these programs, while excellent, doesn't fully meet the needs of the students targeted by the

proposed MS CFD program. As stated previously, the CITE cybersecurity and the proposed MS in CFD are complimentary rather than competitive.

Program Implantation and Projected Resource Requirements.

Program Administration: Describe the administrative organization for the program and explain what changes, if any, will be required in the institutional administrative organization.

The program will be housed and administered from the Department of Forensic Sciences whch is located inside the College of Science. The program will be managed by the Program Director. The pro forma budget also includes funding for a full-time administrative position. This position will assist in managing the day-to-day administrative load of the program in addition to assisting in the maintenance of accreditation records and documentation.

Program Projections: Indicate the planned enrollment growth and development of the new program during the first five years (Form 1). If the program will not be fully developed within five years, indicate the planned size of the program in terms of degrees and majors or clients served over the years to reach full development of the program.

Table 5 depicts conservative enrollment projections. These numbers are the result of careful consideration of the various factors discussed previously in this document including market demand, overall supply of graduates to meet this demand, our ability to attract students, competiting programs, and other influences. We project that the program will start with 10 students in year one and reach a steady state by year eight with 50 students.

	Year 1	Year 2	Year 3	Year 4	Year 5
Number of Students	10	20	25	30	35

Table 5. MS CFD five-year enrollment projections.

	Year 6	Year 7	Year 8	Year 9	Year 10
Number of Students	40	45	50	50	50

Table 6. MS CFD projected enrollment for years six through 10.

Faculty Instructional Requirements: Indicate the number, probable rank, experience, and cost of faculty required over the five-year period.

Labor Costs	Effort	Class 1	Class 2	Class 3	Class 4	Class 5
DF Faculty1 (3 crse)	37.5%	35,250	35,250	35,250	35,250	35,250
DF Faculty2 (1crse)	12.5%	10,875	10,875	10,875	10,875	10,875
DF Faculty3 (1crse)	12.5%	11,500	11,500	11,500	11,500	11,500
DF Faculty4 (year 5)	50.0%	-	-	-	-	46,000
Administrative Asst	100.0%	30,000	30,000	30,000	30,000	30,000
Labor Pool/Contingency	3.0%	-	2,629	4,460	6,346	8,289
FT CFB	27.04%	13,564	3,788	3,971	4,160	829
FT Labor		101,189	94,042	96,056	98,131	142,743

Table 7. MS CFD faculty and staff labor costs for classes on through five.

Labor Costs	Effort	Class 6	Class 7	Class 8	Class 9	Class 10
DF Faculty1 (3 crse)	37.5%	35,250	35,250	35,250	35,250	35,250
DF Faculty2 (1crse)	12.5%	10,875	10,875	10,875	10,875	10,875
DF Faculty3 (1crse)	12.5%	11,500	11,500	11,500	11,500	11,500
DF Faculty4 (year 5)	50.0%	46,000	46,000	46,000	46,000	46,000
Administrative Asst	100.0%	30,000	30,000	30,000	30,000	30,000
Labor Pool/Contingency	3.0%	11,210	14,219	17,318	20,510	23,798
FT CFB	27.04%	1,121	1,422	1,732	2,051	2,380
FT Labor		145,956	149,266	152,675	156,186	159,803

Table 8. MS CFD faculty and staff labor costs for classes on through five.

CFS

Library Resources and Instructional Materials: **Evaluate the adequacy of existing library resources an instructional materials for the proposed program. Estimate the nature and probable cost of additional resources necessary to bring the proposed program to an accreditable level.**

The currently available library resources are adequate for this new program. We do not antipiate the need for any additional library resources.

Support Service Requirement: **Indicate the nature of any additional support services (e.g., laboratories, computer facilities, equipment, etc.) likely to be required by the proposed program. Include the expected costs, and describe how such expansions will be incorporated into the institutional budget.**

The hardware and software costs to launch this program will be minimal. The program will use the existing hardware and software of the undergraduate DFIA program. IT support will be provided by the CoS IT staff. No additional IT staff will be required to launch or operate the program.

Facilites Requirements: **Indicate whether the program will require the addition of new space or facilities or the remodeling or renovation of existing space. If so, provide a statement detailing such plans and space needs and their estimated funding requirements. Describe the impact of this new program on space utilization requirements.**

The program will utilize the existing DFIA teaching space. The undergraduate program in DFIA has grown substantially each year since it's launch in 2013. If that program continues to grow (which we expect it will), additional teaching space will be needed. Since we plan on cross-listing several DFIA/CFD electives (400/500) we anticipate additional students in those courses from this graduate program. In order to handle this increased enrollment, we will hold larger lectures and multiple lab sections. We anticipate needing this larger lecture space possibly as early as the Fall of 2019.

Operating Resource Requirements:

The MS CFD will operate on a pro forma budget model and is projected to reach the break even point in year two. The pro forma model is based upon enrollment estimates that start with a class of ten students. In year two, the projected enrollment is expected to double to 20 students. Enrollment is anticpated to increase by five students each year thereafter until year eight when it flattens out at 50 students. See Tables 9 and 10.

Tuition revenue is projected to increase each year along with the enrollment.The program is expected to generate $100,390 in tuition it's first year and $274,124 in the second. In year five, the projected tuition revenue is expected to cross the $600,00 threshold. By year ten, the projected revenue from tuition is $1080,201. See tables 9 and 10.

	Class 1	Class 2	Class 3	Class 4	Class 5
FTE Intake	10	20	25	30	35
Tuition	100,390	274,124	403,886	510,782	614,283

Table 9. Operating expenses years one through five. Note the program reaches the break even point in year two.

	Class 6	Class 7	Class 8	Class 9	Class 10
FTE Intake	40	45	50	50	50
Tuition	734,184	850,878	982,869	1,048,392	1,080,201

Table 10. Operating expenses years one through five. Note the program reaches the break even point in year two.

Labor costs include the partial effort of three full-time faculty members through year five. At year five, the pro forma includes funding for half the salary of an additional (fourth) full-time faculty member. This additional faculty member will be necessary due to the increased enrollment of the program. The remaining faculty labor costs are borne by the undergraduate Digital Forensics and Information Assurance program. The DFIA program is centrally funded and is considered a core organization for budgeting purposes.

The budget also includes funding for a full-time administrative assistant. This position is needed in order to help manage the administrative load for the program including accreditation, recruiting, etc. See Tables 11 and 12.

Labor Costs	Effort	Year 1	Year 2	Year 3	Year 4	Year 5
DF Faculty1 (3 crse)	37.5%	35,250	35,250	35,250	35,250	35,250
DF Faculty2 (1crse)	12.5%	10,875	10,875	10,875	10,875	10,875
DF Faculty3 (1crse)	12.5%	11,500	11,500	11,500	11,500	11,500
DF Faculty4 (year 5)	50.0%	-	-	-	-	46,000
Administrative Asst	100.0%	30,000	30,000	30,000	30,000	30,000
Labor Pool/Contingency	3.0%	-	2,629	4,460	6,346	8,289
FT CFB	27.04%	13,564	3,788	3,971	4,160	829
FT Labor		**101,189**	**94,042**	**96,056**	**98,131**	**142,743**

Table 11. Labor costs for year one through five.

Labor Costs	Effort	Year 6	Year 7	Year 8	Year 9	Year 10
DF Faculty1 (3 crse)	37.5%	35,250	35,250	35,250	35,250	35,250
DF Faculty2 (1crse)	12.5%	10,875	10,875	10,875	10,875	10,875
DF Faculty3 (1crse)	12.5%	11,500	11,500	11,500	11,500	11,500
DF Faculty4 (year 5)	50.0%	46,000	46,000	46,000	46,000	46,000
Administrative Asst	100.0%	30,000	30,000	30,000	30,000	30,000
Labor Pool/Contingency	3.0%	11,210	14,219	17,318	20,510	23,798
FT CFB	27.04%	1,121	1,422	1,732	2,051	2,380
FT Labor	Effort	**145,956**	**149,266**	**152,675**	**156,186**	**159,803**

Table 12. Labor costs for year six through ten.

Additional labor costs include a CoS standard $10,000 stipend for the program director along with a $16,000 summer stipend. The summer stipend compensates the director for duties performed between the spring and fall semester.

There are also funds to cover the faculty costs of two summer courses. These courses (practicum or research) are a required part of the curriculum. Graduate students are also budgeted for starting with one in year one, two in year two, and three for year three. These GA positions are needed to free fulltime faculty from teaching undergraduate labs. See Tables 13 and 14.

		Year 1	Year 2	Year 3	Year 4	Year 5
Director Stipend		10,000	10,000	10,000	10,000	10,000
Director Summer Stipend		16,000	16,000	16,000	16,000	16,000
Faculty Summer (2 crses)	17.0%	15,980	15,980	15,980	15,980	31,960
Graduate Assistants 1-2-3		18,000	36,000	54,000	54,000	54,000
Labor Pool/Contingency	2.0%	-	1,200	2,784	4,759	6,774
PT CFB	10%	4,198	4,318	4,476	4,674	6,473
PT Labor		64,178	83,498	103,240	105,413	125,207
Total Labor		165,367	177,540	199,296	203,544	267,950

Table 13. Additional labor costs for year one through five.

		Year 6	Year 7	Year 8	Year 9	Year 10
Director Stipend		10,000	10,000	10,000	10,000	10,000
Director Summer Stipend		16,000	16,000	16,000	16,000	16,000
Faculty Summer (2 crses)	17.0%	31,960	31,960	31,960	31,960	31,960
Graduate Assistants 1-2-3		54,000	54,000	54,000	54,000	54,000
Labor Pool/Contingency	2.0%	9,149	11,571	14,042	16,562	19,132
PT CFB	10%	6,711	6,953	7,200	7,452	7,709
PT Labor		127,820	130,484	133,202	135,974	138,801
Total Labor		273,776	279,750	285,877	292,160	298,604

Table 14. Additional labor costs for year six through ten.

The pro forma includes funds for operating expenses. These operating expenses include office supplies, software, equipment, and more. Advertising funds are needed to ensure the program reaches enrollment projections. The funds for lab computers will be used to replace 1/3 of the student lab computers each year.

There are also annual funds budgeted for travel and faculty development. The speed of change in this field (both by technology and the adversary) is incredible. Keeping faculty current is a necessity for our program to remain not only relevant but competitive. This will directly impact the employability of our graduates. See Tables 15 and 16.

		Year 1	Year 2	Year 3	Year 4	Year 5
Office Supplies		1,000	1,030	1,061	1,093	1,126
Advertising		7,500	7,725	7,957	8,195	8,441
Software		5,000	5,150	5,305	5,464	5,628
Equipment		5,000	5,150	5,305	5,464	5,628
Lab Computers		10,800	10,800	12,600	5,000	12,000
Travel/Development		8,000	8,240	20,487	21,102	21,735
MU OCR	5%	5,020	13,706	20,194	25,539	30,714
Contingency		5,000	5,150	5,305	5,464	5,628
Total Expenses		47,320	56,951	78,212	77,320	90,898
Total Cost		212,687	234,491	277,508	280,864	358,848
Net Tuition		(112,297)	39,633	126,378	229,918	255,435
% of Tuition		-112%	14%	31%	45%	42%

Table 15. Operating expenses years one through five. Note the program reaches the break even point in year two.

	Year 6	Year 7	Year 8	Year 9	Year 10
Office Supplies	1,159	1,194	1,230	1,267	1,305
Advertising	8,695	8,955	9,224	9,501	9,786
Software	5,796	5,970	6,149	6,334	6,524
Equipment	5,796	5,970	6,149	6,334	6,524
Lab Computers	12,000	14,000	5,000	13,000	13,000
Travel/Development	22,387	23,059	23,750	24,463	25,197
MU OCR	36,709	42,544	49,143	52,420	54,010
Contingency	5,796	5,970	6,149	6,334	6,524
Total Expenses	98,339	107,663	106,795	119,652	122,869
Total Cost	372,115	387,413	392,672	411,812	421,473
Net Tuition	362,069	463,465	590,197	636,580	658,728
% of Tuition	49%	54%	60%	61%	61%

Table 16. Operating expenses years six through ten.

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Appendix A:
Course Descriptions

Course Descriptions

Change all to CFS

CFD 505 OSINT Practicum 1 (3 hrs) - Supervised field experience in open source intelligence collection and analysis. Course requires 35 clock hours for each hour of credit.

CFD 506 OSINT Practicum 2 (3 hrs) - This is a continuation of OSINT Practicum 1. Supervised field experience in open source intelligence collection and analysis. Course requires 35 clock hours for each hour of credit.

CFD 520 Incident Response (3 hrs) - This course examines forensic and investigative aspects of incident response. Topics include preparation, developing leads, scoping incidents, data collection and forensic duplication, evidence from hosts, networks, applications, and enterprise environments.

CFD 540 Digital Evidence (3 hrs) - Foundational concepts of digital evidence and digital investigations. Includes proper handling and documentation of digital evidence, investigative strategies, forensic fundamentals of digital evidence, and common sources of digital evidence.

CFD 545 Mobile & Web Pen Testing (3 hrs) - Students will learn the current tools, techniques, and procedures used in mobile and web penetration testing.

CFD 548 Multimedia Forensics (3 hrs) - Course will introduce principles of multimedia forensics (images, audio, & video) and their application to cyber forensics. Practical forensic enhancement, analysis, and reporting tools and techniques are covered.

CFD 560 Applied Digital Forensics (3 hrs) – Introduction to the principles, practices and tools used to conduct forensic examination and analysis of a Windows-based computer system. The course also explores common Windows user artifacts.

CFD 561 Cyber Warfare (3 hrs) - Examines the historical, technical, and strategic context of cyber conflict. It also provides an overview of the international relations, policy, doctrine, strategy, and operational issues surrounding Computer Network Attack (CNA), Computer Network Exploitation (CNE), and Computer Network Defense (CND).

CFD 562 Network Forensics (3 hrs) - Examination of techniques and tools used to investigate, search, collect, analyze, and report on network based breaches and events.

CFD 564 Network Security and Cyber Crime (3 hrs) – Examines fundamental security concepts, protocols, and procedures commonly in use today. Topics include governance, access control, cryptography, physical security, security architecture, application development

security, and more. The course will also look at some of the common tactics and techniques used in cybercrime to steal money and data.

CFD 567 Mobile Device Forensics (3 hrs) - Identification, preservation, collection, analysis, and reporting techniques and tools used in the forensic examination of mobile devices such as mobile phones, tablets, and GPS units.

CFD 630 Cyber Threat Intelligence (3 hrs) - A detailed study of the cyber threat intelligence process and its products. Topics covered include threat modeling, structured analysis, adversaries and adversary groups, tactical, operational, and strategic threat intelligence.

CFD 640 Advanced Cyber Forensics (3hrs) - An advanced study of cyber forensics focusing on artifacts from a variety of evidentiary sources and environments. Topics include Windows and Apple computer systems as well as mobile and network devices.

CFD 650 Advanced Cyber Defense (3hrs) - Students will learn advanced tools and methods used in cyber defense. Topics covered include advanced network attacks, current best practices and advanced tools for effective cyber defense.

CFD 660 Advanced Red Team Operations (3 hrs) - Students will learn advanced tools, frameworks, and methods used in Red Team operations. Students will learn and apply advanced Red Team skills that are used to test corporate, military, and industrial systems.

CFD 665 Cybersecurity of IoT and Industrial Control Systems (3 hrs) - Students will learn the tools and techniques used to defend IoT and ICS systems that run the Power Grid and other critical systems.

CFD 670 Practicum (1-6 hrs) - Supervised field experience in a cyber forensics and defense. Course requires 35 clock hours for each hour of credit.

CFD 675 Adv Research in CFD (1-6 hrs) - Students will plan, implement, research, and present a solution to a real-world problem within cyber forensics & defense, demonstrating their technical and professional skills. Must be pre-approved before registering.

CFD 690 Capstone (3hrs) - This course reinforces and assesses the student's ability to apply advanced cyber forensic and cyber defense knowledge and skills in a series of realistic practical exercises.

Appendix B:
External Letters of Support

SHELLEY MOORE CAPITO
WEST VIRGINIA

COMMITTEES
APPROPRIATIONS
COMMERCE, SCIENCE,
AND TRANSPORTATION
ENVIRONMENT AND PUBLIC WORKS
RULES AND ADMINISTRATION

United States Senate

WASHINGTON, DC 20510

April 18, 2019

John E. Sammons
Chair, Department of Forensic Sciences
School of Forensic and Criminal Justice Sciences
Marshall University
One John Marshall Drive
Huntington, WV 25755

Dear Mr. Sammons:

I write in regards to your ongoing efforts to support a world-class Master of Science degree in cybersecurity at Marshall University. In a world of ever-increasing connectivity and reliance on technology, it is critical that we continue to innovate and train the next generation of cybersecurity professionals.

From personal finance and buying groceries to how we operate our electrical grid, the rapid evolution of data use and management has transformed our economy and how we go about our daily lives. While this data evolution has undoubtedly improved our quality of life, increasing interconnectedness has made our personal information and the nation's critical infrastructure susceptible to hostile actions on the part of private actors and foreign adversaries. As chairman of the Homeland Security Appropriations Subcommittee, I am constantly reminded of these threats, and I continue to work every day to provide the resources necessary to meet them head on.

We must also look beyond risks to our own information and infrastructure, and support efforts to undermine criminal activities through digital forensics. As West Virginia continues to struggle with the opioid epidemic, we must not let drug dealers and smugglers use the latest advancements in technology to evade law enforcement.

The United States is fortunate that in this fight it has access to the expertise housed within our higher education system. Institutions like Marshall University, with its tremendous forensics program, are able to provide the manpower and knowledge we need to protect against current and future threats. I appreciate your vital work in this area, and I support your continued efforts to strengthen the School of Forensic and Criminal Justice Sciences' curriculum.

Sincerely,

Shelley Moore Capito

Shelley Moore Capito
United States Senator

WASHINGTON, DC
172 Russell Senate Office Building
Washington, DC 20510
(202) 224-6472

CHARLESTON
500 Virginia Street, East
Suite 950
Charleston, WV 25301
(304) 347-5372

BECKLEY
22 North Kanawha Street
Suite 1
Beckley, WV 25801
(304) 347-5372

MARTINSBURG
300 Foundry Avenue
Suite 202A
Martinsburg, WV 25401
(304) 262-9285

MORGANTOWN
48 Donley Street
Suite 504
Morgantown, WV 26501
(304) 292-2310

www.capito.senate.gov

JOE MANCHIN III
WEST VIRGINIA

[illegible]
Hart Building
Washington, DC 20510
(202) 224-3954

United States Senate

WASHINGTON, DC 20510-4804

COMMITTEES
APPROPRIATIONS
ENERGY AND NATURAL RESOURCES
INTELLIGENCE
VETERANS' AFFAIRS

December 22, 2017

Mr. John Sammons
Chair, Department of Forensic Sciences
Marshall University School of Forensic and Criminal Justice Sciences
1 John Marshall Drive
Huntington, West Virginia 25755-0002

Dear Mr. Sammons,

I write to you today in support of efforts to establish a Digital Forensics and Information Assurance Masters of Science Degree Program at Marshall University.

As you aware, cyber security is an ongoing serious concern in our country, and there is great demand for computer network and security analysts. For example, there have been many recent news articles written in the Washington Post addressing cyber security: "Library of Congress fights off massive cyberattack", "Federal cyber incidents jump 1300% in 10 years", and "Cyberattacks on personal health records growing exponentially." The establishment of a Digital Forensics and Information Assurance Masters of Science Degree Program would be a great benefit to Marshall University and the students that seek to excel in the cybersecurity workforce.

I greatly appreciate your noting my strong interest in this initiative and providing it every appropriate consideration.

With warmest regards,

Joe Manchin III
United States Senator

JM/km

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, MD 20771

January 11, 2018

Reply to Attn of: NASA's IV&V Program

John Sammons
Chair, Department of Forensic Sciences
Marshall University
1 John Marshall Drive
Huntington, WV 25775

Dear Mr. Sammons:

I am writing to express my full support for institutions to establish undergraduate and/or graduate-level programs in the Cybersecurity and/or Information Assurance field of study. It is my understanding that Marshall University is attempting to establish a graduate-level program in Digital Forensics & Information Assurance, which I believe is a valuable addition to its institution.

I have worked in cybersecurity and information assurance for the National Aeronautics and Space Administration's (NASA's) Independent Verification and Validation (IV&V) Program in Fairmont, West Virginia since 2013 and have witnessed a severe lack of qualified individuals to perform this type of work at the undergraduate and graduate level. NASA's IV&V Program has offered internships for a number of years and getting qualified college candidates has been challenging. Having a graduate-level program will help to alleviate this challenge, and will also help the state of West Virginia as a whole. According to cyberseek.org there are currently over 285,000 job openings in the cybersecurity field across the United States, with around 1,000 within the state of West Virginia. With the current economic situation across West Virginia, especially the southern part of the state where I grew up, it is our responsibility to do everything we can to educate and train the next generation in industries that are growing as opposed to industries that are rapidly declining. If I can be of any further support, please contact me at Brandon.T.Bailey@nasa.gov.

Sincerely,

Brandon T. Bailey
Cybersecurity Group Lead
NASA's IV&V Program

STATE OF WEST VIRGINIA
OFFICE OF THE ADJUTANT GENERAL
1703 COONSKIN DRIVE
CHARLESTON, WEST VIRGINIA 25311-1085

James A. Hoyer
Major General, WVARNG
The Adjutant General

(304) 561-6318
DSN: 623-6318
FAX (304) 561-6327

NGWV-TAG

DEC 07 2017

MEMORANDUM FOR President Jerome A. Gilbert, Marshall University

SUBJECT: Cyber Security Program Development

1. I enthusiastically support Marshall University's efforts to further enhance their undergraduate cyber security program offerings and development of a graduate program focused on growing future leaders in the cyber security field. Furthermore, I support Marshall's efforts at workforce development and creating cyber practitioners with the skills necessary to defend corporate networks, government systems, and critical infrastructure from attack.

2. Within the cyber battle space, our potential adversaries are many and their sophistication grows daily. Likewise, the number of vulnerabilities discovered within information systems, consumer technology, and critical infrastructure continues to rise. Our nation and our state lack the number of cyber practitioners needed to address the threats that our adversaries and our vulnerabilities pose. I applaud and support Marshall's willingness to tackle these challenges and I encourage collaboration amongst all public and private university institutions in West Virginia to cultivate and develop our cyber workforce.

JAMES A. HOYER
Major General, WVARNG
The Adjutant General

Nick Drehel, Jr.
Director
Digital Investigations Training
588 West 400 South
Suite 355
Lindon, UT 84042
713-410-7084

To whom it may concern,

I am the Director of Digital Investigations Training at AccessData, where I oversee the computer forensic, mobile forensics, and incident response training staff and develop innovative training solutions for Local, State, Federal, and International law enforcement agencies as well as worldwide corporate entities. My background includes 32 years of law enforcement experience. I have worked in computer forensics since 1996, serving with the Houston Police Department Computer Crime/Forensic Unit and with the United States Secret Service Electronic Crimes Task Force in Houston. I am writing this letter to endorse the launch of the Masters of Science degree at Marshall University. I have known the department chair, John Sammons, for many years and I have been associated with the computer forensic program offered at Marshall.

Digital forensic analysts examine digital information connected to cybercrimes. They protect compromised data, recover files, and handle important evidence. There is a need for professionals with master's degrees in computer forensics. Graduates of master's programs pursue positions in laboratories and assist crime specialists in the analysis of evidence and data and their skills aid criminal investigations at the local, state, and federal levels. Others pursue technology-based and securities-based careers with large organizations. Digital forensics professionals have excellent communication skills, are detail-oriented, and possess problem-solving skills.

Marshall University's Bachelor of Science degree in Digital Forensics and Information Assurance program prepares students for service in a variety of public and commercial arenas as digital forensics or network security professionals. Graduates from the program learn the skills necessary to be able to effectively plan, establish and administer computer forensics and information assurance systems in law enforcement and the private sector. Their program consists of classroom and hands-on labs that provide the fundamentals required to successful complete the program and I fully endorse their program and the experienced instructors on staff.

If you require any additional information, please feel free to contact me at 713-410-7084.

Nick Drehel, Jr.
Director
Digital Investigations Training
AccessData Group, Inc.

To Whom It May Concern:

My name is Ryan Fyffe. I am a 2012 graduate of the Marshall University's Integrated Science and Technology bachelor's program emphasizing in Digital Forensics. I am currently working at CrowdStrike Services, one of the top cybersecurity consulting companies in the world. Prior to my role at CrowdStrike, I worked as a computer network defense analyst for the Department of Defense.

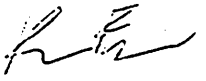
Marshall University is currently planning a master's degree in digital forensics and information assurance (DFIA), which would be extremely valuable to future Marshall students and professionals in the field of DFIA. During my undergraduate experience at Marshall University, I gained knowledge and experience which greatly contributed to my current success. From 2008 to 2012, my time was spent taking various courses in the fields of digital forensics and information technology, which were well-aligned with the fields of DFIA. Classes ranged from programming to network security and provided students a fundamental understanding of how computers work, how to write code, and how to investigate a hard drive. Marshall was partnered with Access Data to allow students the opportunity to get certified in Access Data's FTK software as well as internship opportunities with the company. Graduating college with a degree, certifications, and real-world experience gave students an advantage when seeking careers post-graduation.

Since my time at Marshall, the program has continued to grow and adapt to the ever-changing world of technology. This adaptation is supported by a faculty that not only provides educational experience to students, but real-world experience. Students are increasingly more involved in conferences, alumni groups, and cybersecurity exercises. These experiences are highly valued by employers, but they often expect continuing education in cybersecurity and DFIA. A master's degree in DFIA would allow Marshall University to offer current students more competitive background as well as attract students from other undergraduate programs looking for a positive graduate experience.

At CrowdStrike I've had the privilege to work with some of the brightest in the field of DFIA on some of the biggest cases. As organizations become more aware of the issues around securing their information and networks, DFIA professionals have to face this challenge. Throughout my experiences, I've learned that companies have a high demand for motivated professionals with a digital forensics and information assurance backgrounds. These individuals help keep organizations safe from hackers, solve the tough problems, and drive innovation. Current and past events demonstrate the need for well-equipped DFIA professionals. For example, the defense of government networks from foreign attackers, fighting against destructive malware, and defending elections from actors that threaten our democracy. The challenges these professionals face every day reaffirms the need to continue one's education in order stay prepared.

Marshall taught me how to efficiently analyze and respond to these challenges through education and practical knowledge. Marshall University has proven through a great faculty, driven students, and successful alumni that it can build a strong undergraduate DFIA program. I have no doubt that this success will translate to their master's program.

Respectfully,



Ryan Fyffe, CrowdStrike

14628 Golden Rain Tree Blvd.
Orlando, Florida 32828

December 27, 2017

Re: MS in Digital Forensics

As a practitioner of digital forensics for over 30 years and as an academic for over 14 years, I have an appreciation for the needs of students and their eventual employers. With that as background, I offer the following comments concerning the proposed MS in Digital Forensics.

When digital forensics, then called "computer forensics" began, some three decades ago, many believed that it would be a very narrow field, likely only a subset of computer crimes. Slowly, three distinct areas of focus began to emerge: law enforcement, information security, and electronic discovery. And while electronic discover is a facinating and dynamic field, I will limit my comments to the former two. Traditional "computer forensics" was all about solving crimes. And early on, there were few computers, so there was only a limited need for digital forensics. Fast forward a couple of decades and there is virtually no crime that is routinely investigated without the use of digital evidence. Law enforcement continues to struggle to keep up with the demand for services and the technology. Similarly, when there were only a few computers and limited networks, there wasn't much of a need for rigorous digital forensics. But as the technology developed, was deployed, and its use integrated into every aspect of enterprises and our personal lives, the need to protect and investigate cyber activities became crucial. Both focus areas deal with similar problems, albeit for differing reasons. But they have cross-pollinated approaches, tools, and techniques at almost every step of the way.

And so, we might ask: why have two digital forensics programs? Because they are complementary in the same way that information security and law enforcement are complementary. And while not many colleges or universities could effectively pull this kind of synergy off, Marshall University, with their well-regarded Forensic Science Program, strong, shared digital forensic faculty, and mature cybersecurity undergraduate program are well placed to create a world-class program.

From students, the most common question I'm asked is: "where can I get a quality digital forensics education?" I'm often asked by government and private sector employers: "Where can I get good digital forensic/information assurance employees?" Now I can answer both questions with a single answer: Marshall University!

/s/

Mark M. Pollitt, Ph.D.
President
Digital Evidence Professional Services, Inc.

RCBI
ROBERT C. BYRD INSTITUTE
1050 Fourth Avenue
Huntington, WV 25701

MARSHALL UNIVERSITY

December 13, 2017

John Sammons
Chair, Department of Forensic Sciences
Marshall University School of Forensic and Criminal Justice Sciences
One John Marshall Drive
Huntington, WV 25755

John,

Please allow this letter to serve as the Robert C. Byrd Institute's (RCBI) commitment of support for the launch of Digital Forensics and Information Assurance Program Masters of Science degree. Having worked with Professor Bill Gardner on various coding and cybersecurity projects, including summer coding camps for middle- and high-school students, we have found such content to be very beneficial and complementary to the mission of RCBI.

At RCBI, our experts deliver innovative solutions with leading edge technology to advance manufacturing and entrepreneurship. As manufacturing increases in its cyber capabilities, so does the industry's risk of breaches. Thus, knowledge in cybersecurity is vital for sustainability. We at RCBI believe that a new MS program will substantially increase opportunities for new students, returning students, or career-changers to prepare for careers in cybersecurity, helping fill the skills gap in the cybersecurity workforce. Based upon success of the existing undergraduate program, a master's program in Digital Forensics and Information Assurance Program would be a benefit to Marshall University, its students, and the many industries in need of skilled and highly trained individuals.

Please do not hesitate to contact me if you require additional information.

Sincerely,

Charlotte Weber

Charlotte Weber
Director & CEO

Appendix C:
Supporting Documents

29 August 2019

Dr. Lori Howard
Chair, Graduate Council
Marshall University

Dear Dr. Howard,

I am writing to you to express my support for the proposed MS degree program in Cyber Forensics and Defense (CFD). This new program will follow the same highly successful, practitioner-focused approach used by the undergraduate Digital Forensics and Information Assurance (DFIA) program.

It is my belief that this program will complement rather than duplicate the MS in Cyber Security offered by CITE. At my direction, these two programs will share courses which will enhance the student experience of both programs, expand the number of available electives, and achieve increased efficiency in terms of faculty teaching loads.

On August 26th, the DFIA program received a $4.25 million grant from the U.S. Department of Homeland Security. One of the key deliverables of this grant is the development of a pipeline of graduates capable of assisting Homeland Security Investigations (HSI) in investigating, disrupting, and dismantling criminal activity related to the opioid epidemic. In a visit to campus late last year, HSI representatives made it quite clear that they wanted the MS CFD program developed and implemented with these funds.

As you may know, there is a significant statewide effort to bring cyber security businesses to West Virginia. A vital part of that strategy is the creation of a highly qualified workforce. Universities and Community Colleges across the state are launching cyber security degree programs in order to meet these workforce demands. These two complimentary programs will not only contribute to this much needed workforce, but attract students to Marshall University.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Jaime R. Taylor, PhD
Provost/Senior Vice President for Academic Affairs

Marshall University
Office of Academic Affairs

Old Main 200
One John Marshall Drive
Huntington, WV 25755
Tel: 304-696-6690
Fax: 304-696-6612
marshall.edu

Memorandum

To: Dr. Lori Howard
Chair, Marshall University Graduate Council

From: Dr. Charles Somerville
Dean, College of Science

Date: 30 September 2019

Re: CITE letter of support for CoS ITP, MS in Cyber Forensics & Defense

I am forwarding a DRAFT document sent to me by Dr. Wael Zatar, Dean of the College of Information Technology & Engineering at 12:21 AM, 30 August 2019. The letter reflects the content of a conversation that I had with Dean Zatar on the evening of 29 August. During that conversation, Dean Zatar indicated that he would send the final, signed letter of support directly to the Graduate Council. I submit this DRAFT document as a placeholder in anticipation of receipt of the signed, official document.

Please let me know if I can provide any additional information.

Marshall University
College of Science
Office of the Dean

One John Marshall Drive
Huntington, WV 25755-2500
Tel: 304-696-2372 | Fax: 304-696-3243
marshall.edu/cos

28 August 2019

Dr. Lori Howard
Chair, Graduate Council
Marshall University

Dear Dr. Howard,

I am writing this letter on behalf of the Marshall University College of Information Technology and Engineering (CITE) to address the Intent-to-Plan for an M.S. program in Cyber Forensics and Defense (CFD) submitted by Mr. John Sammons in the Department of Forensic Science in the College of Science (CoS).

The College of Information Technology and Engineering has established a cost-effective Master of Science in Cybersecurity that has the potential to attract hundreds of students. The program offers great courses in the field and meets many of the needs in the State, region and nation. Marshall University has now the opportunity to have a niche in cybersecurity-related programs and that could simply be materialized through the best use of Marshall's resources and faculty time. For instance, the area of cybercrime and forensics could benefit from offering more in-depth courses in this area.

The College of Science proposes an M.S. program in Cyber Forensics and Defense that could potentially complement CITE's Cybersecurity program. There are courses in the proposed program that are currently offered in CITE's Cybersecurity program and these courses will continue to be taught by CITE faculty. I understand that there could be areas of similarity between the CoS's proposed program and CITE's existing M.S. in Cybersecurity and my ultimate hope is to get the faculty in both CITE and CoS to broaden the reach of Marshall University in attracting students to cyber programs, and not to compete for the same student populations. Marshall's leadership, Dean Somerville and I have already agreed on this goal and we, therefore, are committed to taking the necessary steps to make it happen.

I have received feedback from CITE's faculty that suggests the elimination of the word "Defense" from the name of the proposed program. In addition and prior to the CoS's

Marshall University
College of Information Technology and Engineering
Office of the Dean

Arthur Weisberg Family Applied Engineering Complex
1676 Third Avenue, Suite 2103
Huntington, WV 25755-2586
Tel: 304-696-5453
Fax: 304-696-5454
marshall.edu/cite

development of the degree addition document, it is my wish that faculty from the two colleges get involved in a constructive dialogue that could ultimately benefit the CoS while making its decision on the final list of courses and their contents. It is my belief that such an act from the faculty would eliminate unnecessary course duplication and possible confusion to our stakeholders. And as such, the College of Information Technology and Engineering supports the establishment of a program that complements CITE's Cybersecurity program and addresses the needs in the digital and cyber forensics arena.

Please do not hesitate to contact me if I could address any question or if I could provide any additional information.

Best Regards,

Wael Zatar, PhD
Dean and Professor of Engineering
College of Information Technology & Engineering
Marshall University

MARSHALL UNIVERSITY
www.marshall.edu

College of Science
Office of the Dean

18 April 2019

To the Members of the Marshall University Graduate Council:

This letter is to communicate the support of Provost Jaime Taylor and Chief Financial Officer Mark Robinson for the College of Science Intent to Plan for a Masters of Science degree program in *Cyber Forensics and Defense*.

We have discussed the merits of the proposed program with Provost Taylor on multiple occasions, seeking his feedback and approval of our Intent to Plan. He has provided both as evidenced by his signature below.

We also met formally with Mr. Robinson to develop the *pro forma* financial projection included with the Intent to Plan. By his signature Mr. Robinson indicates that the *pro forma* is a good-faith estimate of the costs and revenues associated with the proposed academic program.

We look forward to your consideration for our Intent to Plan for the MS CFD program.

Sincerely,

Charles Somerville, PhD
Dean, College of Science

for JRT 4-18-19

Dr. Jaime Taylor
Provost and Senior Vice President for Academic Affairs
Marshall University

4-18-19

Mr. Mark Robinson
Senior Vice President for Finance and Chief Financial Officer
Marshall University

MS Cyber Forensics & ~~Defense~~ Security Admission Standards

Admissions and Performance Standards: Describe admissions and performance standard and their relationship to the program's learning outcomes.

Prospective students will apply for the program at various stages of their career. Some students will come straight into the program after completing their undergraduate degree. Other students will be seeking to further their education after several years in the field. As such, there will be two paths into the program. Option A is for those students having recently graduated with an appropriate 4-year degree. Option B is for those applicants having significant work experience in the field. The details for each option are outlined below.

Option A

Option A is intended for applicants that are recent graduates and have less than three years work experience in digital forensics and/or information assurance.

1. Baccalaureate Degree - Students admitted to the program must have an appropriate baccalaureate degree from an accepted, regionally accredited US college or university, or equivalent, for international applicants.

2. Grade Point Average – Students admitted must have an undergraduate GPA of at least 2.8 on a 4.0 scale.

3. Personal Statement – In the Personal Statement, the applicant will describe their background and goals as they relate to the study of digital forensics and information assurance. Successful applicants will articulate how their background has prepared them for success in the program as well as how their goals align with the program's learning objectives.

4. Letters of Recommendation - Applicants must solicit three letters of recommendation from former or present employers, professors, supervisors, etc. The letters should attest to the applicant's knowledge, skills, character, and work ethic. The letters must be submitted by the author of the letter and not the applicant themselves.

Option B

Option B is intended for applicants that have been out of school for more than three years and have three or more years of documented work experience in digital forensics and/or information assurance/cybersecurity.

1. Baccalaureate Degree - Students admitted to the program must have an appropriate baccalaureate degree from an accepted, regionally accredited US college or university, or equivalent, for international applicants.

2. Grade Point Average – Students admitted must have an undergraduate GPA of at least 2.5 GPA on a 4.0 scale.

3. Personal Statement – In the Personal Statement, the applicant will describe their background and goals as they relate to the study of digital forensics and information assurance. Successful applicants will articulate how their background and work experience has prepared them for success in the program as well as how their goals align with the program's learning objectives.

4. Letters of Recommendation - Applicants must solicit three letters of recommendation from former or present employers, professors, supervisors, etc. The letters should attest to the applicant's knowledge, skills, character, and work ethic. The letters must be submitted by the author of the letter and not the applicant themselves.

5. Current CV/Resume – An updated Resume or Curriculum Vitae that includes a detailed work history, education, training, certifications, awards, publications, professional memberships, etc.

6. Professional Portfolio – The portfolio must include examples of the applicant's work product and is intended to demonstrate their capacity to successfully complete graduate level work in digital forensics and cybersecurity. The portfolio could include things such as:

    - Samples of professional writing (redacted reports, grants, SOPs, etc.)
    - Professional Publications (journals, books, articles, etc.)
    - Presentations (slide decks, conference proceedings, etc.)
    - Research

MS Cyber Forensics and Defense → Security
Intent to Plan - Addendum

For a more detailed discussion of these questions, please see the full Intent to Plan for this program.

ADDITIONAL RESOURCE REQUIREMENTS: If your new program requires additional faculty, equipment or specialized materials, attach an estimate of the time and money required to secure these items.

This program will require minimal resources funded by the university to launch. The recently awarded funding from the U.S. Department of Homeland Security will be used to build and equip advanced cyber forensics and defense lab in WAEC 2237. This is an unfinished chemistry lab that has been allocated to the College of Science. This lab will be the primary teaching space for this program and accommodate 24 students.

As for faculty staffing, this program can be launched and delivered with the current number of full-time faculty and adjuncts. Adjuncts will used to teach some of the courses in the undergraduate DFIA program which will enable full-time faculty to teach graduate courses. We will also be gaining efficiency by offering cross-listed undergraduate courses – with expanded detail and additional assignments - as electives in the graduate program.

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.

The Master's degree in Cybersecurity offered by the Marshall University College of Information Technology and Engineering (CITE) complements rather than competes with the proposed MS in Cyber Forensics and Defense (CFD). Cybersecurity is a broad field comprised of many different focus areas (e.g. secure software development, digital forensics, incident response, penetration testing, security management, etc.). Rather than competing, these degrees serve two complementary, but distinctly different student populations.

Like the undergraduate Digital Forensics and Information Assurance (DFIA) degree, the MS CFD is very practitioner focused. In contrast, the CITE MS in Cybersecurity takes a computer science and management approach. For example, the CITE curriculum includes concentrations in Cybersecurity Management and Application Security. Some of the courses include Applied Cryptography, Risk and Vulnerability, Cybersecurity Policy and Management, Application Security, and IT Disaster Planning and Recovery. Elective options include Software Engineering, High Performance Computing, Applied Algorithms, and AI Principles and Methods. These courses and concentrations will not be available in the MS CFD program.

Cybersecurity is a broad discipline, affording tremendous opportunities for both of these programs. Even if there are similar course names and content, they can be approached in different, discipline-specific ways. This approach isn't new to the university. Statistics courses serve as an example (and precedent) of this approach.

After comparing curriculum of this program with the MS Cybersecurity degree offered by CITE, we believe there is actually very little duplication of course content at the graduate level. This is especially true when you consider the different, discipline-specific approaches to the course content. Table 1 lists the existing undergraduate courses that we will be upgrading and cross-listing for the graduate program.

DFIA 400/500 – Intro to Digital Forensics **DFIA 420/520** – Incident Response **DFIA 440/540** – Digital Evidence **DFIA 445/545** – Mobile & Web Pen Testing **DFIA 448/548** – Forensic Image and Video Analysis **DFIA 454/554** – Network Defense **DFIA 460/560** – Applied Digital Evidence **DFIA 461/561**– Cyber Warfare **DFIA 462/562** – Network Forensics **DFIA 464/564** – Network Security & Cyber Crime **DFIA 467/567** – Mobile Device Forensics **DFIA 405/505** – OSINT Practicum 1* **DFIA 406/506** – OSINT Practicum 2*	Many of the electives in this program will be drawn from existing, cross-listed, undergraduate DFIA courses. These courses (with the exception of OSINT Practicum 1 & 2) have been in existence since 2013. *Proposed new courses for the undergraduate DFIA program

Table 1: Existing, cross-listed undergraduate courses (with the exception of OSINT Practicum 1 & 2*).

The cross-listed graduate courses will require graduate students to meet higher level learning outcomes based on Bloom's taxonomy. For example, undergraduate student outcomes require lower order thinking (e.g. remember, understand, and apply). Graduate students must meet higher order outcomes including analyzing, evaluating, and creating). These advanced outcomes will be met and measured through a variety of projects, assignments, and assessments.

CITE's MS Cybersecurity degree includes a course on Cyberwarfare CYBR 620. DFIA also has a Cyber Warfare course (DFIA 461/561). This class has been in existence since 2013. Cyber warfare is a broad subject and can definitely be approached in different, discipline-specific ways. Care should be taken to ensure that course titles are deconflicted to avoid student confusion.

CYBR 500 - Computer Security Design **CYBR 510**- Introduction to Cyber Security **CYBR 530** - Cybersecurity Policies and Management **CYBR 625** – Applied Cryptography **CYBR 681** – Thesis	We identified five courses in the CITE MS Cybersecurity curriculum that have no MS CFD equivalent.

Table 2: CYBR courses that have no equivalent in the proposed MS CFD program.

CFD 630 (New) – Cyber Threat Intelligence **CFD 640 (New)** – Advanced Cyber Forensics **CFD 665 (New)** – Cyber Security of IoT and Industrial Control Systems	These three courses in the MS CFD curriculum have no MS Cybersecurity equivalent.

Table 3: CFD courses that have no equivalent in the MS Cybersecurity program.

It should be noted that CYBR 620 Cyberwarfare does spend one week covering the cyber security of Internet of Things (IoT) devices and industrial control systems. In contrast, our course will focus on this topic for an entire semester.

CFD 670 (New) Practicum **CFD 675 (New)** Adv Research in CFD **CFD 690 (New)** Capstone	These courses should not overlap or duplicate existing CITE course content. These courses will be approached in a very discipline specific way. Practicum and Capstone will be taught using Community Based Learning methods.

Table 4: CFD Practicum (internship), Advanced Research, and Capstone courses

Given the courses identified and described above, there are actually few courses that can be left for comparison. The remaining three courses (listed in Tables 5, 6, and 8) in the MS CFD program are listed below along with an MS Cybersecurity course that could be considered similar. Table 7 compares CYBER 615 Cyber Risk & Vulnerability with a DFIA undergraduate course, which is very similar.

CYBR 542 - Cyber Operations and CFD 650 Advanced Cyber Defense

CFD 650 Advanced Cyber Defense		CYBR 542 - Cyber Operations
Week	Topic	Topic
1	Creating a Security Program	System Setup
2	Asset Management and Documentation	Basic Offense
3	Policies	Operational Awareness
4	Standards and Procedures	DNS and BIND
5	User Education	Scanning the Network
6	Incident Response	Active Directory
7	Disaster Recovery	Attacking the Domain and Logging
8	Industry Compliance Standards and Frameworks	Midterm Exam
9	Physical Security	Network Services
10	Defending Microsoft Windows Infrastructure and Networks Infrastructure	Malware and Persistence
11	Defending Unix Application Servers	Apache and ModSecurity
12	Defending Endpoints	IIS and ModSecurity
13	Password Management and Multifactor Authentication	Web Attack
14	Vulnerability Management	Firewalls
15	Purple Teaming	Case study and simulation

Table 5: CYBR 542 Cyber Operations compared to CFD 650 Advanced Cyber Defense

CYBR 615 - Cyber Risk and Vulnerability and CFD 660 – Advanced Red Team Operations

As seen from the course schedules below these courses have different focuses. CYBR 615 course content that more closely duplicates our undergraduate course DFA 357 Network Penetration & Attack than anything in the proposed graduate curriculum. CFD 660 will focus on advanced red teaming, not on fundamental penetration testing techniques. This course has been in existence since 2013.

CFD 660 Advanced Red Team Operations		CYBR 615 - Cyber Risk and Vulnerability
Week	Topic	Topic
1	Red Teams in Cyberspace	Introduction to Course
2	Innovations and Automation	Introduction to Penetration Testing Concepts
3	The State of Modern Offensive Security	Penetration Testing Scoping and Rules of Engagement
4	Rules of Engagement	Online Reconnaissance and Offensive Counterintelligence
5	Technical and Non-Technical Requirements of Reporting	Social Engineering
6	Red Teaming vs. Purple Teaming	Network Mapping and Scanning Techniques
7	Counter-APT Teaming	Midterm Exam
8	Outcome-Oriented Scoping	Enterprise Vulnerability Scanning
9	Initialization Perspectives and Attack Surface Coverage	Network Exploitation Tools and Techniques
10	Reverse Red Team	Web Application Exploitation Tools and Techniques
11	Evaluation Offensive Security Processes	Post-Exploitation and Pivoting
12	Offensive Security Research Lab Design	OS and Application Exploit Mitigations
13	Offensive Countermeasures and Active Defense	Malware Analysis
14	Red Teaming Tools: Cobalt Strike	Malware Locations and Footprints
15	Red Teaming in Cyber Warfare	Manual Code Reversing

Table 6: CYBR 542 Cyber Operations compared to CFD 650 Advanced Cyber Defense.

We believe that there is more overlap and duplication with CYBR 615 Cyber Risk and Vulnerability and our undergraduate course in Network Penetration and Attack (DFIA 357). For comparison, we've included the course topics in the table below. We intend to change this course designator to DFIA 457 so that it can also be cross listed as a graduate course.

DFIA 357 Network Penetration & Attack		CYBR 615 - Cyber Risk and Vulnerability
Week	**Topics**	Topic
1	Module 0 - Introduction and Virtual Machines	Introduction to Course
2	Module 1- What is Penetration Testing	Introduction to Penetration Testing Concepts
3	Module 2- Recon	Penetration Testing Scoping and Rules of Engagement
4	Module 2- Recon	Online Reconnaissance and Offensive Counterintelligence
5	Module 3-Scanning	Social Engineering
6	Module 4- Exploitation	Network Mapping and Scanning Techniques

7	Module 4- Exploitation	Midterm Exam
8	**Midterm Exam,** Module 4- Exploitation	Enterprise Vulnerability Scanning
9	Module 5- Social Engineering	Network Exploitation Tools and Techniques
10	Module 6- Web-Based Exploitatio	Web Application Exploitation Tools and Techniques
11	Module 7- Maintaining Access	Post-Exploitation and Pivoting
12	Module 7- Maintaining Access	OS and Application Exploit Mitigations
13	Module 8- Wrapping up the Penetration Test	Malware Analysis
14	Module 8- Wrapping up the Penetration Test	Malware locations and footprints

Table 7: DFIA 357 compared to CYBR Risk and Vulnerability.

CYBR 535 Cyber Risk and CFD 650 Advanced Cyber Defense

The nearest course in the proposed CFD program is CFD 650 Advanced Cyber Defense. A review of the course schedule for these two courses show no obvious overlap or duplications. Table 6 compares the topics covered in these two courses.

CFD 650 Advanced Cyber Defense		**CYBR 535 Cyber Risk**
Week	Topic	Topic
1	Creating a Security Program	Understanding Cyber Risk
2	Asset Management and Documentation	Virtualization & Hypervisor
3	Policies	Network Scanning and Forensics
4	Standards and Procedures	Honeypot and Tarpit
5	User Education	Public Key Infrastructure
6	Incident Response	Trojan Horse and Rootkit
7	Disaster Recovery	Midterm Exam
8	Industry Compliance Standards and Frameworks	Intrusion Detection and Penetration Testing
9	Physical Security	Software as a Service and System Hardening
10	Defending Microsoft Windows Infrastructure and Networks Infrastructure	Cyber Defense and Offense
11	Defending Unix Application Servers	Switch Management and ARP Attacks
12	Defending Endpoints	Wireless Security
13	Password Management and Multifactor Authentication	Software as a Service
14	Vulnerability Management	Secure Software Development

Table 8: CYBR 535 Cyber Risk compared to CFD 650 Advanced Cyber Defense

In summary, the courses proposed for the MS CFD program include;

- 13 courses from existing, cross listed undergraduate DFIA courses.
- 3 CFD courses with no equivalent in CYBR.
- 3 (Practicum, Advanced Research, and Capstone) courses taught from a discipline specific perspective.
- 3 courses with some apparent similarity, but on closer examination have a distinctly different focus.
- 5 CITE CYBR courses that are accepted electives.
- 2 required core courses from the CITE CYBR curriculum

We will be happy to address any additional questions that the Graduate Council may have.

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: SOCIAL WORK | Alpha Designator/Number: SW 630 | (•) Graded ( ) CR/NC

Contact Person: Dr. Peggy Harman | Phone: 65770

NEW COURSE DATA:

New Course Title: Intersections of Mental Health, Sustance Use, and Trauma

Alpha Designator/Number: S W 6 3 0

Title Abbreviation: I N T | M H | S U B U S E | T R A U M A

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
This course identifies and explains ways to which clients with a diagnosis of trauma and co-occuring mental health and substance use can be treated simulataneously.

Co-requisite(s): N/A | First Term to be Offered: Spring 2020

Prerequisite(s): N/A | 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 Peggy P. Harman	Date 9-19-19
Registrar 4/40701	Date 10-24-19
College Curriculum Chair	Date 10/29/19
Graduate Council Chair Lani Kenneth	Date 11/23/19

Request for Graduate Course Addition - Page 2

College: COHP | Department/Division: SOCIAL WORK | Alpha Designator/Number: SW 630

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.

Paula Rymer, Assistant Professor

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 syllabus

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

Please see attached syllabus

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

Levine, P. & Kline, M. (2007). Truama through a child's eyes: Awakening the ordinary miracle of healing. Infancy through Adolescents. North Atlantic Books
Monson, C. & Schnaider, P. (2014). Treating PTSD w/Cognitive Behavioral Therapies: Interventions that work. 1st.ed.
Van der Kolk, B. (2014). The Body keeps the Score. New York. Penguin Books.

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

Instructional methods will include discussions and group activities, analysis of behaviors, and research of trauma, scenerio development, videos, presentations of individual and collaborative projects.

Request for Graduate Course Addition - Page 4

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

Evaluation methods will include case studies, review and application of trainings, group intervention and therapeutic demonstrations, and written applications, essays, 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)

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: Social Work
Course Number and Title: SW 630 Intersections of Mental Health, Substance Use, and Trauma
Catalog Description: Course identifies and explains the intersections of comorbid disorders that accompanies trauma. Reflections of substance abuse and mental health issues from infancy to adulthood.
Prerequisities: Acceptance to Social Work Masters program
First Term Offered: Fall 2020
Credit Hours: 3

Marshall University

SWK 630 Intersections of Substance Misuse and Trauma
COURSE SYLLABUS

PAULA RYMER, MSW, CSW-KY, LSW-OH, LISW-WV

Course Title/Number	SWK 630 Intersections of Substance Misuse and Trauma
Semester/Year	Spring 2020
Days/Time	Friday 5:30pm-9:30pm Saturday 8:30am-12:30pm
Location	Prichard Hall 401
Instructor	Paula Rymer MSW, LICSW
Office	Prichard Hall 213
Phone	304/696-5770
E-mail	Rymer13@marshall.edu
Office hours	Wednesday 10:00—4:30pm By Appt. and Zoom conferencing
University Policies	

Catalog Description

This course identifies and explains ways to which clients with a diagnosis or trauma and co-occurring mental health and substance use can be treated simultaneously

Course Description

The course builds upon the foundation courses such as psychopathology, practice, integrated behavioral models, and co-occuring disorders. The goal is to facilitate integrating the knowledge with previous course work. The goal is to strengthen and acclimate the social work practitioner to understand how trauma has created and reinforces negative coping skills and behaviors throughout a client's lifespan. Evidence-based practice skills will be adapted to assess, diagnose, engage, and treat populations such as the men, women, adolescents, children, and underserved groups in communities, populations disenfranchised from generalized mental health care, and those terminally and chronically ill. Ethical dilemmas involving treatment to those that are non-compliant, high risk for returning to active addiction, and those without insurance or means to compensate for treatment. Self-determination, informed consent, social justice for oppressed populations, confidentiality and other social work values will be integrated into class learning.

Course Objectives, Student Learning Outcomes, & Course Competencies

By the end of the semester, the student will be able to:

A. Understand the framework for the latest edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM-5).
B. Utilize a competency-based model for assessment of substance misuse and trauma.
C. Understand the development of assessment specific to mental illness, substance misuse, and trauma.
D. Development of assessment specific tools to substance misuse and trauma.
E. Understanding incidence and prevalence rates of suicidal behaviors in various demographic and diagnostic groups that substance misuse and trauma is present

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 articulate personal and professional values and promote the skills required to perform as valued professionals in a transdisciplinary setting including critical analysis of evidence based alternatives, nontraditional health care practices of various cultural groups. Competency 1---Ethical and Professional Behavior	Students will practice personal reflection and self-correction to ensure continual professional development. Through the application of a strengths/resilience approach to analyze the social worker role.	Students will demonstrate techniques through role-play, individual and group presentations, written assessments, and class participation.
Students will demonstrate awareness of self as it impacts profession practice and ethical decision making Competency 1 ---Ethical and Professional Behavior	Through the application of a strengths/resilience approach to analyze the social worker role.	Students will demonstrate techniques through role play, individual and class presentations and written assessments.
Students will gain an understanding of methods for constructing a rational of selection and identification of critical elements of application and evaluation of practices approaches for work with individuals, couples, families, and groups including (but not limited to) recovery issues, crisis intervention, problem-solving, stress management, and health care issues. Competency 4 ---Practice Informed Research and Research Informed Practice	Distinguish, appraise, and integrate multiple sources of knowledge, including research-based knowledge, and practice wisdom. Students will practice analyzing models of assessment, prevention, intervention, and evaluation.	Students will demonstrate this outcome by utilizing effective oral and written communication of their rationales for practice approaches in working with individuals, families, groups, organizations, communities, and colleagues, through role-play, group presentations, written assessments, and class participation.
Students will gain an understanding of an advanced theoretical base for helping individuals, families, and groups in varied health care settings. Competency 7---Assessment	Students will articulate an understanding of biopsychosocial and ecological perspectives focused on assisting individuals, families, and groups in health care, recovery, and intensive outpatient settings.	Students will demonstrate techniques through role-play, individual and group presentations to their peers, and written assessments.

Required Textbook:

Textbook:

Briere, J. (2019). *Treating risky and compulsive behavior in trauma survivors.* New York. Guilford Press. ISBN: 9781462538683

Van der Kolk, B. (2014). The Body keeps the score. New York. Penguin Books. ISBN: 978-0-14-312774-1

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5.* Washington, D.C: American Psychiatric Association.

Additional Useful Texts:
Monson, C. & Shnaider, P. (2014) *Treating PTSD with Cognitive-Behavioral Therapies: Interventions That Work (Concise Guides on Trauma Care Book)* 1st Ed. ISBN-10:1433817373

American Psychological Association. (2009). *Publication manual of the American Psychological Association.* (6th Ed.) Washington, D.C.: American Psychological Association.

Class Activities and Evaluation Standards

Course objectives are listed on page 1-2 of the syllabus

1. **Homework Assignments: 50 pts. each 4 assignments** **Maximum Points: 200**

   Review of reading material, lecture, handouts and videos. This assignment should develop the student's course objectives and competencies 1, 4, & 7.

2. **Reflection Paper** **Maximum Points: 100**

   The Reflection paper is based from YouTube Video by Nadine Burke Harris, listed in Bb under this assignment. Assignment is aimed at developing the students' course objectives. Students will develop a paper looking at trauma and reflect on the development and use of ACE's.
   The essay is **no less than 4-6 full pages**; do not count the title page or reference page. APA format. If you use any other sources to prove or sustain any comments or opinions, please cite them.

3. Midterm-Essay test **Maximum Points: 200**

Comprehensive test on material covered to date in the classroom. Test will be open textbook and including all handouts. Course objectives and competencies 1 & 4 will be met through this assignment. Test will be found on Bb and will consist of essay questions. Please read your questions carefully and answer all parts to the questions. Please write out the questions include the points (for each question) in a WORD document and download into Bb.

4. PowerPoint Presentation Final **Maximum Points: 300**

The PowerPoint presentation will be the final for this course and should consist of all three components "Mental Health, Substance Misuse, and Trauma". You can pick any age group: Infant & Child, Adolescents, or Adults. Five Academic sources minimum (Any handout or resource used during the class is acceptable) Outline (copy of ppt will work). 20 minute maximum presentation. Time yourself when practicing and 20 slides is required not counting title and reference slide. Be creative with the slides. Please submit outline and Powerpoint to Bb for grading together. Competency 1, 4, & 7 will be met.

A	**800**	**720**
B	**719**	**640**

Day	LECTURE	READINGS	ACTIVITY
1	Understanding Trauma Definition of Trauma Trauma and the effects on physical health. How do we promote healing and recovery from trauma? Addicted to Trauma: The pain of pleasure and the pleasure of pain Signs and symptoms of trauma in children Body-Brain Connections Losing your Body, Losing your Self	The Body keeps the Score Ch. 1, 2, 3, 4, 5, & 6 Class Discussion on Chapters above. Book should be read prior to the class starting.	Review ACES survey, PTSD checklist Watch video: *Ted Talks: Nadine Burks "How childhood trauma effects health across a lifetime".* *Video: https://www.youtube.com/watch?v=3qELiw_1Ddg* *https://www.youtube.com/watch?v=FOCTxcaNHeg&index=3&list=PL_2x_2wHPMzzV0MMOjy7T16BchoRHCoGC&t=0s* *https://www.youtube.com/watch?v=aqhzFd4NUPI&index=3&list=PL_2x_2wHPMzzV0MMOjy7T16BchoRHCoGC this video not shown in class* **Reading Questions #1 due: 50pts**
2	The Minds of Children Attachment and Attunement Trapped in Relationships: Cost of Abuse and Neglect What's love got to do with it?	The Body keeps the score Ch. 7, 8, 9, 10, 11, & 12 Discussion on chapters.	https://www.youtube.com/watch?v=m9Pg4K1ZKws&t=764s this video not shown in class https://www.youtube.com/watch?v=BEHDQeIRTgs

	Developmental Trauma: Hidden Epidemic Uncovering Secrets: The problem of traumatic memory		
3	Healing from trauma Language: miracle and tyranny Letting go of the past: EMDR Putting your pieces together Being able to reconstruct your life and helping those you have hurt Understanding the definitions of Trauma and Addiction Language of trauma and addictions	The Body keeps the Score Ch. 13-20 Discussion	https://onbeing.org/programs/rachel-yehuda-how-trauma-and-resilience-cross-generations/ **Reading Questions #2 due: 50 pts.** ***Video:*** ***https://www.youtube.com/watch?v=8NkZO3_h7vI*** ***https://www.youtube.com/watch?v=N19OJbemZDw*** ***(watch on your own time)*** ***https://www.youtube.com/watch?v=z_2DU7VTOmk*** ***Safe Behavior Scale***
4	Understanding Sensations, Images, and Feelings Who am I? Victim or Survivor? Separation and Divorce	***Treating risky and compulsive behavior in trauma survivors Text by John Briere Chapters 1-5 Appendix 1-4*** *Effects of Adolescent Trauma Exposure on Risky Behavior in College Women* by	https://www.youtube.com/watch?v=MKgS8lJD9H4 Movie: Gifts of Grief https://www.youtube.co

	Death: Making Meaning out of losses Helping Children to Grieve their Losses Sexual Trauma Self-Loathing vs Forgiving Yourself	*Bonnie L. Green, etc. al* Why "Substance Abuse" Is a Label We Should all Reject.	m/watch?v=vJ4eHW9EWUk https://www.youtube.com/watch?v=TR70hzu5sXQ Reading Questions #3
5	Babies born addicted to drugs (predisposed to trauma) How to survive a relapse What to do next?	***Treating risky and compulsive behavior in trauma survivors Text by John Briere Chapters 6-10*** ***Appendix 5-7*** Handout: Neonatal Abstinence Syndrome	Video https://www.youtube.com/watch?v=svX3fEdVTLQ https://www.youtube.com/watch?v=yr-kLlwNexs https://www.youtube.com/watch?v=tNWU6XSjb-c
5	Identity Perception Decisions to grow Understanding how trauma can keep you in rage, hatred, revenge, bitterness Intrusive thoughts		Videos: https://www.youtube.com/watch?v=BXlnrFpCu0c Video: https://www.youtube.com/watch?v=bDBgatcJmT8 https://www.youtube.com/watch?v=vEH0xjg8yz8

6	Recovery of drugs begins with recovery of trauma Create a healing image Two types of trauma counseling What the wounded can give back		Videos: https://www.youtube.com/redirect?event=video_description&v=cZW_Q7VTkZE&redir_token=fpO0satAVbShjgoSqxvLlFJAeR18MTU0NjcxMDIwMUAxNTQ2NjIzODAx&q=http%3A%2F%2Fenlightenedstates.com%2Findex.php%2Ffaq%2F https://www.youtube.com/watch?v=J2xYSYLPuy4 **Reading Questions #4**
6	***Students will be presenting their PPT on suicide***		***GROUP PRESENTATIONS***

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: Social Work Alpha Designator/Number: 681 (•) Graded ( ) CR/NC

Contact Person: Paula Rymer Phone: 304-696-5770

NEW COURSE DATA:

New Course Title: Suicidology: The Study of Prevention, Intervention, and Postvention

Alpha Designator/Number: S W K 6 8 1

Title Abbreviation: S u i c i d o l o g y

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
The course explores concepts of suicide as a public health issue. The course provides students with an understanding of suicide language and evidenced based clinical practice techniques.

Co-requisite(s): First Term to be Offered: Spring 2020

Prerequisite(s): 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 Peggy Horman	Date 10-9-19
Registrar 440701	Date
College Curriculum Chair	Date 10/29/19
Graduate Council Chair Lori Hancock	Date 11/23/19

Request for Graduate Course Addition - Page 2

College: COHP Department/Division: Social Work Alpha Designator/Number: 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.

Paula Rymer

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.

There are no stand alone courses in Suicidology listed in the 2018-2019 Marshall University Graduate Catalog.

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 Applicabe

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

Please see attached syllabus

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

Please see attached syllabus.

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

Please see attached syllabus.

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

Lecture and In-class practice lab.

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

Opinion paper, Group presentations, current events paper, literature review and practice evaluation.

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

Not Applicable

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

AFTER RURAL SUICIDE A - idph.iowa.gov. (n.d.). Retrieved from https://www.idph.iowa.gov/Portals/1/userfiles/133/after_rural_suicide_guide_2016.pdf.

Suicide Survivors: Those left behind
University of Wisconsin- Eau Claire Counseling Services, Date unknown
http://www.uwec.edu/counsel/pubs/suicidesurvivors.htm

Surviving a Suicide Loss: A Financial Guide
American Foundation for Suicide Prevention (AFSP) & National Endowment for Financial Education (NEFE), 2004
http://www.afsp.org/survivor/financial/index.htm

(2009-03). Wasserman, D., & Wasserman, C. (Eds.), Oxford Textbook of Suicidology and Suicide Prevention. Oxford, UK: Oxford University Press. Retrieved 8 Oct. 2019, from https://oxfordmedicine.com/view/10.1093/med/9780198570059.001.0001/med-9780198570059.

Joiner, T. (2007) Why people die by suicide. United States. Harvard University Press.
ISBN: 978-0-6740-2549-3

Maris, R. (2019) Suicidology: a comprehensive biopsychosocial perspective. The Guilford Press. ISBN: 978-1-4625369-8-6

Linn-Gust, M. & Cerel, J. (2011) Seeking Hope: Stories of the Suicide Bereaved. Chellheadworks. ISBN: 978-0-9723318-4-5

American Psychiatric Association. (2013).Diagnostic and statistical manual of mental disorders(5th ed.). Arlington, VA: American Psychiatric Publishing.

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: Department of Social Work

Course Number and Title SWK 681- Suicidology

Course Name and Title: Suicidology: Prevention, Intervention and Postvention

Catalog Description: The course explores concepts of suicide as a public health issue. The course provides students with an understanding of suicide language and evidenced based clinical practice techniques.

Prerequisites: None

First Term Offered: Spring 2020
Credit Hours: 3

Marshall University
College of Health Professions
Masters of Social Work Program
Cross-listed for Psychology, Counseling, and Education Depts.

Course Title/Number	**SW 681** **Suicidology: The Study of Prevention, Intervention, & PostVention**
Semester/Year	Spring 2020
Days/Time	Tentative dates and times to be scheduled
Location	MU Huntington Face to Face – Polycom – MOVC and KANGC
Instructor	Paula Rymer MSW, CSW, LISW
Office	213 Prichard Hall
Phone	304/696-5770
Credit Hours	3
E-Mail	Rymer13@marshall.edu
Office Hours	Tuesday, Wednesday 9:30-4:30pm & Friday 10:30-5:30pm. By Appt. also.
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

Catalog Description

The course explores concepts of suicide as a public health issue. The course provides students with an understanding of suicide language and evidenced based clinical practice techniques

Course Description

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**
Competency 4: Engage in Practice Informed Research and Research-informed practice	Assesses treatment fidelity Gaining knowledge through research on evidence-based practices	Literature review assignment Interviewing clients with suicidal ideation or lived experiences.

	Demonstrate knowledge of techniques and evidence-based interventions	
Competency 6: Engage with individuals, Families, Groups, Organizations, and Communities	Acquiring knowledge base of interventions, interpersonal dynamics Distinguish, appraise and integrate multiple sources of knowledge, including research-based knowledge, and practice wisdom.	Interactive Intervention and interviewing Research literature review Current issues assignment
Competency 7: Assess Individuals, Families, Groups, Organizations, and Communities	Students will practice using oral and written communication in working with individuals, families, and groups Students will engage with organizations and communities assessing resources for meeting needs.	Role play, Presentation, and Interactive Interviewing will be used to demonstrate compliance and understanding. Research development will educate and clarify the role organizations and communities play
Competency 8: Intervene with Individuals, Families, Groups, Organizations, and Communities	Knowledge of Cognitive and Affective processes, skills, and knowledge base	Research of evidence-based practices and techniques of intervention and results of what is effective skills
Competency 9: Evaluation of practice with Individuals, Families, Groups, Organizations, and Communities	Knowledge of Cognitive and Affective processes, skill development and implementing knowledge base	Research assignment Interactive interviewing practice, and demonstrating skills in presentation

Required Texts, Additional Reading, and Other Materials

Joiner, T. (2007) *Why people die by suicide.* United States. Harvard University Press. ISBN: 978-0-6740-2549-3

Maris, R. (2019) *Suicidology: a comprehensive biopsychosocial perspective.* The Guilford Press. ISBN: 978-1-4625369-8-6

Linn-Gust, M. & Cerel, J. (2011) *Seeking Hope: Stories of the Suicide Bereaved.* Chellheadworks. ISBN: 978-0-9723318-4-5

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Recommended Readings

Students are expected to read journal articles that relate to the current discussion about the role of suicide and self-harming behaviors and the impact of public policy on health care practice. Students should come prepared to discuss the media's presentation of these issues. In addition, students should become familiar with the literature in this area. In particular, the following journals are especially pertinent:

Suicide and Life-Threatening Behavior is available online through Wiley-Blackwell's, Wiley Online Library.
American Journal of Public Health Community Mental Health Journal Health Affairs
Health and Social Work
Journal of the American Medical Association (JAMA)

Additional Reading Suggestions:

An Unquiet Mind by Kay Redfield Jamison
Night Falls Fast, Understanding Suicide by Kay Redfield Jamison
How I Stayed Alive When My Brain Was Trying To Kill Me by Susan Rose Blauner see http://www.mentalhelp.net/poc/view_doc.php?id=1787&type=book&cn=5
Waking Up: Climbing Through the Darkness by Terry L. Wise
The Noonday Demon by Andrew Solomon
Struck By Living by Julie Hersh

Course Requirements/Due Dates

Assignment	Total Points
Assignment 1: Suicide: Stigma & Bias/ Opinion Paper	**100 pts**
Assignment 2: Paper: Interview with a Suicidal client, self-harming client with intent, or someone that has lost a loved one to suicide.	**250 pts**
Assignment 3: Group Presentation	**150 pts**
Assignment 4: Evidence-based Interventions Paper	**100 pts**

Assignment 5: Reading Questions: Why people die by suicide	**25 pts**
Assignment 6: Reading Questions: Why people die by suicide	**25 pts**
Assignment 7: Current Issues Paper	**100 pts.**
Assignment 8: Research literature review	**250 pts**

Grading Policy

Late Assignments will have a deduction of 10pts., if the assignment is over a week late a deduction of 20pts will be taken.

Final Grade	
1000-900	A
899-800	B
799-700	C

Attendance Policy

All students are expected to regularly attend class and be on time. **A student with more than three unexcused absences during the course of this seminar may receive a no credit.**

A student who is **tardy three or more times to seminar may receive a grade of no credit.** If a student receives a no credit grade in this seminar, they will be required to repeat this seminar. If you late take your seat quietly and do not disturb class.

Class participation is expected which means that a synthesis of readings and application is demonstrated. Not engaging in class or group work may result in a lower grade.

Course Assignments Schedule

Assignment 1: Suicide: Stigma/Bias Opinion Paper

Describe a stigma or a bias that you have personally dealt with regarding suicide, suicidal attempts or self-harming behavior. Assignment for undergrad students minimum 2pages. Graduate students 4 page minimum. If you use a reference to prove a point remember to cite. Cover page required. APA required. 100 pts.

Assignment 2: Paper: Interview with a client

Assignment 2: Interview a client that has attempted, engages in self-harming behaviors, or a client that has lost someone to suicide. Goal is to gain understanding of suicide and aspects of suicide. HIPPA compliancy is required by interviewer and all names and specific information such as birthdates, birthplace has to meet guidelines. Coded names only will be used for the client. Undergraduate students' minimum 5 pages. Graduate students' minimum 8 pages. APA format and guidelines will apply. 250 pts.

Assignment 3: Group Presentation

This group presentation will be (in groups of 3 or more) on a topic relevant to any of the chapters in the textbook "Suicidology by Ronald W. Maris.

The presentation should:

The presentation should include:

1. A description of why the particulars of suicide should be/is considered a public health problem: definition, incidence, and/or prevalence in the general population; population groups that are most affected (gender, age, ethnic minority, SES, etc.) and why; etiology of the problem (bio-psychosocial factors that contribute); association with other diseases; course of the illness/health problem, including prognosis of the mental health problem.
2. Issue surrounding treatment (types of treatment available; side effects from treatment, Access and cost of treatment, treatment decision-making, ethical issues regarding treatment). Remember this issue will involve several agencies or entities to serve the client.
3. Impact of the health problem on the individuals, family or larger social network. In some instances, it may be relevant to discuss the impact of the health problem on the community.
4. Group presentation should contain minimum of 20 slides. Be creative and effective to engage the audience. Include Reference slide. On Title slide include what chapter from the book that is being overviewed or referenced. Graduate students' minimum of 30 slides. 150pts.

Assignment 4: Evidence-based interventions paper (2)

Assignment 4: Explanation of evidence-based interventions that is utilized to engage a suicidal individual(s). Give three examples and their bases of development, skills acquired, outline the population, how it creates harm reduction and reduces suicidal behaviors. 100 pts.

Assignment 5 & 6: Reading Questions

Reading questions from the text by Thomas Joiner "Why people die by suicide"
Essay Questions worth 25 pts. each assignment.

Assignment 7: Current Issues Paper

Present a current issue that is happening in the field of Suicidology. Whether it is a particular type of research method of intervention, bereavement, traumatic growth, faith-based or spirituality, or happenings in a particular age-group. This paper can be used during paper presentations during suicide prevention week if student would like to present. Undergraduate students 4 pgs. Graduate students 6 pgs. 100pts.

Assignment 8: Literature Review

Field of knowledge of suicide and suicidal behaviors is increasing but still there is more research and work to be accomplished. This assignment is to increase your knowledge and engagement with literature that looks, examines, and developments more insight in the area of suicide and self-harming behaviors. The assignment calls for the student to engage in specifics and find literature or the lack there of to discuss and how in the future what particulars can be examined and developed by researchers to gain either an intervention, particular thought on the specific area, what needs to be studied, a population that has been overlooked, or a way to decrease stigma that surrounds suicide and self-harm. Requirements. Graduate student's 7pgs min. 7 references min. Undergraduate 5 pgs. Min.5 references. 250pts.

WEEK	LECTURE	READINGS	ACTIVITY
1	Introduction to Suicidology Understanding Stigma: Types of Stigma Not being afraid of mental illness and suicide. Empirical Evidence and studies of the last 20 years Risk Factors and Protective factors	Maris (2019) Suicidology. Chapters 1-4 Why people die by suicide by Thomas Joiner (2005) Ch.1-5	1) The cultural taboos of suicide and mental illness by John Nieuwenburg https://www.youtube.com/watch?v=STMp6w38k3g 2) Glennon Melton (mental illness) https://www.youtube.com/watch?v=NHHPNMIK-fY&t=29s 3)David Covington's Ted Talk https://www.youtube.com/watch?v=-Jx9nTKH9Ys&t=229s 4)Kevin Hines Video https://www.youtube.com/watch?v=loiGNZTfu6g&t=721s

			Please watch videos 1 & 3 prior to the class.
2	Demographics of suicidal clients Suicide notes: What do we know or understand about suicide	Maris (2019) Suicidology Ch. 5-9 Cerel, J. Brown, M., Moore, M. M., van de Venne, J., & Brown, S. L. (2014). Who leaves suicide notes? A six year population-based study. *Suicide and Life Threatening Behavior* DOI: 10.1111/sltb.12131 Volume 45 Issue 3, June 2015, pg 326-334	PPT: Understanding Suicide (1st. section) (Only a portion of this movie will be viewed during class and will be stopped for discussion throughout. Please watch this documentary in full prior to class). PBS: Depression: out of the shadows https://www.youtube.com/watch?v=IM5SSldzLRY
3	Risk assessment Understanding the lived experience of a suicide attempt (Theories and Attitudes)	Joiner (2005) Why people die by suicide Suicide & Life-Threatening Behavior, 11, 221-231.	PPT: Understanding Suicide (2nd section) Columbia Suicide Ranking Scale
4	Understanding more about suicide. What to do in our schools/colleges to prevent suicide. (Lifelines & SOS) Garrett Lee Smith grant (MU-SPEAC)	https://www.sprc.org/settings/colleges-universities https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3809451/pdf/nihms508555.pdf	More than Sad video (AFSP,) The Truth About Suicide: Real Stories of Depression in College (AFSP,) Suicide: how my failed attempts became my biggest success Shraddha Shankar https://www.youtube.com/watch?v=S6EsjYLcrm8 The Truth behind College Campus https://www.youtube.com/watch?v=sRo5Db_7yVI
5	Understanding Major mental disorders and correlations with suicide Depression Anxiety Panic Disorder	Maris (2019) Suicidology Ch 10-13 APA (2013) DSM-5	https://www.youtube.com/watch?v=-eBUcBfkVCo&t=100s https://www.youtube.com/watch?v=RiM5a-vaNkg&t=35s PHQ-9 GAD-7 Life Events checklist

	Bipolar Disorder Borderline Personality Disorder Schizophrenia		PTSD checklist
6	Family Hx. of Suicidal Behaviors and Mental Illness Connections of trauma and suicidal behaviors Substance Misuse in Families Suicidal Behaviors and Co-Occuring Mental and Substance Use Disorders	CAMS workbook & worksheets Maris (2019) Suicidology Ch. 14-16	Child and Adolescent Suicide (protective factors) Parental Psychiatric Illness. Review assessments. Risk and Protective Factors: Psychiatric Risk Factors. Adult Suicide: *Interventions with Adult Suicidal Clients* *DAST assessment*
7	Introduction: Ethical and Philosophical Issues in Suicide. The role of culture, race, and ethnicity in suicide. Religion and Suicide	Maris (2019) Suicidology Ch 17-19 Moore & Roberts (2017) The Suicide Funeral	Guest speaker
8	Mental Health Challenges Treatment and Interventions no-suicide contracts vs. safety planning Suicidal Behaviors and Co-Occuring Mental and Substance Use Disorders	Cerel, J., Maple, M., van de Venne, J, Moore, M , Flaherty, C, & Brown, M. (in press, 2015) Suicide exposure in the community: Prevalence and correlates in one US state. Public Health Reports Sept 28 Public Health Approaches to Suicide Prevention	https://www.youtube.com/watch?v=MVV6vlaSfVQ&t=845s https://www.youtube.com/watch?v=ut-vdtvmuJw Substance-Related Disorders and Suicide Personality disorders and Suicide CAMS training (introduction) Full training for CAMS at fall conference
9	Mental Health needs of Veterans and Active Duty Military	Maris (2019) Ch. 20	One a day (handout) Time magazine Veterans Breaking the Silence Programs within the military

	Understanding Military Suicide VA efforts to prevent suicide over the last 15 years.	Anestis, M. D., Joiner, T., Hanson, J. E., & Gutierrez, P. M. (2014). The modal suicide decedent did not consume alcohol just prior to the time of death: An analysis with implications for understanding suicidal behavior. Journal of Abnormal Psychology, 123(4), 835- 840	Major General Mark Graham's story Video and Handout https://www.youtube.com/watch?v=d9Krgr5Dc6g https://www.youtube.com/watch?v=qvtqFQTbBcU
10	Lesbian, Gay, Bisexual, Transgender, and Queer/Questioning At-Risk Groups (the Homeless, Native Americans, & Incarcerated Individuals) Murder & Suicide Statistics, Risk factors, Protective factors	Maris (2019) Ch. 21 & 22 Robinson, J., Cox, G., Malone, A., Williamson, M., Baldwin, G., Fletcher, K., & O'Brien, M. (2013). A systematic review of school-based interventions aimed at preventing, treating, and responding to suicide related behavior in young people. Crisis, 34(3), 164–182. doi:10.1027/0227-5910/a000168 • • Matarazzo, B. B., Barnes, S. M., Pease, J. L., Russell, L. M., Hanson, J. E., Soberay, K. A., & Gutierrez, P. M. (2014). Suicide risk among lesbian, gay, bisexual, and transgender military personnel and veterans: What does the literature tell us? Suicide and Life-Threatening Behavior, 44(2), 200-217. Doi: 10.1111/sltb.12073	Risk factors for Suicide with the Gay community. Video: https://www.youtube.com/watch?v=hzdT390OCz4 https://www.youtube.com/watch?v=n-2okB6W4r8 https://www.youtube.com/watch?v=jWOYSQ_6Juk https://www.youtube.com/watch?v=Nvxfk8aMO0o https://www.youtube.com/watch?v=rXruYMZq01Y Treatment considerations for each at risk groups.

11	Guidelines for Suicide Risk Assessment Fundamental Suicide Assessment Components	Maris (2019) 16 & 19 Gibbons, R. D., Brown, C. H., Hur, K., Davis, J., & Mann, J. J. (2012). Suicidal thoughts and behavior with antidepressant treatment: Reanalysis of the randomized placebo-controlled studies of fluoxetine and venlafaxine. Archives of General Psychiatry, 69(6), 580– 587. doi:10.1001/archgenpsychiatry.201 1.2048	Columbia Suicide Ranking Scale training Different assessment tools for Depression, Anxiety, PTSD, PHQ-9, GAD-7, Life Events Checklist. Empirical evidence and how we engage with suicidal clients.
12	Evidence-based treatments Understanding Cognitive Behavioral Health for Survivors of Suicide Loss Crisis Intervention Model discussed.	Maris (2019) Ch. 23, 24, &25 Neimeyer, R. (Meaning Reconstruction	Discussion small groups after presentation and lecture. CBT, DBT, Interpersonal Psychotherapy, and Motivational Interviewing and Suicide.
13	Surviving Suicide Lived Experience Understanding Family Relationships to Suicide Victim Mental Health Professionals Suicide Losing a client to suicide; the effect on the mental health professional.	Maris (2019) Ch. 26 Entire Text Seeking Hope: Stories of the Suicide Bereaved (Linn-Gist & Cerel) Understanding Post Traumatic Growth	Dr. Julie Cerel, University of Kentucky Podcast with Dr. Blake Jones ***Video Fierce Goodbye*** ***Video Gifts of Grief*** Post-traumatic growth Complicated Grief Vicarious Trauma Family Survivors Professional Survivors **http://www.posttraumaticgrowth.com/index.php/video-1-national-loss-conference/**

14	***Students will be presenting their PPT on suicide***		***GROUP PRESENTATIONS*** ***POSTER 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: COHP Dept/Division: Social Work Alpha Designator/Number: SWK 682 (•) Graded ( ) CR/NC

Contact Person: Theresa Hayden Phone: 502-235-4874

NEW COURSE DATA:

New Course Title: Human Trafficking

Alpha Designator/Number: S W K 6 8 2

Title Abbreviation: H u m a n T r a f f i c k i g

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
Human Trafficking is grounded in fundamental concepts related to trafficking of human beings. Multiple forms of human exploitation as well as implications for social policy and interventions are discussed.

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*): N/A

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

Dept. Chair/Division Head Peggy Hannon	Date 10-9-19
Registrar 440701	Date 10-9-19
College Curriculum Chair	Date 10/29/19
Graduate Council Chair Lori Hunt	Date 11/23/19

Request for Graduate Course Addition - Page 2

College: COHP Department/Division: Department of Social Work Alpha Designator/Number: 682

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. Theresa Hayden, Assistant Professor

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. as evidenced by a review of the 2018-2019 Marshall University Graduate Catalog

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 syllabus.

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

Please see attached syllabus

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

Please see attached syllabus.

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

Course has been developed for online offering. Faculty utilize Blackboard Collaborate for face to face meetings with students, discussion board and videos.

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

Discussion Boards; Reaction Papers; and Final Group Project.

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

Not Applicable

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

Bales, K., Hesketh, O., & Silverman, B. W. (2015). Modern slavery in the UK: How many victims? Significance, 12(3), 16 -21.

Bales, K. (2012). Disposable people: New slavery in the global economy (3rd ed.). Berkeley, CA: University of California Press.

Clawson, H., & Dutch, N. (2008). Identifying victims of human trafficking: Inherent challenges and promising strategies from the field. Washington, DC: Office of the Assistant Secretary for Planning and Evaluation (ASPE).

Estes, R., & Weiner, N. (2001). The commercial exploitation of children in the U. S., Canada, and Mexico.

Lloyd, R. (2011). Girls like us: Fighting for a world where girls are not for sale, an activist finds her calling and heals herself (1st ed.). New York, NY: HarperCollins.

Shelley, L. (2010). Human trafficking: A global perspective, New York, NY: Cambridge University Press.

United Nations. (2000). Protocol to prevent, suppress and punish trafficking in persons, especially women and children, supplementing the United Nations convention against transnational organized crime.

United Nations Office of Drug and Crime. (2006, April). Trafficking in persons: Global patterns.

Verité. (2015). Strengthening protections against trafficking in persons in federal and corporate supply chains. Retrieved from https://www.verite.org/wp-content/uploads/2017/04/EO-and-Commodity-Reports-Combined-FINAL-2017.pdf

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: Social Work
Course Number and Title: SWK 682 Human Trafficking
Catalog Description: Human Trafficking is grounded in fundamental concepts related to trafficking of human beings. Multiple forms of human exploitation as well as implications for social policy and interventions are discussed.
Prerequisites: None
First Term Offered: Spring 2020
Credit Hours: 3

Marshall University Syllabus
College of Health Professions - Social Work

Course
SWK 682 Human Trafficking

Course Description
Human Trafficking is grounded in fundamental concepts related to trafficking of human beings. Multiple forms of human exploitation as well as implications for social policy and interventions are discussed.

Credits
3 hours Graduate

Prerequisites
Undergraduate degree in any field of study

Term/Year
Spring 2020

Format: Meeting Days/Times/Location
This course format is 100% asynchronous online course with no required synchronous meetings (OC).

This course should be completed in one spring term.

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

Instructor
Theresa C. Hayden, Ph.D., MSSW

Contact Information
- Office: off campus
- Office Hours: By virtual appointment
- Office Phone: 502-235-4874 (NO text)
- Marshall Email: haydent@marshall.edu

Preferred Communication Method and Expected Response Time

(QM Standard 5.3) Initial contact through Marshall Email with response in 24 hours. Emergency communication by cell phone 502-235-4874 with response in 1 hour. NO text.

About Me

(QM Standard 1.8) I completed my doctorate in social work from the University of Louisville Kent School of Social Work, earned two master's degrees (social work

Kent School and religious education Fordham University New York City), and a bachelor's in psychology from Brescia University Owensboro KY. I have presented on the topic of human trafficking at international, state, and local conferences. I am a Board Member of People Against Trafficking Humans (PATH) Coalition of Kentucky and actively engaged with community awareness on the crime of human trafficking. I am the Evaluation Consultant for the Commonwealth of Kentucky, Office of Attorney General to oversee the Task Force activities related to the Kentucky Statewide Human Trafficking ECM project funded by the Department of Justice.

Required and/or Recommended Texts and Materials

Required Texts and Materials

Busch-Armendariz, N., Nsonuw, M., & Heffron, L. (2018). Human trafficking: Applying research, theory, and case studies. SAGE; Thousand Oaks California.

Recommended/Optional Texts and Materials

Other materials provided in Blackboard.

Technology and Technical Skill Requirements

(QM Standards 1.5 and 1.6)

- Students must be proficient in the use of computers, the Internet, browsers, Microsoft Office Word, and other common applications.
- For computer and browser requirements, see "Get Connected" and "Internet Browser" at Student Resources: First Steps. See also IT: Recommended Hardware (URLs: http://www.marshall.edu/muonline/student-resources/ and http://www.marshall.edu/it/recommendations/).
- To check your browsers, use the Blackboard Browser Checker and ensure that you set permissions properly and have all the necessary plug-ins. (URL: https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support/Browser_Checker)
- Students must be able to use Marshall email, as well as the following tools in Blackboard: course messages, assignments, discussion board forums, tests, blogs, journals, wikis, and groups. Links to Blackboard Help and tutorials are available on the Start Here page and on the Tech Support tab in Blackboard.
- Virtual (VC) courses may require a webcam and microphone to use Blackboard Collaborate Ultra for synchronous meetings. For the best experience, Blackboard recommends Google Chrome browser or Mozilla Firefox browser. Links to Blackboard Collaborate Help and Tutorials are on the Start Here page and on the Tech Support tab in Blackboard.
- Adobe Acrobat Reader may be needed to read some files. This plug-in is available free. (URL: https://get.adobe.com/reader/) See the Tech Support tab in Blackboard for additional information and links.

- Students are 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

(QM Standard 7.1) 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)

Course Purpose

(QM Standard 1.2)

The purpose of this course is to raise awareness of human trafficking. Specifically, to define human trafficking; how it works, who is involved, and what is the motivation for violating human rights.

Course Objectives/Outcomes

(QM Standards 2.1 and 2.3) The student will be able to:

SLO 1: Categorize the scope and breadth of human trafficking as modern slavery.

SLO 2: Analyze the ecological perspective supporting human trafficking (micro, mezzo, macro).

SLO 3: Design initiatives and action plan in their respective fields for combatting human trafficking.

Desired Learner Outcomes

(QM Standard 2.4) 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
Use a variety of theoretical human rights perspective to understand human trafficking and its relationship to other forms of violence against vulnerable populations.	**Competency 2:** Engage Diversity and Difference in Practice **Competency 3:** Advance Human Rights and Social, Economic, and Environmental Justice	Discussion boards Group work chapter reviews writing
Understand the psychological, social, physical, legal, and financial consequences of human trafficking on victims, the community, and society as a whole.	**Competency 3:** Advance Human Rights and Social, Economic, and Environmental Justice **Competency 5:** Engage in Policy Practice **Competency 9:** Evaluate Practice with Individuals, Families, Groups, Organizations, and Communities	Discussion boards Group work chapter reviews writing
Identify relevant social policies and their intended and unintended consequences for human trafficking victims and those working on their behalf	**Competency 3:** Advance Human Rights and Social, Economic, and Environmental Justice **Competency 4:** Engage In Practice-informed Research and Research-informed Practice **Competency 5:** Engage in Policy Practice	Discussion boards Group work chapter reviews writing
Identify the complex social service delivery system developed around services for human trafficking victims.	**Competency 3:** Advance Human Rights and Social, Economic, and Environmental Justice **Competency 4:** Engage In Practice-informed Research and Research-informed Practice **Competency 5:** Engage in Policy Practice **Competency 9:** Evaluate Practice with Individuals, Families, Groups, Organizations, and Communities	Group / Team Project synthesizing and evaluating course material

Course Structure

(QM Standard 1.2) This course is organized into 6 units presented in folders in Blackboard within the Course Content link. The entire course is mediated by technology and Internet access.

Course Requirements/Due Dates

Unit	Activity/Assignment	Points	Due Date
# 1 Chap 1 200 points	Discussion Board: Welcome and Introductions	15	Jan 14th
	Discussion Board	35	Jan 16th & 20th
	Discussion Board	50	Jan 23rd & 27th
	Reaction Paper	100	Feb 3rd
# 2 Chap 2 50 points	Discussion Board	50	Feb 10th
# 3 Chap 3 200 points	Discussion Board	50	Feb 13th & 17th
	Discussion Board	50	Feb 20th & 24th
	Reaction Paper	100	March 3rd
# 4 Chap 4 200 points	Discussion Board	50	March 6th & 10th
	Discussion Board	50	March 13th & 17th
	Reaction Paper	100	March 20th & 31st
# 5 Chap 5, 6, 7 300 points	Reaction Paper	100	April 7th
	Reaction Paper	100	April 14th
	Reaction Paper	100	April 21st
# 6 Chap 8 500 points	FINAL PROJECT with Case Studies in textbook	500	May 3rd
1450	**TOTAL**	100%	

Course Policies

(QM Standard 1.4) 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

Attendance/Participation Policy

This online course (VC) was created using universal design principles to assist individuals with a variety of learning differences. Every effort has been made to present content in different formats to accommodate the individual learning differences of students. There are both synchronous and asynchronous learning components. Your attendance at scheduled chat sessions in the syllabus is required. Other activities are completed on your own. Please keep in mind that all activities have due dates – this is not a "self-paced" course. Please refer to the Course Schedule for when assignments are due.

Online Communication Expectations

(QM Standard 1.3) Professional and respectful tone and civility are used in communicating with fellow learners and the instructor, through any electronic means or methods.

Grading Policy

Grading Scale

(QM Standard 3.2) A letter grade will be earned based on the following learning assignments. The grade percentage weights assigned to the assignments are as follows:

Assignments/Activities	%	Points
Discussion Boards (8)	20 %	350 points
Reaction Papers (6)	40 %	600 points
Final Group Project (1)	40 %	500 points
Total	**100%**	**1450 points**
Assessment Classification	Range	Grade
	Points	
Excellent Work	1350 - 1450	A
Good Work	1250 - 1349	B

Late Work Policy

(QM Standard 3.2) All assignments are due on the date outlined in the syllabus unless other arrangements are made ahead of time with the instructor. ***Late assignments for ANY REASON (including taking the final grade of Incomplete) are subject to a 10%-point deduction for each assignment.***

Anticipated Response Time for Grading and Feedback

(QM Standard 3.5, 5.3) Initial contact through Marshall Email with response in 24 hours. Emergency communication by cell phone 502-235-4874 with response in 1 hour. NO text. Grading and feedback on assignments will be posted within a week after the due date. Assignments submitted AFTER the due date may not receive any feedback.

Evaluation Criteria

(QM Standard 3.3)

Criteria	35% points	50% points	80% points	100% points
Discussion Board	1 posting per week	2 postings per week less than 100 words each	2 postings per week 100 to 300 words each	2 postings per week 300 words each
Reaction Paper	References ***less than 3*** of the materials and readings with some original thought	References ***some*** of the materials and readings with some original thought	References ***most*** of the materials and readings with some original thought	References ***all*** materials and readings with critical thinking
Final Group Project	Team members assign 35% participation and performance	Team members assign 50% participation and performance	Team members assign 80% participation and performance	Team members agree 100% participation and performance

University Policies

(QM Standard 1.4) 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

Students with Disabilities

(QM Standard 7.2) 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/)

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/).

Course Schedule and Timeline
**** Subject to Change as Necessary***

Module	Class Topic	Readings	Focus and Activities	Competencies
Unit 1 **Weeks Jan 14 - 28**	Introduction to human trafficking as 21st Century Slavery	Busch-Armendariz, Nsonuw, & Heffron Chap 1 and Blackboard links	Human trafficking as human rights issue, relevance and prevalence in 21st Century 3 Discussion Boards 1 Reaction Paper	2, 3, 4
Unit 2 **Week Feb 4**	Explore the historical perspective of slavery trafficking of humans	Busch-Armendariz, Nsonuw, & Heffron Chap 2 and Blackboard links	History of human rights violations 1 Discussion Board	2, 4, 5, 9
Unit 3 **Weeks Feb 11 - 25**	Intersectionality of human trafficking	Busch-Armendariz, Nsonuw, & Heffron Chap 3 and Blackboard links	Identifying the risk factors for labor and sex trafficking; complexity of addressing the crime 2 Discussion Boards 1 Reaction Paper	2, 4, 5, 9
Unit 4 **Weeks March 4 - 18**	Supply and Demand side of human trafficking	Busch-Armendariz, Nsonuw, & Heffron	Profitability of trafficking humans 2 Discussion Boards 1 Reaction Paper	2, 3, 5, 9

		Chap 4 and Blackboard links		
Week March 25th	**Spring Break**			
Unit 5 **Weeks April 1 - 15th**	Examining the Micro, Mezzo, and Macro side of human trafficking	Busch-Armendariz, Nsonuw, & Heffron Chap's 5, 6, 7 and Blackboard links	Systemic approach to human trafficking 3 Discussion Boards 1 Reaction Paper	2, 3, 9
Unit 6 **Weeks April 22 – May 6**	How to make change	Busch-Armendariz, Nsonuw, & Heffron Chap 8 and Blackboard links Dead week Final Exams	Taking action to eliminate human trafficking Group / Team Project	2, 3, 4, 5, 9

Bibliography

Bales, K., Hesketh, O., & Silverman, B. W. (2015). Modern slavery in the UK: How many victims? *Significance, 12*(3), 16 -21.

Bales, K. (2012). Disposable people: New slavery in the global economy (3rd ed.). Berkeley, CA: University of California Press.

Clawson, H., & Dutch, N. (2008). Identifying victims of human trafficking: Inherent challenges and promising strategies from the field. Washington, DC: Office of the Assistant Secretary for Planning and Evaluation (ASPE).

Estes, R., & Weiner, N. (2001). The commercial exploitation of children in the U. S., Canada, and Mexico.

Lloyd, R. (2011). Girls like us: Fighting for a world where girls are not for sale, an activist finds her calling and heals herself (1st ed.). New York, NY: HarperCollins.

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United Nations. (2000). Protocol to prevent, suppress and punish trafficking in persons, especially women and children, supplementing the United Nations convention against transnational organized crime.

United Nations Office of Drug and Crime. (2006, April). Trafficking in persons: Global patterns.

Verité. (2015). Strengthening protections against trafficking in persons in federal and corporate supply chains. Retrieved from https://www.verite.org/wp-content/uploads/2017/04/EO-and-Commodity-Reports-Combined-FINAL-2017.pdf