

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: AS&T

Contact Person: Scott Simonton

Phone: 746-2045

Degree Program MS Environmental Science

Check action requested: ☐ Addition ☐ Deletion ☒ Change

Effective Term/Year

Fall 20

19

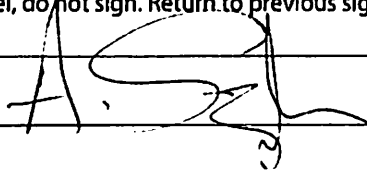
Spring 20

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

4-2-19

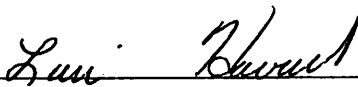
College Curriculum Chair

Date

College Dean

Date

Graduate Council Chair



Date

11/25/19

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 program still includes legacy requirements from COGS days. Changes are being made to reflect the need for more flexibility for students as they pursue their interests in a very broad field. Additionally, these changes are being made to facilitate the addition of areas of emphasis, which will be proposed upon approval of the changes reflected here.

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)

Changed from 24 hrs core/required courses to 15-18 hrs core/required (depending on thesis vs project option) for 36 hr program
Eliminate TE698 Project Formulation requirement as no other CITE program maintains that legacy requirement, increases elective options.

Eliminate ENVE 615 Env Chem requirement (will be moved to requirement for certain areas of emphasis)

Add substitutes for EM660 Proj Mngmt and ENGR610 Applied Stats (added flexibility)

Eliminate ES620 Env Mngmt Sys requirement (to increase elective options)

Codifies allowance of electives from other Colleges/Programs

1. ADDITIONAL RESOURCE REQUIREMENTS: If your program requires additional faculty, equipment or specialized materials to ADD or CHANGE this major or degree, attach an estimate of the time and money required to secure these items.

NOTE: Approval of this form does not imply approval for additional resources. Enter NONE if not applicable.

NONE

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

NONE

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

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

3. Current Catalog Description

Insert the *Current* Catalog Description and page number from the latest catalog for entries you would like to change.

(May attach separate page if needed)

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)

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: CITE, Applied Science and Technology

Major or Degree: MS Environmental Science

Type of Change: Change

Rationale: The program still includes legacy requirements from COGS days. Changes are being made to reflect the need for more flexibility for students as they pursue their interests in a very broad field. Additionally, these changes are being made to facilitate the addition of areas of emphasis, which will be proposed upon approval of the changes reflected here.

CURRENT

ENVIRONMENTAL SCIENCE, M.S.

Minor in Environmental Science

Program Description

The environmental science program gives the student the broad multi-disciplinary subject matter and analytical tools necessary to be successful in such professions as consulting, industrial environmental management and environmental protection. Students from diverse science backgrounds apply their knowledge and skills to environmental problems, such as air pollution and control; water pollution and treatment; groundwater protection, contamination and remediation; solid and hazardous waste management.

Admission Requirements

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

marshall.edu/graduate/admissions/how-to-apply-for-admission.

Each applicant must satisfy at least ONE of the following criteria:

- Score at the mean or above on the verbal GRE
- Score at the mean or above on the quantitative GRE
- Score at the mean or above on the analytical GRE
- Score at the mean or above on the Miller Analogies Test
- Have an undergraduate GPA of 2.50 or above
- Have passed the Fundamentals of Engineering exam and/or the Professional Engineering exam

In addition to the general requirements all students entering the graduate Environmental Science program must have completed prior to admission the following courses OR their equivalent: Chemistry 205 and Math 130 with a grade of C or better, AND a minimum total of FIVE (5) courses/ competencies, relevant to environmental science, from the following: Chemistry (200 level or above); Physics (200 level or above); Biology; Geology; Geography; Statistics; Soil Science; Law; Health and Economics; or 10 years relevant work experience.

Degree Requirements

Students must complete 36 graduate credit hours at the graduate level, including at least 24 credit hours at Marshall University. The degree consists of 12 credit hours of core courses; 12 credit hours of required courses; and 12 credit hours of electives.

Core Courses

EM 660 Project Management

ENGR 610 Applied Statistics

TE 698 Comprehensive Project Formulation (or ES 585, Introduction to Environmental Science)

TE 699 Comprehensive Project - after completion of 27 hours

ES 680 Thesis, may be taken instead of TE 698 and TE 699.

Additional Degree Requirements for Program

Required Courses

ES 514 Environmental Risk Assessment

ENVE 615 Environmental Chemistry

ES 550 Environmental Law I (or ES 662 or ES 655)

ES 620 Environmental Management Systems (or ES 640 or ES 646)

To fulfill the Core requirement, 6 credit hours must be satisfied by the TE 698/TE 699 sequence (to complete a comprehensive project) OR six hours of ES 680 (to complete a thesis). Comprehensive projects and the resulting write-up tend to be based on the application of the Environmental Science degree to professional projects, whereas a thesis is written as an output of a research project

Electives

On completion of the MS Environmental Science degree program the student should have the requisite scope of knowledge and competency in specific environmental subject matter. Students are required to take 12 credit hours of elective courses and use them to satisfy proficiency courses: TWO Environmental Science program electives; ONE division elective (an approved course in the division); ONE CITE elective (an approved course in CITE). The required and elective courses should be outlined in the Plan of Study. The Plan of Study should be developed in cooperation with and signed by the student's advisor and should be completed prior to registration for the 12th credit hour.

Graduate Minor in Environmental Science

The Graduate Minor in Environmental Science can be completed through 9 hours of coursework:

• ES 514 Risk Assessment OR

ES 610 Environmental Sampling Practice OR

ES 630 Site Assessment

• ENVE 615 Environmental Chemistry OR

ES 646 Dynamics of Ecosystems OR

ES 654 Environmental Microbiology

• ES 550 Environmental Law OR

ES 662 Environmental Policy OR

ES 655 Environmental Ethics

CURRENT

ENVIRONMENTAL SCIENCE, M.S.

Minor in Environmental Science

Program Description

The environmental science program gives the student the broad multi-disciplinary subject matter and analytical tools necessary to be successful in such professions as consulting, industrial environmental management and environmental protection. Students from diverse science backgrounds apply their knowledge and skills to environmental problems, such as air pollution and control; water pollution and treatment; groundwater protection, contamination and remediation; solid and hazardous waste management.

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- Have passed the Fundamentals of Engineering exam and/or the Professional Engineering exam

In addition to the general requirements all students entering the graduate Environmental Science program must have completed prior to admission the following courses OR their equivalent: Chemistry 205 and Math 130 with a grade of C or better, AND a minimum total of FIVE (5) courses/ competencies, relevant to environmental science, from the following: Chemistry (200 level or above); Physics (200 level or above); Biology; Geology; Geography; Statistics; Soil Science; Law; Health and Economics; or 10 years relevant work experience.

Degree Requirements

Students must complete 36 graduate credit hours at the graduate level, including at least 24 credit hours at Marshall University. The degree consists of 9-12 credit hours of core courses; 6-12 credit hours of required courses; and 18-21 credit hours of electives. At least 18 credit hours must be 600-level.

Students may choose to complete either the project option, or the thesis option, after consultation with their academic advisor. Students must have a project or thesis proposal approved by their project or thesis advisor prior to enrolling in project (TE 699 Comprehensive Project) or thesis (ES 680 Thesis).

Project Option. The comprehensive project involves the application of coursework completed as part of the degree to a practical problem. Students will work with their advisors to identify an appropriate project and scope. Students must prepare a formal written report and deliver an oral presentation to a committee. Students register for a Comprehensive Project (TE 699, 3 hrs.) during the semester in which their project will be completed and presented, but preliminary work on the project may commence before that semester.

Thesis Option. The thesis option involves the completion of 6 hours of research (ES 680) under the direction of an advisor on an approved project. Students must summarize their work in the form of a formal, written document and successfully defend the thesis before a committee. Thesis work is typically conducted over two semesters.

Core Courses

EM 660 Project Management (or ES 620 or TM 610)

ENGR 610 Applied Statistics (or BSC 517 or STA 518 or GEO 540 or PH 621)

~~TE 698 Comprehensive Project Formulation (or ES 585, Introduction to Environmental Science)~~

TE 699 Comprehensive Project ~~—after completion of 27 hours~~ OR

ES 680 Thesis, ~~may be taken instead of TE 698 and TE 699.~~

Additional Degree Requirements for Program

Required Courses

ES 514 Environmental Risk Assessment

~~ENVE 615 Environmental Chemistry~~

ES 550 Environmental Law I (or ES 662 or ES 655)

~~ES 620 Environmental Management Systems (or ES 640 or ES 646)~~

To fulfill the Core requirement, 6 credit hours must be satisfied by the TE 698/TE 699 sequence (to complete a comprehensive project) OR six hours of ES 680 (to complete a thesis). Comprehensive projects and the resulting write-up tend to be based on the application of the Environmental Science degree to professional projects, whereas a thesis is written as an output of a research project

Electives

On completion of the MS Environmental Science degree program the student should have the requisite scope of knowledge and competency in specific environmental subject matter. Students are required to take 18-21 credit hours of elective courses and use them to satisfy proficiency courses. Electives can be chosen from Environmental Science or any program within CITE. Additionally, electives from the College of Science, Department of Public Health, or Department of Geography will generally be approved. Graduate courses from other programs will be considered. The required and elective courses should be outlined in the Plan of Study. The Plan of Study should be developed in cooperation with and signed by the student's advisor and should be completed prior to registration for the 12th credit hour.

Graduate Minor in Environmental Science

Graduate students from other majors may obtain a graduate Minor in Environmental Science by completing any three Environmental Science courses at the 500-level or 600-level for a total of nine hours of graduate work, with written permission in advance from the student's academic advisor and the Environmental Science Program Coordinator prior to the student taking the courses. On completion of the MS Environmental Science degree program the student should have the requisite scope of knowledge and competency in specific environmental subject matter. Students are required to take 12 credit hours of elective courses and use them to satisfy proficiency courses: TWO Environmental Science program electives; ONE division elective (an approved course in the division); ONE CITE elective (an approved course in CITE). The required and elective courses should be outlined in the Plan of Study. The Plan of Study should be developed in cooperation with and signed by the student's advisor and should be completed prior to registration for the 12th credit hour.

~~Graduate Minor in Environmental Science~~

The Graduate Minor in Environmental Science can be completed through 9 hours of coursework:

▲ ~~ES 514 Risk Assessment OR~~

~~ES 610 Environmental Sampling Practice OR~~

~~ES 630 Site Assessment~~

▲ ~~ENVE 615 Environmental Chemistry OR~~

~~ES 646 Dynamics of Ecosystems OR~~

~~ES 654 Environmental Microbiology~~

▲ ~~ES 550 Environmental Law OR~~

~~ES 662 Environmental Policy OR~~

~~ES 655 Environmental Ethics~~

PROPOSED

ENVIRONMENTAL SCIENCE, M.S.

Minor in Environmental Science

Program Description

The environmental science program gives the student the broad multi-disciplinary subject matter and analytical tools necessary to be successful in such professions as consulting, industrial environmental management and environmental protection. Students from diverse science backgrounds apply their knowledge and skills to environmental problems, such as air pollution and control; water pollution and treatment; groundwater protection, contamination and remediation; solid and hazardous waste management, and environmental policy.

Admission Requirements

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

Each applicant must satisfy at least ONE of the following criteria:

- Score at the mean or above on the verbal GRE
- Score at the mean or above on the quantitative GRE
- Score at the mean or above on the analytical GRE
- Score at the mean or above on the Miller Analogies Test
- Have an undergraduate GPA of 2.50 or above
- Have passed the Fundamentals of Engineering exam and/or the Professional Engineering exam

In addition to the general requirements all students entering the graduate Environmental Science program must have completed prior to admission the following courses OR their equivalent: Chemistry 205 and Math 130 with a grade of C or better, AND a minimum total of FIVE (5) courses/ competencies, relevant to environmental science, from the following: Chemistry (200 level or above); Physics (200 level or above); Biology; Geology; Geography; Statistics; Soil Science; Law; Health and Economics; or 10 years relevant work experience.

Degree Requirements

Students must complete 36 graduate credit hours at the graduate level, including at least 24 credit hours at Marshall University. The degree consists of 9-12 credit hours of core courses; 6 credit hours of required courses; and 18-21 credit hours of electives. At least 18 credit hours must be 600-level.

Students may choose to complete either the project option, or the thesis option, after consultation with their academic advisor. Students must have a project or thesis proposal approved by their project or thesis advisor prior to enrolling in project (TE 699 Comprehensive Project) or thesis (ES 680 Thesis).

Project Option. The comprehensive project involves the application of coursework completed as part of the degree to a practical problem. Students will work with their advisors to identify an appropriate project and scope. Students must prepare a formal written report and deliver an oral presentation to a committee. Students register for a Comprehensive Project (TE 699, 3 hrs.) during the semester in which their project will be completed and presented, but preliminary work on the project may commence before that semester.

Thesis Option. The thesis option involves the completion of 6 hours of research (ES 680) under the direction of an advisor on an approved project. Students must summarize their work in the form of a formal, written document and successfully defend the thesis before a committee. Thesis work is typically conducted over two semesters.

Core Courses

EM 660 Project Management (or ES 620 or TM 610)

ENGR 610 Applied Statistics (or BSC 517 or STA 518 or GEO 540 or PH 621)

TE 699 Comprehensive Project OR

ES 680 Thesis.

Additional Degree Requirements for Program

Required Courses

ES 514 Environmental Risk Assessment (or SFT651 or NRE 531)

ES 550 Environmental Law and Policy

To fulfill the Core requirement, 3 credit hours must be satisfied by TE 699 (to complete a comprehensive project) OR 6 hours of ES 680 (to complete a thesis). Comprehensive projects and the resulting write-up tend to be based on the application of the Environmental Science degree to professional projects, whereas a thesis is written as an output of a research project

Electives

On completion of the MS Environmental Science degree program the student should have the requisite scope of knowledge and competency in specific environmental subject matter. Students are required to take 18-21 credit hours of elective courses and use them to satisfy proficiency courses. Electives can be chosen from Environmental Science or any program within CITE. Additionally, electives from the College of Science, Department of Public Health, or Department of Geography will generally be approved.

Graduate courses from other programs will be considered. The required and elective courses should be outlined in the Plan of Study. The Plan of Study should be developed in cooperation with and signed by the student's advisor and should be completed prior to registration for the 12th credit hour.

Graduate Minor in Environmental Science

Graduate students from other majors may obtain a graduate Minor in Environmental Science by completing any three Environmental Science courses at the 500-level or 600-level for a total of nine

hours of graduate work, with written permission in advance from the student's academic advisor and the Environmental Science Program Coordinator prior to the student taking the courses.

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: COEPD Dept/Division: Leadership Studies
Contact Person: Eugenia Damron Phone: 304-746-2514

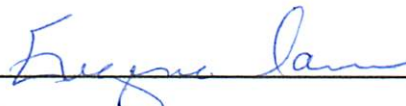



Rationale for Request:

Certification in School Principalship

- Change Admission Requirements to include additional licensures and require two years of teaching or school counseling experience instead of one
- Update admission requirements link, admission instructions, and language for test requirements
- Update state licensure requirements
- Add Program Requirements

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

NOTE: all requests may not require all signatures.

Department/Division Chair  Date 8-16-19
Registrar  Date 8-20-19
College Curriculum Committee Chair  Date 9-28-19
(or Dean if no college curriculum committee)
Graduate Council Chair  Date 9/29/19

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

AUG 20 2019 PM 12:40

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.

Certificate/Licensure in School Principalship (post-master's)

This program is designed for students who have completed a master's degree in education. Students completing the program qualify for professional administrative licensure as a PreK-Adult school principal in West Virginia and Ohio. Students from other states should check with their state licensing agency concerning licensure requirements. Those seeking professional administrative licensure as a school principal in West Virginia must pass the PRAXIS II (5411—Educational Administration and Supervision Test) and also complete the Evaluation Leadership Institute offered by the West Virginia Center for Professional Development.

Admission Requirements - Principal Licensure and Graduate Certificate Program

An applicant should enroll as a Certificate/Professional Development student and select on the application form "School Principalship."

- A student who desires admission to the Post-Master's Principal Licensure/Graduate Certificate program must have an overall Graduate Grade Point Average (GPA) of 3.0 on a 4.0 scale in an education field from an ELCC-accredited institution.

- Transcripts from the student's graduate institution(s) must be provided to Graduate Admissions at the time of application.

- Students are also required to have a Professional Teaching Certificate and a minimum of one year of teaching experience at the time of application.

Program of Studies18 hrs.

LS 510 The Principalship
LS 610 Leadership for School Improvement
LS 612 Education Technology for Administrators
LS 630 School and the Community
LS 675 Legal and Policy Issues
LS 660 Internship-School Management 2

Request for Graduate Non-Curricular Changes – Page 3

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.

Please see attached.

This document is a copy of the original work. It is not a derivative work. It is not a reproduction of the original work. It is a copy of the original work.

10

10/10/19 12:40 PM

AUG 20 2019 PM12:40

10/10/19

10/10/19 12:40 PM

Graduate Certificate/Licensure in School Principalship (post-master's)

This program is designed for students who have completed a master's degree in education and provides the coursework to obtain. ~~Students completing the program qualify for~~ professional administrative licensure as a ~~PreK-pre-kindergarten through a~~Adult school principal in West Virginia ~~and Ohio~~. Students from other states should contact their local departments of education ~~check with their state licensing agency concerning~~ licensure requirements prior to applying to this program. Those seeking professional administrative licensure as a school principal in West Virginia must pass the PRAXIS II (5411—5412 Educational Administration and Supervision Test). State licensure also requires completion of the ~~and also complete the~~ Evaluation Leadership Institute from the West Virginia Department of Education when hired as a school principal ~~offered by the West Virginia Center for Professional Development~~.

Admission Requirements ~~Principal Licensure and Graduate Certificate Program for School Principalship~~

Applicants should follow the graduate admission process in this catalog and on the Marshall website at www.marshall.edu/admissions/apply. Applicants should apply on the Distance-Only application and select "Certificate (PM): School Principalship" on the application.

In addition to Marshall University's requirements for graduate admission, applicants must have:

- A master's degree in education from a CAEP-accredited institution with an overall graduate Grade Point Average (GPA) of 3.0 on a 4.0 scale.
- One of the following: A Professional Teaching Certificate, a Career and Technical Education Teaching Certificate, or a Student Support Certificate in School Counseling; and
- A minimum of two years of teaching or school counseling experience.

Applicants may be admitted conditionally for one term while test requirements are pending. Applicants may be admitted provisionally when a GPA or test score does not meet the minimum requirements at the discretion of the program director. All conditional admission requirements must be completed for full admission status and to register for subsequent sessions.

An applicant should enroll as a Certificate/Professional Development student and select on the application form "School Principalship." ~~• A student who desires admission to the Post-Master's Principal Licensure/Graduate Certificate program must have an overall Graduate Grade Point Average (GPA) of 3.0 on a 4.0 scale in an education field from an ELCC-accredited institution. • Transcripts from the student's graduate institution(s) must be provided to Graduate Admissions at the time of application. • Students are also required to have a Professional Teaching Certificate and a minimum of one year of teaching experience at the time of application.~~

Program of Studies for School Principalship -- 18 hours ~~Program of Studies~~

~~18 hrs.~~

- LS 510 The Principalship
- LS 610 Leadership for School Improvement
- LS 612 Education Technology for Administrators
- LS 630 The School and the Community
- LS 675 Legal and Policy Issues
- LS 660 Capstone: Internship ~~School Management~~ ~~2~~

Program Requirements for School Principalship

- Every student must designate a practicing principal who agrees to act as his/her mentor during the program.
- Field experiences are a required component of this program and are embedded in program classes. Some field experiences are embedded in the program classes, and the remainder are completed in the Capstone course.
- A graduate certificate candidate in the program may receive no more than one grade of "C" in required coursework. In the event of a second grade of "C" or below, the student may be dismissed from the program.
- Repeating a course for a higher grade does not negate the existence of the former grade. A student may be dismissed from the program upon earning a second grade of "C" or below, even if the student repeated a course and earned a higher grade.

Request for Graduate Non-Curricular Changes – Page 4

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.

Graduate Certificate/Licensure in School Principalship (post-master’s)

This program is designed for students who have completed a master’s degree in education and provides the coursework to obtain professional administrative licensure as a pre-kindergarten through adult school principal in West Virginia. Students from other states should contact their local departments of education for licensure requirements prior to applying to this program. Those seeking professional administrative licensure as a school principal in West Virginia must pass the PRAXIS 5412 Educational Administration and Supervision Test. State licensure also requires completion of the Evaluation Leadership Institute when hired as a school principal.

Admission Requirements for School Principalship

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Program of Studies for School Principalship – 18 hours

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LS 660 Capstone: School Management

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Request for Graduate Non-Curricular Changes – Page 4

1. How many of the following items are you requesting to be added to your program? (Please check the appropriate box in the table below.)

2. List the names of the following items in the table below (if applicable):

3. Please provide a brief description of the following items in the table below (if applicable):

4. Please provide a brief description of the following items in the table below (if applicable):

5. Please provide a brief description of the following items in the table below (if applicable):

6. Please provide a brief description of the following items in the table below (if applicable):

7. Please provide a brief description of the following items in the table below (if applicable):

8. Please provide a brief description of the following items in the table below (if applicable):

9. Please provide a brief description of the following items in the table below (if applicable):

10. Please provide a brief description of the following items in the table below (if applicable):

11. Please provide a brief description of the following items in the table below (if applicable):

12. Please provide a brief description of the following items in the table below (if applicable):

13. Please provide a brief description of the following items in the table below (if applicable):

14. Please provide a brief description of the following items in the table below (if applicable):

15. Please provide a brief description of the following items in the table below (if applicable):

16. Please provide a brief description of the following items in the table below (if applicable):

17. Please provide a brief description of the following items in the table below (if applicable):

18. Please provide a brief description of the following items in the table below (if applicable):

19. Please provide a brief description of the following items in the table below (if applicable):

AUG 20 2019 PM 12:40

Request for Graduate Non-Curricular Changes – Page 5

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

Type of change request: Update admission requirements language and add program requirements

Department: Leadership Studies

Degree program: Certification in School Principalship

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

AUG 20 2019 PM 12:40

Request for Graduate Non-Curricular Changes

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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: COEPD Dept/Division: Leadership Studies
 Contact Person: Eugenia Damron Phone: 6-8959

Rationale for Request:

-MA in Leadership Studies with emphasis in Leadership Specialist

- Update admission link and procedure
- Correct Plan of Study titles and number of hours
- Correct course name to "ACE" 689
- Add Program Requirements

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 Eugenia Damron Date 8-1-19
 Registrar Soyan McCoy Date 8-28-19
 College Curriculum Committee Chair [Signature] Date 8-28-19
 (or Dean if no college curriculum committee)
 Graduate Council Chair Lori Howard Date 9/29/19

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

11-2-2019 12:38 PM

Handwritten signature and text, possibly a name and a date or location.

Handwritten text, possibly a name or a title.

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.

Leadership Studies, M.A. with Leadership Specialist Area of Emphasis

This program is ideally suited to the needs of working professional adult students who wish to gain leadership skills, but do not want to limit their knowledge to any particular area of study.

Admission Requirements

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

In addition, applicants must have:

An undergraduate Grade Point Average (GPA) of 2.75 or higher on a 4.0 scale for all previously completed undergraduate university work.

The applicant may be granted provisional enrollment and directed to complete 12 hours of selected courses designated by the department. If a 3.25 grade point average is maintained in those courses, then the applicant will be admitted to the degree program. All degree students follow a planned program of study and must maintain a cumulative Grade Point Average (GPA) of 3.0.

Program of Studies30 hrs.

LS 632 Human Relations in the Public Sector

LS 625 Human Resources Management

ATE 689 Grant Proposal Writing

LS 645 Community Collaborative Planning and Management

LS 615 Leadership in the Public Sector

LS 690 Leadership Capstone Course

Nine hours of electives selected to enhance student skills in specific areas:

Elective courses:

LS 640 Legal Issues for Non-Profit and Public Sector Organizations

LS 628 Leading Non-Profit and Public Sector Organizations

LS 635 Organizational Theory

LS 626 Fundraising Management

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Request for Graduate Non-Curricular Changes – Page 3

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.

Please see attached

Request for Graduate Non-Degree Changes - Page 2

1. Graduate Non-Degree Changes: A student who is currently enrolled in a graduate program and wishes to make changes to their program of study, such as adding or dropping courses, may request a non-degree change. The student must submit a request to the Graduate School, which will review the request and make a decision. The student must also pay a fee for the request.

2. Non-Degree Changes: A student who is currently enrolled in a non-degree program and wishes to make changes to their program of study, such as adding or dropping courses, may request a non-degree change. The student must submit a request to the Graduate School, which will review the request and make a decision. The student must also pay a fee for the request.

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Leadership Studies, M.A. with Leadership Specialist Area of Emphasis

This program is ideally suited to the needs of working professional adult students who wish to gain leadership skills, but do not want to limit their knowledge to any particular area of study.

Admission Requirements for Leadership Specialist

Applicants should follow the graduate admission process in this catalog and on the Marshall website at www.marshall.edu/admissions/apply. Applicants should select the Distance-Only application and under programs select "Leadership Studies (MA): Leadership Specialist" on the application.

In addition to Marshall University's requirements for graduate admission, applicants must have:

- A bachelor's degree from a regionally-accredited institution;
- An undergraduate Grade Point Average (GPA) of 2.75 or higher on a 4.0 scale.

Applicants may be admitted provisionally when a GPA does not meet the minimum requirements at the discretion of the program director. The student will be directed to complete 12 hours of selected courses designated by the department. If a 3.25 grade point average is maintained in those courses, the applicant will be fully admitted to the program.

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

In addition, applicants must have:

An undergraduate Grade Point Average (GPA) of 2.75 or higher on a 4.0 scale for all previously completed undergraduate university work.

The applicant may be granted provisional enrollment and directed to complete 12 hours of selected courses designated by the department. If a 3.25 grade point average is maintained in those courses, then the applicant will be admitted to the degree program. All degree students follow a planned program of study and must maintain a cumulative Grade Point Average (GPA) of 3.0.

Program of Studies for Leadership Specialist -- 30 hours

Core courses:

LS 615 Leadership in the Public Sector
LS 625 Human Resources Management
LS 632 Human Relations in the Public Sector
LS 645 Community Collaborative Planning and Management
ACE 689 Grant Proposal Writing

Elective courses:

LS 626 Fundraising Management
LS 628 Leading Non-Profit and Public Sector Organizations
LS 635 Organizational Theory
LS 640 Legal Issues for Non-Profit and Public Sector Organizations

Capstone:

LS 690 Leadership Capstone

Program of Studies 30 hrs.

LS-632 Human Relations in the Public Sector

LS-625 Human Resources Management

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~~ATE-689 Grant Proposal Writing~~
~~LS-645 Community Collaborative Planning and Management~~
~~LS-615 Leadership in the Public Sector~~
~~LS-690 Leadership Capstone Course~~

Nine hours of electives selected to enhance student skills in specific areas:

Elective courses:

~~LS-640 Legal Issues for Non-Profit and Public Sector Organizations~~
~~LS-628 Leading Non-Profit and Public Sector Organizations~~
~~LS-635 Organizational Theory~~
~~LS-626 Fundraising Management~~

Program Requirements for Leadership Specialist

- A graduate candidate in the program may receive no more than two grades of "C" or below in required coursework. In the event of a third grade of "C" or below, the student may be dismissed from the program.
- Repeating a course for a higher grade does not negate the existence of the former grade. A student may be dismissed from the program upon earning a third grade of "C" or below, even if the student repeated a course and earned a higher grade.

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Request for Graduate Non-Curricular Changes – Page 4

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.

Leadership Studies, M.A. with a Leadership Specialist Area of Emphasis

This program is ideally suited to the needs of working professional adult students who wish to gain leadership skills, but do not want to limit their knowledge to any particular area of study.

Admission Requirements for Leadership Specialist

Applicants should follow the graduate admission process in this catalog and on the Marshall website at www.marshall.edu/admissions/apply. Applicants should select the Distance-Only application and under programs select “Leadership Studies (MA): Leadership Specialist” on the application.

In addition to Marshall University’s requirements for graduate admission, applicants must have:

- A bachelor’s degree from a regionally-accredited institution;
- An undergraduate Grade Point Average (GPA) of 2.75 or higher on a 4.0 scale.

Applicants may be admitted provisionally when a GPA does not meet the minimum requirements at the discretion of the program director. The student will be directed to complete 12 hours of selected courses designated by the department. If a 3.25 grade point average is maintained in those courses, the applicant will be fully admitted to the program.

Program of Studies for Leadership Specialist -- 30 hours

Core courses:

LS 615 Leadership in the Public Sector
LS 625 Human Resources Management
LS 632 Human Relations in the Public Sector
LS 645 Community Collaborative Planning and Management
ACE 689 Grant Proposal Writing

Elective courses:

LS 626 Fundraising Management
LS 628 Leading Non-Profit and Public Sector Organizations
LS 635 Organizational Theory
LS 640 Legal Issues for Non-Profit and Public Sector Organizations

Capstone:

LS 690 Leadership Capstone

Program Requirements for Leadership Specialist

- A graduate candidate in the program may receive no more than two grades of “C” or below in required coursework. In the event of a third grade of “C” or below, the student may be dismissed from the program.
- Repeating a course for a higher grade does not negate the existence of the former grade. A student may be dismissed from the program upon earning a third grade of “C” or below, even if the student repeated a course and earned a higher grade.

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Request for Graduate Non-Curricular Changes – Page 5

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

Type of change request: Update admission info, correct course name, add program requirements

Department: Leadership Studies

Degree program: MA in Leadership Studies with emphasis in Leadership Specialist

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

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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: COHP / LCOB

Dept/Division: NA

Contact Person: Dean Prewitt (6-2616)/Dean Mukherjee (6-2659)

Phone: _____

Degree Program MS Health Informatics

Check action requested: ☐ Addition ☐ Deletion ☒ ChangeEffective 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	<u>A. Mukherjee</u>	Date	<u>8/26/2019</u>
College Curriculum Chair	<u>A. Mukherjee</u>	Date	<u>8/26/2019</u>
College Dean	<u>A. Mukherjee</u>	Date	<u>8/26/2019</u>
Graduate Council Chair	<u>Law Howard</u>	Date	<u>11/25/19</u>
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)

See attached.

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)

NONE

1. ADDITIONAL RESOURCE REQUIREMENTS: If your program requires additional faculty, equipment or specialized materials to ADD or CHANGE this major or degree, attach an estimate of the time and money required to secure these items. NOTE: Approval of this form does not imply approval for additional resources. Enter NONE if not applicable.

NONE

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

NONE

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

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

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

See 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.

See attached.

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)

(page 82)

College of Health Professions

Dr. Michael Prewitt, Dean

www.marshall.edu/cohp

Athletic Training, M.S.

Biomechanics, M.S.

Communication Disorders, M.S.

Dietetics, M.S.

Exercise Science, M.S.

Nursing, M.S.N.

Physical Therapy, D.P.T.

Public Health, M.S.

Social Work, M.S.W.

Sport Administration, M.S.

Other programs: minors in Exercise Science and Sport Studies, graduate certificates in Family Nurse Practitioner (post master's), Nursing Administration (post master's), Nursing Education (post master's), Dietetic Internship

(page 81)

College of Business

Dr. Avinandan Mukherjee, Dean

www.marshall.edu/cob

Accountancy, M.S.

Business Administration, M.B.A.

Health Care Administration, M.S.

Health Informatics, M.S.

Human Resource Management, M.S.

Doctor of Management Practice in Nurse Anesthesia, D.M.P.N.A.

Other programs: Business Foundations, Graduate Certificate in Management Foundations

(current pages 131-134) Change in page numbers only, needs to be put under College of Business.

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: College of Health Professions and Lewis College of Business

Major or Degree: MS in Health Informatics, Graduate Certificate in Online Health Informatics, Graduate Certificate in Nursing Analytics

Type of Change: (addition, deletion, change): Change of College

Rationale: The COHP and the LCOB are submitting this change to move the Health Informatics MS degree program from the College of Health Profession (COHP) to the Lewis College of Business (LCOB). This change is necessary because Girmay Berhie, the Chairperson of the Health Informatics MS degree and the two graduate certificate programs (the online data analytics in health care and the nursing informatics certificate programs), has resigned. Because of problems in the long-term sustainability of staffing this program, Dean Prewitt and Dean Avi Mukherjee agreed that the LCOB might be better equipped, in terms of faculty and expertise, to run the program. This change is appropriate and in the best interests of each College, and the University as a whole. The LCOB is teaching 69% of the courses in Fall 2019. It already has health care-related degree programs and has numerous faculty with expertise in the area. The LCOB was involved in developing and introducing the program when it first started, and has helped facilitate a smooth transition of the program for students.

Rationale for Request:

This change form is to change the Health Informatics MS degree program from the College of Health Profession (COHP) to the Lewis College of Business (LCOB).

This change is necessary because Girmay Berhie, the Chairperson of the Health Informatics MS degree and the two graduate certificate programs (the online data analytics in health care and the nursing informatics certificate programs), has resigned. Because of problems with the long-term sustainability of staffing this program, Dean Prewitt and Dean Avi Mukherjee agreed that the LCOB might be better equipped, in terms of faculty and expertise, to run the program. This change is appropriate and in the best interests of each College, and the University as a whole, for the following reasons:

1. In Fall 2019, 69% (27 out of 39 total credit hours) of the courses in the Health Informatics MS degree programs are being taught by the LCOB.
2. The LCOB already has degree programs in fields related to Health Informatics. It has an undergraduate degree in Health Care Management, a MS degree in Health Care Administration, and a Doctor of Management Practice in Nurse Anesthesia (DMPNA). Its proposed DBA program will have a concentration in health care management. Additionally, the LCOB's MBA program has a concentration in health care administration.
3. The LCOB has numerous faculty with expertise in health informatics and related areas (see lists below). Dean Avi Mukherjee actively publishes in the health care area.

Faculty teaching health care courses:

- Dr. Alberto Coustasse, Full Professor
- Dr. Doohee Lee, Full Professor
- Dr. Dennis Emmett, Full Professor
- Dr. Kent Willis, Assistant Professor

Faculty teaching management information systems courses:

- Dr. Rick Weible, Full Professor
- Dr. Anil Gurung, Full Professor
- Dr. Dale Shao, Full Professor

Faculty teaching business analytics and legal environment courses:

- Dr. Lanham, Assistant Professor
- Dr. Subedi, Full Professor
- Dr. Zhang, Assistant Professor
- Dr. Fnu, Assistant Professor
- Casey Baker JD, Assistant Professor
- Olen York JD, Instructor

Faculty teaching health care related management and strategy courses in the DMPNA program:

- Dr. McInerney, Full Professor

- Dr. Emmitt, Full Professor
 - Dr. Lee, Full professor
 - Dr. McClure, Associate Professor
 - Dr. Muslin, Associate Professor
 - Dr. Sollosy, Associate Professor
4. The LCOB was a critical partner in the design, development, and introduction of the MS in Health Informatics program. Faculty from the LCOB designed and taught courses that originally accounted for 31% (12 out of 39) of the degree program.
 5. In response to a request by Dean Michael Prewitt and Provost Jaime Taylor, the LCOB agreed to manage the MS in Health Informatics program starting in Fall 2019. This included recruiting individuals, providing advising support, collecting assessment documentation, and directing accreditation requirements for the program. The investment of LCOB in ensuring a smooth transition without additional resources will benefit the students, Colleges, and University over the long term. The LCOB has met with all students along with Dean Prewitt, and the students are excited about the transition.

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)

(page 82)

College of Health Professions

Dr. Michael Prewitt, Dean

www.marshall.edu/cohp

Athletic Training, M.S.

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Dietetics, M.S.

Exercise Science, M.S.

Health Informatics, M.S.

Nursing, M.S.N.

Physical Therapy, D.P.T.

Public Health, M.S.

Social Work, M.S.W.

Sport Administration, M.S.

Other programs: minors in Exercise Science and Sport Studies, graduate certificates in Family Nurse Practitioner (post master's), Nursing Administration (post master's), Nursing Education (post master's), Dietetic Internship

(page 81)

College of Business

Dr. Avinandan Mukherjee, Dean

www.marshall.edu/cob

Accountancy, M.S.

Business Administration, M.B.A.

Health Care Administration, M.S.

Human Resource Management, M.S.

Doctor of Management Practice in Nurse Anesthesia, D.M.P.N.A.

Other programs: Business Foundations, Graduate Certificate in Management Foundations

(pages 131-134) Current placement of degree program descriptions including the Health Informatics, M.S., the Graduate Certificate in Online Data Analytics in Health Care, and the Graduate Certificate in Nursing Data Analytics.

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.

(page 82)

College of Health Professions

Dr. Michael Prewitt, Dean

www.marshall.edu/cohp

Athletic Training, M.S.

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~~Health Informatics, M.S.~~

Nursing, M.S.N.

Physical Therapy, D.P.T.

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(page 81)

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Human Resource Management, M.S.

Doctor of Management Practice in Nurse Anesthesia, D.M.P.N.A.

Other programs: Business Foundations, Graduate Certificate in Management Foundations

(current pages 131-134) Change in page numbers only, needs to be put under College of Business.

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: College of Health Professions and Lewis College of Business

Contact Person: Dean Prewitt (6-2616) and Dean Mukherjee (6-2659) Phone:

Rationale for Request:

See attached.

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 *Michael Prewitt* Date *8/26/2019*

Registrar *Souya DCG* Date *8/24/19*

College Curriculum Committee Chair *Michael Prewitt* Date *8/26/2019*

(or Dean if no college curriculum committee)

Graduate Council Chair *Lori Howard* Date *9/29/19*

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

Request for Graduate Non-Curricular Changes – Page 2

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

(page 82)

College of Health Professions

Dr. Michael Prewitt, Dean

www.marshall.edu/cohp

Athletic Training, M.S.

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Communication Disorders, M.S.

Dietetics, M.S.

Exercise Science, M.S.

Health Informatics, M.S.

Nursing, M.S.N.

Physical Therapy, D.P.T.

Public Health, M.S.

Social Work, M.S.W.

Sport Administration, M.S.

Other programs: minors in Exercise Science and Sport Studies, graduate certificates in Family Nurse Practitioner (post master's), Nursing Administration (post master's), Nursing Education (post master's), Dietetic Internship

(page 81)

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Other programs: Business Foundations, Graduate Certificate in Management Foundations

(pages 131-134) Current placement of degree program descriptions including the Health Informatics, M.S., the Graduate Certificate in Online Data Analytics in Health Care, and the Graduate Certificate in Nursing Data Analytics.

Request for Graduate Non-Curricular Changes – Page 3

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.

(page 82)

College of Health Professions

Dr. Michael Prewitt, Dean

www.marshall.edu/cohp

Athletic Training, M.S.

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Exercise Science, M.S.

~~Health Informatics, M.S.~~

Nursing, M.S.N.

Physical Therapy, D.P.T.

Public Health, M.S.

Social Work, M.S.W.

Sport Administration, M.S.

Other programs: minors in Exercise Science and Sport Studies, graduate certificates in Family Nurse Practitioner (post master's), Nursing Administration (post master's), Nursing Education (post master's), Dietetic Internship

(page 81)

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Dr. Avinandan Mukherjee, Dean

www.marshall.edu/cob

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Health Care Administration, M.S.

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Human Resource Management, M.S.

Doctor of Management Practice in Nurse Anesthesia, D.M.P.N.A.

Other programs: Business Foundations, Graduate Certificate in Management Foundations

(current pages 131-134) [Change in page numbers only, needs to be put under College of Business.](#)

Request for Graduate Non-Curricular Changes – Page 4

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.

(page 82)

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www.marshall.edu/cohp

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(page 81)

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Dr. Avinandan Mukherjee, Dean

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Doctor of Management Practice in Nurse Anesthesia, D.M.P.N.A.

Other programs: Business Foundations, Graduate Certificate in Management Foundations

(current pages 131-134) Change in page numbers only, needs to be put under College of Business.

Request for Graduate Non-Curricular Changes – Page 5

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

Type of change request:

Change in College offering the degree program.

Department:

Change from College of Health Professions to Lewis College of Business, Division of Management and Health Care Administration

Degree program:

HEALTH INFORMATICS, M.S.
Graduate Certificate in Online Data Analytics in Health Care
Graduate Certificate in Nursing Analytics

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

Fall 2019

Rationale for Request:

This non-curricular change form is to change the Health Informatics MS degree program from the College of Health Profession (COHP) to the Lewis College of Business (LCOB).

This change is needed because Girmay Berhie, the Chairperson of the Health Informatics MS degree, including the two graduate certificate programs – the online data analytics in health care and the nursing informatics certificate programs, has resigned. Because of problems in the long-term sustainability of staffing this program, Dean Prewitt and Dean Avi Mukherjee agreed that the LCOB might be better equipped, in terms of faculty and expertise, to run the program. This change is appropriate and in the best interests of each College, and the University as a whole, for the following reasons:

1. In Fall 2019, 69% (27 out of 39 total credit hours) of the courses in the Health Informatics MS degree programs are being taught by the LCOB.
2. The LCOB already has degree programs in fields related to Health Informatics. It has an undergraduate degree in Health Care Management, a MS degree in Health Care Administration, and a Doctor of Management Practice in Nurse Anesthesia (DMPNA). Its proposed DBA program will have a concentration in health care management. Additionally, the LCOB's MBA program has a concentration in health care administration.
3. The LCOB has numerous faculty with expertise in health informatics and related areas (see lists below). Dean Avi Mukherjee actively publishes in the health care area.

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- Dr. Kent Willis, Assistant Professor

Faculty teaching management information systems courses:

- Dr. Rick Weible, Full Professor
- Dr. Anil Gurung, Full Professor
- Dr. Dale Shao, Full Professor

Faculty teaching business analytics and legal environment courses:

- Dr. Lanham, Assistant Professor
- Dr. Subedi, Full Professor
- Dr. Zhang, Assistant Professor
- Dr. Fnu, Assistant Professor
- Casey Baker JD, Assistant Professor
- Olen York JD, Instructor

Faculty teaching health care related management and strategy courses in the DMPNA program:

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- Dr. Emmitt, Full Professor
 - Dr. Lee, Full professor
 - Dr. McClure, Associate Professor
 - Dr. Muslin, Associate Professor
 - Dr. Sollosy, Associate Professor
4. The LCOB was a critical partner in the design, development, and introduction of the MS in Health Informatics program. Faculty from the LCOB designed and taught courses that originally accounted for 31% (12 out of 39) of the degree program.
 5. In response to a request by Dean Michael Prewitt and Provost Jaime Taylor, the LCOB agreed to manage the MS in Health Informatics program starting in Fall 2019. This included recruiting individuals, providing advising support, collecting assessment documentation, and directing accreditation requirements for the program. The investment of LCOB in ensuring a smooth transition without additional resources will benefit the students, Colleges, and University over the long term. The LCOB has met with all students along with Dean Prewitt, and the students are excited about the transition.

Provost and Senior Vice President for Academic Affairs

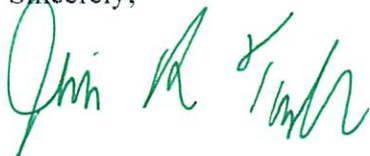
August 20, 2019

Dear Graduate Council:

This letter is to convey my support for the transfer of the MS in Health Informatics program from the College of Health Professions (COHP) to the Lewis College of Business (LCOB). Dean Prewitt (COHP) and Dean Mukherjee (LCOB) are negotiating this transfer because the primary faculty member in the COHP recently retired making it difficult for the COHP to effectively oversee the program. This transfer will enable the LCOB to align its MS in Health Care Administration, BA in Health Care Management, and Doctorate in Nurse Anesthesiology degrees with the Master degree in Health Informatics. It will utilize the LCOB's already established expertise in teaching health care, business analytics, management information systems, and business process and operations courses. Students enrolled in the program will receive staff advising support from the LCOB Associate Director of Graduate Programs and faculty mentoring support from the LCOB Director of the MS in Health Care Administration program. Both have many years of experience interacting with hospitals and health care facilities.

The position vacated in the College of Health Professions (COHP) will return to Academic Affairs, and the LCOB faculty will be responsible for the COHP courses beginning in Fall 2019. Current and new students will receive notification this week about the program transfer. The COHP and the LCOB will hold a meeting with students on Monday August 26 that will provide updated materials regarding advising and faculty/staff contacts in the LCOB.

Sincerely,



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

WE ARE... MARSHALL.

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: **COEPD** Dept/Division: **Leadership Studies**

Contact Person: **Eugenia Damron** Phone: **304-746-8959**

Rationale for Request:

Leadership Studies Department - Introductory Text

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 _____

Registrar _____ Date _____

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

Graduate Council Chair _____ Date _____

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

Request for Graduate Non-Curricular Changes – Page 2

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

Leadership Studies, M.A., Ed.D

Leadership Studies, M.A.

Areas of Emphasis:

Educational Leadership (School Principal)

Leadership Specialist

Educational Leadership, Ed.D.

Graduate Certificates:

School Principalship (post-master's)

Social Service and Attendance

Licensure:

School Principalship

Social Service and Attendance

Supervisor of Instruction

Program Descriptions

The Leadership Studies program offers the following degree programs:

- Master of Arts degree in Leadership Studies (M.A.) with Area of Emphasis in Educational Leadership
- Doctoral Degree in Education (Ed. D.) with a major in Leadership Studies

Leadership Studies also offers professional licensure programs for School Principal, Supervisor of Instruction, School Superintendent, and Social Services and Attendance.

Request for Graduate Non-Curricular Changes – Page 3

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.

Please see attached.

LEADERSHIP STUDIES, M.A., Ed.D.

DEGREE PROGRAMS:

Leadership Studies, M.A.

Areas of Emphasis:

Educational Leadership (School Principal Licensure)

Leadership Specialist

Leadership Studies, Ed.D.

CERTIFICATE/LICENSURE:

School Principalship (post-master's)

Social Services and Attendance (post-bachelor's)

LICENSURE PROGRAMS:

Career and Technical Education School Principal

Supervisor of Instruction

Superintendent

PROGRAM DESCRIPTIONS

The Leadership Studies department offers the following degree programs:

- Master of Arts degree in Leadership Studies (M.A.) with Area of Emphasis in Educational Leadership
- Master of Arts degree in Leadership Studies (M.A.) with Area of Emphasis in Leadership Specialist
- Doctoral Degree in Education (Ed.D.) with a major in Leadership Studies

Leadership Studies also offers professional licensure programs for School Principal, Career and Technical Education School Principal, Supervisor of Instruction, Superintendent, and Social Services and Attendance.

Students follow planned programs of study and must maintain a cumulative Grade Point Average (GPA) of 3.0 on a 4.0 scale during their program. All course grades, taken after admission to a program, original and repeated, will be listed on the student's transcript and will be used in the calculation of GPAs for graduation. At the time of graduation, all coursework must meet the seven-year time limit requirement.

Leadership Studies, M.A., Ed.D

Leadership Studies, M.A.

—Areas of Emphasis:

——Educational Leadership (School Principal)

——Leadership Specialist

Educational Leadership, Ed.D.

Graduate Certificates:

—School Principalship (post-master's)

—Social Service and Attendance

Licensure:

—School Principalship

—Social Service and Attendance

—Supervisor of Instruction

Program Descriptions

—The Leadership Studies program offers the following degree programs:

- Master of Arts degree in Leadership Studies (M.A.) with Area of Emphasis in Educational Leadership**
- Doctoral Degree in Education (Ed. D.) with a major in Leadership Studies**

—Leadership Studies also offers professional licensure programs for School Principal, Supervisor of Instruction, School Superintendent, and Social Services and Attendance.

Request for Graduate Non-Curricular Changes – Page 4

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.

LEADERSHIP STUDIES, M.A., Ed.D.

DEGREE PROGRAMS:

Leadership Studies, M.A.

Areas of Emphasis:

Educational Leadership (School Principal Licensure)

Leadership Specialist

Leadership Studies, Ed.D.

CERTIFICATE/LICENSURE:

School Principalship (post-master's)

Social Services and Attendance (post-bachelor's)

LICENSURE PROGRAMS:

Career and Technical Education School Principal

Supervisor of Instruction

Superintendent

PROGRAM DESCRIPTIONS

The Leadership Studies department offers the following degree programs:

- Master of Arts degree in Leadership Studies (M.A.) with Area of Emphasis in Educational Leadership
- Master of Arts degree in Leadership Studies (M.A.) with Area of Emphasis in Leadership Specialist
- Doctoral Degree in Education (Ed.D.) with a major in Leadership Studies

Leadership Studies also offers professional licensure programs for School Principal, Career and Technical Education School Principal, Supervisor of Instruction, Superintendent, and Social Services and Attendance.

Students follow planned programs of study and must maintain a cumulative Grade Point Average (GPA) of 3.0 on a 4.0 scale during their program. All course grades, taken after admission to a program, original and repeated, will be listed on the student's transcript and will be used in the calculation of GPAs for graduation. At the time of graduation, all coursework must meet the seven-year time limit requirement.

Request for Graduate Non-Curricular Changes – Page 5

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

Type of change request: Leadership Studies Department - Introductory Text

Department: Leadership Studies

Degree program: Introductory Catalog Text for Leadership Studies Department

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

Graduate Intent to Plan--Major or Degree

NOTE: This "Intent to Plan" form must be submitted and go through the approval process BEFORE you submit the form titled, "Request for Graduate Addition, Deletion or Change of a 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. If attachments are 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: ScienceDept/Division: Forensic SciencesContact Person: John SammonsPhone: 304-696-7241New Degree Program Cyber Forensics & Defense

Effective Term/Year

Fall 20

☐

Spring 20

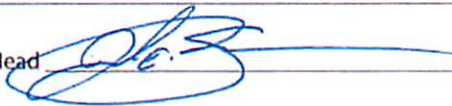

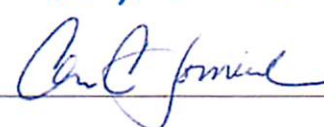
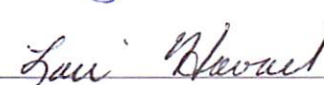
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Summer 20

☐

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 <u>8-30-19</u>
College Curriculum Chair 	Date <u>8-30-19</u>
College Dean 	Date <u>30 August 2019</u>
Graduate Council Chair 	Date <u>11/25/19</u>
Provost/VP Academic Affairs _____	Date _____
Presidential Approval _____	Date _____
Board of Governors Approval _____	Date _____

Graduate Intent to Plan--Major or Degree-Page 2

Please provide a rationale for new degree program: (May attach separate page if needed)

See the attached.

1. 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.

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 the attached.

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

Graduate Intent to Plan--Major or Degree-Page 3

5. New Catalog Description

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

See the attached.

Graduate Intent to Plan--Major or Degree-Page 4

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

Department:

New Major or Degree:

Credit Hours:

Rationale:

Department: Forensic Sciences

New Major or Degree: Cyber Forensics and Defense

Credit Hours: 33

Rationale:

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. 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. 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 proposed program in Cyber Forensics and defense will help fill the critical shortage of skilled cybersecurity professionals, compliment the existing CITE MS in Cybersecurity, and help attract students to Marshall University.

Marshall University

College of Science

School of Forensic and Criminal Justice Sciences

Master of Science in Cyber Forensics and Defense

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 rationale 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 practitioner 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 (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 expects 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 its 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

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

and

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 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	3
DFIA/CFD Technical Elective	3	CYBR 542 Cyber Operations	3
		CFD 665 – Cybersecurity of ICS	3
Total Credit Hours		6	Total Credit Hours
			9

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

Summer 1		Summer 2	
Courses	Hrs	Courses	Hrs
CFD 675/670 – Adv Research/Practicum	3	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
CFD 650 – Adv Cyber Defense	3	CFD 690 - Capstone	3
CFD 630 – Cyber Threat Intelligence	3	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 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 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 began 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 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.

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: Connecticut, Florida, Indiana, Kentucky, Maryland, North Carolina, New York,

Ohio, Pennsylvania, 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 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 colleges 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 University Forensic 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 which 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, competing 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.

Library Resources and Instructional Materials: Evaluate the adequacy of existing library resources and 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 anticipate 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.

Facilities 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 its 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 anticipated 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 its 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 \$1,080,201. 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
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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

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

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:

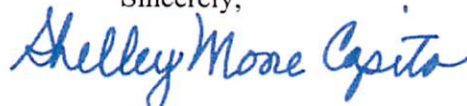
I write in regards to your ongoing efforts to support a world-class Master of Science degree in cybersecurity at Marshall University. In a world of ever-increasing connectivity and reliance on technology, it is critical that we continue to innovate and train the next generation of cybersecurity professionals.

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
United States Senator

JOE MANCHIN III
WEST VIRGINIA

SUITE 306
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

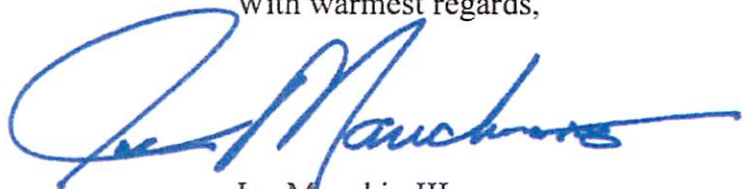
Dear Mr. Sammons,

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,

A handwritten signature in black ink that reads "Brandon Bailey".

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

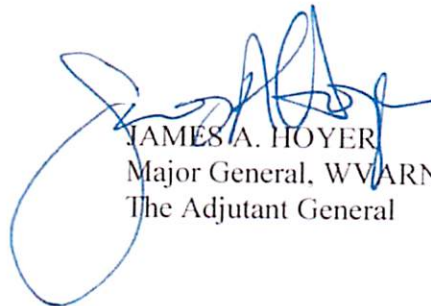
NGWV-TAG

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 successfully 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.

A handwritten signature in black ink, appearing to read 'Nick Drehel, Jr.', with a stylized, cursive script.

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.

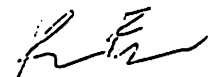
Marshall University is currently planning a master's degree in digital forensics and information assurance (DFIA), which would be extremely valuable to future Marshall students and professionals in the field of DFIA. During my undergraduate experience at Marshall University, I gained knowledge and experience 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,

A handwritten signature in black ink, appearing to read 'R. Fyffe', written in a cursive style.

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 discovery is a fascinating 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!

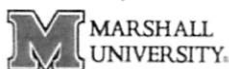
/s/

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



ROBERT C. BYRD INSTITUTE

1050 Fourth Avenue
Huntington, WV 25701



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
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

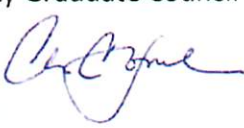
Old Main 200
One John Marshall Drive
Huntington, WV 25755
Tel: 304-696-6690
Fax: 304-696-6612
marshall.edu

BE PROUD.
BE A SON OR DAUGHTER OF MARSHALL.



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

BE PROUD.
BE A SON OR DAUGHTER OF MARSHALL.



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

BEPROUD.
BE A SON OR DAUGHTER OF MARSHALL.

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



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



Dr. Jaime Taylor
Provost and Senior Vice President for Academic Affairs
Marshall University



Mr. Mark Robinson
Senior Vice President for Finance and Chief Financial Officer
Marshall University

WE ARE... MARSHALL.

One John Marshall Drive • Huntington, West Virginia 25755-2500 • Tel 304/696-2372 • Fax 304/696-3243
A State University of West Virginia • An Affirmative Action/Equal Opportunity Employer

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: COEPD

Dept/Division: Leadership Studies

Alpha Designator/Number: LS 604

☒ Graded ☐ CR/NC

Contact Person: Eugenia Damron

Phone: 6-8959

NEW COURSE DATA:

New Course Title: CTE Leadership Studies I

Alpha Designator/Number: L S 6 0 4

Title Abbreviation: C T E L e a d e r s h i p S t u d i e s I

(Limit of 25 characters and spaces)

Course Catalog Description:
(Limit of 30 words)

Leadership preparation for career and technical education programs located at technical centers and/or high schools. Students will study career and technical education policies, funding sources, and accountability within Simulated Workplace.

Co-requisite(s): None

First Term to be Offered: Fall 2019

Prerequisite(s): Completing an LS program

Credit Hours: 3

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

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

Dept. Chair/Division Head <u>Eugenia Damron</u>	Date <u>8-1-19</u>
Registrar <u>Sonya L C G</u> <u>130401</u>	Date <u>8-15-19</u>
College Curriculum Chair <u>[Signature]</u>	Date <u>8-28-19</u>
Graduate Council Chair <u>[Signature]</u>	Date <u>9/29/19</u>

Request for Graduate Course Addition - Page 2

College: COEPD

Department/Division: Leadership Studies

Alpha Designator/Number: LS 604

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.

Ms. Tara Combs

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

Not Applicable

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

Not Applicable

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

Not Applicable

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

Not Applicable

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

See attached document

Request for Graduate Course Addition - Page 3

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

See attached document

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

Current research and policies will be used in lieu of a text.

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

Fully asynchronous online Blackboard course

Request for Graduate Course Addition - Page 4

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

Refer to course outline

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

Not Applicable

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

Bibliography:

Website: Perkins

<https://www.careertech.org/perkins>

Website: State Policies

<https://wvde.state.wv.us/policies/>

Simulated Workplace/ Business and Industry Reviews:

<https://wvde.us/governors-economic-initiatives/simulated-workplace/>

Accountability:

<https://wvde.us/governors-economic-initiatives/technical-assessment/>

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: Leadership Studies

Course Number and Title: LS 604 "CTE Leadership Studies I"

Catalog Description: Leadership preparation for career and technical education programs located at technical centers and/or high schools. Students will study career and technical education policies, funding sources, and accountability within Simulated Workplace.

Prerequisites: Completion of Leadership Studies program

First Term Offered: Fall 2019

Credit Hours: 3

Course Objectives/Outcomes

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will examine the Federal Perkins policy.	Identify and analyze federal career and technical education expectations.	Module 1
Students will examine West Virginia's career and technical education policies.	Identify and analyze state career and technical education expectations.	Module 2
Students will understand Simulated Workplace processes.	Students will plan and design a Simulated Workplace classroom and environment.	Module 3
Students will understand the accountability roles and responsibilities of a CTE administrator.	Students will research and review the various accountability platforms.	Module 4
Students will understand the daily actions of a CTE administrator at a CTE facility.	Students will complete six hours of observations/shadowing a current CTE administrator or Director.	Field Experience 1
Students will understand the business and industry company review process.	Students will complete a business and industry review of a local Simulated Workplace company.	Field Experience 2

Course Outline

Modules	Points	Title	Submission	Due Date
Sign on		Introduction	Discussion Board	9.4
Module 1	30	Federal CTE Perkins	Assignment Box	9.18
Module 2	30	CTE State Policies	Assignment Box	10.2
Module 3	30	Simulated Workplace	Assignment Box	10.16
Module 4	30	CTE Accountability	Assignment Box	10.30
Field Experience 1	50	CTE Observation	Discussion/Assignment Box	11.20
Field Experience 2	50	B&I Review	Discussion/Assignment Box	12.11



Marshall University
College Of Education and Professional Development
CTE Leadership Studies

Course

LS 604 CTE Leadership Studies I

Term:

Fall 2019

Course Description

Leadership preparation for career and technical education programs located at technical centers and/or high schools. This course will educate the students about the unique factors involved with career and technical education. Students will study career and technical education policies, funding sources, and accountability within Simulated Workplace.

Credits

3 Credit Hours

Prerequisites

Completion of a Leadership Studies program

Term/Year

Fall 2019

Format (and Meeting Days/Times/Location)

This course format is 100% asynchronous online course (OC). This is a 100% online course delivered through Blackboard with no required synchronous meetings. Current research and policies will be used in lieu of a textbook. This course should be completed in one fall term.

Academic Calendar

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

Instructor

Ms. Tara Combs

Contact Information

Marshall Email: tcombs@k12.wv.us

Preferred Communication Method and Expected Response Time

You may contact me on the blackboard site. If you need immediate assistance please email me at tcombs@k12.wv.us

About Me

I currently work as a Coordinator for the West Virginia Department of Education in the Division of Career and Technical Education and Governor's Economic Initiatives. I previously served as the Director of Career and Technical Education for Cabell County Schools. Prior to my directorship I worked as an academic coordinator for CTE academies at a Career and Technical Center. I have contributed 11 years to career and technical education in West Virginia.

I find it rewarding to assist administrators with understanding and properly operating career and technical education programs in West Virginia schools. I hope to instill my passion for CTE onto you, as I have found it to be the most beneficial asset to education.

Required and/or Recommended Texts and Materials

Website: Perkins	https://www.careertech.org/perkins
Website: State Policies	https://wvde.state.wv.us/policies/
Simulated Workplace/ Business and Industry Reviews	https://wvde.us/governors-economic-initiatives/simulated-workplace/
Accountability	https://wvde.us/governors-economic-initiatives/technical-assessment/

Technology and Technical Skill Requirements

- Students must be proficient in the use of computers, the Internet, browsers, Microsoft Office Word, and other common applications.
- For minimum computer requirements, please see [Student Resources](#) and [IT: Recommended Hardware](#) (URLs: <http://www.marshall.edu/muonline/student-resources/> and <http://www.marshall.edu/it/rechardware/>).
- 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 [delete any you do not use]: 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.
- 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 may be required to submit assignments as Microsoft Word documents (.docx), using the most recent Microsoft Office suite. Office 365 is available free to students enrolled at Marshall University. 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.
- Must be able to record a video of you performing some assignments.
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- Marshall Information Technology (IT) Service Desk (Help Desk) (URL: <http://www.marshall.edu/it/departments/it-service-desk/students/>)
 - Huntington: (304) 696-3200
 - South Charleston: (304) 746-1969
 - Email: itservicedesk@marshall.edu

Course Purpose

This course is designed to develop competencies necessary for Career Technical Education (CTE) administrative positions while understanding of basic principles and issues within CTE curriculum planning, development, implementation, organization, and evaluation. This course focuses on understanding local workforce needs, accountability needs, current CTE state and federal requirements, and instructional leadership within a Simulated Workplace environment.

Course Objectives/Outcomes

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will examine the Federal Perkins policy.	Identify and analyze federal career and technical education expectations.	Module 1
Students will examine West Virginia's career and technical education policies.	Identify and analyze state career and technical education expectations.	Module 2
Students will understand Simulated Workplace processes.	Students will plan and design a Simulated Workplace classroom and environment.	Module 3
Students will understand the accountability roles and responsibilities of a CTE administrator.	Students will research and review the various accountability platforms.	Module 4
Students will understand the daily actions of a CTE administrator at a CTE facility.	Students will complete six hours of observations/shadowing a current CTE administrator or Director.	Field Experience 1
Students will understand the business and industry company review process.	Students will complete a business and industry review of a local Simulated Workplace company.	Field Experience 2

Course Requirements/Due Dates/Course Schedule

Modules	Points	Title	Submission	Due Date
Sign on		Introduction	Discussion Board	9.4
Module 1	30	Federal CTE Perkins	Assignment Box	9.18
Module 2	30	CTE State Policies	Assignment Box	10.2
Module 3	30	Simulated Workplace	Assignment Box	10.16
Module 4	30	CTE Accountability	Assignment Box	10.30
Field Experience 1	50	CTE Observation	Discussion/Assignment Box	11.20
Field Experience 2	50	B&I Review	Discussion/Assignment Box	12.11

Online Etiquette Expectations

ACADEMIC HONESTY:

Academic honesty is expected in all class-related endeavors, and students are expected to be honest in all academic work. Penalties for plagiarism or other forms of dishonesty can be severe and may include course failure, dismissal from the program or from the University. Refer to the Graduate Catalog for further information:

<https://www.marshall.edu/mugc/CatalogS2005/index.html>

The university policy may be found at Academic Dishonesty Policy and Report (requires Adobe Acrobat)

<http://www.marshall.edu/academicaffairs/Academic%20Dishonesty%20Policy.pdf>

Grading Policy

FIELD EXPERIENCES: This course has required field experiences. This is an important component of the courses, as these activities provide the “bridge” from theory to practice; they provide opportunities for hands-on experience. The field experiences for LS630 include: 1) CTE Observations; 2) Business and Industry Review. (NOTE: Students MUST complete all field experience activities and reflective papers in order to earn a course grade.)

Each field experience requires a **reflective section** in which the student considers the nature of the field experience, its relative value to his/her preparation as an administrator, difficulties in accomplishing the task, and other relative and pertinent thoughts. Graduate level writing (without spelling and/or grammar errors) and analysis are expected.

Grading Scale

93-100	A
85-92	B
75-84	C

Rubrics for each Field Experience are available on Blackboard.

A GRADE OF "INCOMPLETE"

A grade of "Incomplete" will not automatically be given to a student who does not complete all course requirements. Incomplete grades will only be given to students who become ill or face some other type of emergency during the term and therefore cannot complete the course, and have completed at least half of the course. Incompletes will not be given to those who simply fail to drop the course by the appropriate date. The instructor determines the length of time the student has to complete missing class work, with a maximum of one year from the end of the course. In most cases, however, extensions of time granted are equal to one term. It is a student's responsibility to contact the Instructor during the course if a potential problem is anticipated in completing the course.

Late Work Policy

Due dates are posted on the Assignment Chart. All assignments are expected to be posted by 8 am on the due date, late assignments will be penalized with a loss of 2 points per day.

While our faculty sympathize when students have difficulty meeting an assignment or activity due date, many problems are created when students miss deadlines. (1) The student's work piles up, reducing the quality of both the learning experience and the finished product. (2) Faculty schedules are carefully planned to provide time for meaningful feedback to students and late work from students is not something for which they plan. (3) Late work from students can reduce the momentum and meaning of the course for everyone in it. (4) This program is designed to prepare practicing leaders who must regularly meet deadlines. Procrastination as a leader is viewed as incompetence by subordinates and supervisors.

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3. There will be no chance for revision of any assignment that is submitted after the due date.

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5. Sometimes, an instructor may decide to return an assignment for revision. Any assignment returned for revision is due to be resubmitted 1 week (7 days) after it is returned or marked unacceptable.

Anticipated Response Time for Grading and Feedback

I try to grade items as soon as they come in. I grade in the order work is received. You can expect a response within one week of submission. If you email me on blackboard I will respond as soon as I log into the class. If you email me at tcombs@k12.wv.us I will respond as soon as I'm available.

Evaluation Criteria

Deadlines for assignments can be found on the course calendar and on the course assignment chart. Students' learning will be assessed on the completion and quality of assignments and field experiences.

University Policies

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

- Academic Honesty
- 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

Students with Disabilities

Marshall University is committed to making all programs, services, and activities fully accessible to students with disabilities. The purpose of the Office of Disability Services Program is to provide the educational and physical accessibility support necessary for students to achieve their academic goals and to promote as much independence as possible on the part of the students with disabilities. Students with disabilities who require accommodations must contact the Office of Disability Services (URL: <http://www.marshall.edu/disability/>).

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/>).

Bibliography

Website: Perkins	https://www.careertech.org/perkins
Website: State Policies	https://wvde.state.wv.us/policies/
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Accountability	https://wvde.us/governors-economic-initiatives/technical-assessment/

REGISTRAR'S OFFICE
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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: COEPDDept/Division: Leadership StudiesAlpha Designator/Number: LS 608☒ Graded ☐ CR/NCContact Person: Eugenia DamronPhone: 6-8959

NEW COURSE DATA:

New Course Title: CTE Leadership Studies IIAlpha Designator/Number: L S 6 0 8Title Abbreviation: C T E L e a d e r s h i p S t u d i e s I I

(Limit of 25 characters and spaces)

Course Catalog Description:
(Limit of 30 words)

Leadership preparation for career and technical education programs located at technical centers and/or high schools. Students will study career/technical education initiatives, importance of advisory committees, and economics of Simulated Workplaces.

Co-requisite(s): NoneFirst Term to be Offered: Spring 2020Prerequisite(s): LS 604Credit Hours: 3

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

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

Dept. Chair/Division Head <u>Eugenia Damron</u>	Date <u>8-1-19</u>
Registrar <u>Sonja [Signature]</u> <u>130401</u>	Date <u>8-15-19</u>
College Curriculum Chair <u>[Signature]</u>	Date <u>8-28-19</u>
Graduate Council Chair <u>Luis [Signature]</u>	Date <u>9/29/19</u>

Request for Graduate Course Addition - Page 2

College: COEPD

Department/Division: Leadership Studies

Alpha Designator/Number: LS 608

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.

Ms. Tara Combs

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

Not Applicable

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

Not Applicable

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

Not Applicable

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

Not Applicable

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

See attached document

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

See attached document

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

Current research and policies will be used in lieu of a text.

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

Fully asynchronous online Blackboard course

Request for Graduate Course Addition - Page 4

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

Refer to course outline

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

Not Applicable

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

Bibliography:

Article website -- Marshall Access

SWP Safety Manual <https://sway.office.com/ENhEv3j3OC1SXywE?ref=Link>

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: Leadership Studies

Course Number and Title: LS 608 "CTE Leadership Studies II"

Catalog Description: Leadership preparation for career and technical education programs located at technical centers and/or high schools. Students will study career/technical education initiatives, importance of advisory committees, and economics of Simulated Workplaces.

Prerequisites: LS 604

First Term Offered: Spring 2020

Credit Hours: 3

Course Objectives/Outcomes

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will identify the benefits of an effective advisory board and its impact on CTE and economic growth.	Students will research the various types of advisory board members beneficial to CTE programs and create an event that Simulated Workplace students are able to interact with business and industry.	Module 1
Students will understand the importance of establishing a professional working relationship among CTE centers, county high schools, and the local community.	Students will develop a marketing plan to promote Simulated Workplace.	Module 2
Students will analyze and interpret strategies to leverage CTE funds that impacts the community.	Students will develop an innovative community impact project.	Module 3
Students will understand how to implement and evaluate meaningful Simulated Workplaces.	Students will complete safety training as it pertains to Simulated Workplace companies.	Module 4
Students will identify strengths of advisory boards and Simulated Workplace company meetings.	Students will attend an advisory board meeting.	Field Experience 1
Students will understand the significance of Simulated Workplace company meetings.	Students will attend a Simulated Workplace company meeting.	Field Experience 2

Course Outline

Modules	Points	Title	Submission	Due Date
Sign on		Introduction	Discussion Board	1.22
Module 1	25	Advisory Committees	Assignment Box	2.5
Module 2	25	Marketing CTE	Assignment Box	2.19
Module 3	25	Community Impact	Assignment Box	3.4
Module 4	25	SWP Safety	Assignment Box	3.18
Field Experience 1	50	Advisory Meeting	Discussion/Assignment Box	4.8
Field Experience 2	50	SWP Company Meeting	Discussion/Assignment Box	4.29



Marshall University
College Of Education and Professional Development
CTE Leadership Studies

Course

LS 608 CTE Leadership Studies II

Term:

Spring 2020

Course Description

Leadership preparation for career and technical education programs located at technical centers and/or high schools. This course will educate the students about the unique factors involved with career and technical education. Students will study career and technical education initiatives, the importance of advisory committees, and the economic impact of Simulated Workplaces.

Credits

3 Credit Hours

Prerequisites

LS 604

Term/Year

Spring 2020

Format (and Meeting Days/Times/Location)

This course format is 100% asynchronous online course (OC). This is a 100% online course delivered through Blackboard with no required synchronous meetings. Current research and policies will be used in lieu of a textbook. This course should be completed in one spring term.

Academic Calendar

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

Instructor

Ms. Tara Combs

Contact Information

Marshall Email: tcombs@k12.wv.us

Preferred Communication Method and Expected Response Time

You may contact me on the blackboard site. If you need immediate assistance please email me at tcombs@k12.wv.us

About Me

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Required and/or Recommended Texts and Materials

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Course Purpose

This course is designed to develop competencies necessary for Career Technical Education (CTE) administrative positions while understanding of basic principles and issues within CTE curriculum planning, development, implementation, organization, and evaluation. This course focuses on understanding advisory committees, marketing CTE programs and their economic impact potential, Simulated Workplace safety and Simulated Workplace company meetings.

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FIELD EXPERIENCES: This course has required field experiences. This is an important component of the courses, as these activities provide the "bridge" from theory to practice; they provide opportunities for hands-on experience. The field experiences for LS630 include: 1) CTE Observations; 2) Business and Industry Review. (NOTE: Students MUST complete all field experience activities and reflective papers in order to earn a course grade.)

Each field experience requires a **reflective section** in which the student considers the nature of the field experience, its relative value to his/her preparation as an administrator, difficulties in accomplishing the task, and other relative and pertinent thoughts. Graduate level writing (without spelling and/or grammar errors) and analysis are expected.

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Rubrics for each Field Experience are available on Blackboard.

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- Academic Rights and Responsibilities of Students
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Bibliography

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Certificate/Licensure in Social Service and Attendance

This program provides the required coursework for Social Service and Attendance licensure. The program is designed for educational personnel who hold a valid license, or for social workers who hold at least a bachelor's degree.

Admission Requirements – Social Service and Attendance Licensure/Graduate Certificate Program

An applicant should apply as a Certificate/Professional Development student and select on the application form "Social Service and Attendance."

- Transcripts from the student's undergraduate institution(s) must be provided to Graduate Admissions at the time of application.
- Each candidate for the Social Services and Attendance Worker licensure must meet all admission requirements as a degree student. Scores from the Graduate Record Examination, the Miller Analogies Test, or a previous master's degree from an accredited institution must be on file at the time of admission. Students must score at least a 40 (tested prior to October 2004) or at least a 392 (after October, 2004) on the Miller Analogies Test. Students who take the Graduate Record Examination must have a combined score of 800 verbal and quantitative (tested prior to November, 2011) or at least a 286 (November, 2011 or after).
- All students follow a planned program of study and must maintain a cumulative Grade Point Average (GPA) of 3.0.

Program of Studies 12 hrs.

COUN	670	Interventions for Current Issues in School Counseling OR
COUN	673	Counseling Children, Adolescents, and Parents
LS	693	School Law for Support Personnel
LS	691	The Attendance Director
LS	692	Internship: School Social Services

Licensure in Supervisor of Instruction

Marshall University's program is currently being revised. Contact the Leadership Studies program for information.

School Superintendent Licensure

The Graduate Certificate in Superintendency is a 15-hour program that leads to licensure as a school superintendent in West Virginia. It consists of coursework that helps prepare candidates to provide district-level leadership to a school system, including coursework in leadership principles, school law and finance, and other systems level issues in education.

The prerequisites for admission are a master's degree in educational leadership or the equivalent, from a CAEP-accredited institution, a minimum 3.0 graduate GPA, and a valid principal's license.

The course requirements are as follows:

LS	700	Superintendency (3)
LS	710	Principles of Leadership (3)
LS	720	Public School Finance (3)
LS	740	Public School Law (3)
LS	771	School District Leadership (3)

→ CTE School Principal - end of Leadership Studies Programs
LITERACY EDUCATION, M.A.

Program Description

The Master of Arts in Literacy Education consists of six foundation courses, four advanced courses, two of which are practicum experiences, and two elective courses, for a total of 36 credit hours.

Admission Requirements

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

In addition, applicants must have:

- An undergraduate Grade Point Average (GPA) of 2.7 or higher on a 4.0 scale for all previously completed undergraduate university work;
- A valid WV teaching certificate;

(This catalog language should be added at the end of the Leadership Studies' program information; after graduate certificate/licensure programs)

ENDORSEMENTS IN LEADERSHIP STUDIES

Career and Technical Education School Principal

The following courses provide the coursework required for career and technical education school principals in West Virginia. Students who have principal administrative licensure, pre-kindergarten through adult, in West Virginia, are eligible to complete these courses. West Virginia endorsement also requires completion of a workshop with the West Virginia Department of Education after the courses are completed.

Applicants who have a master's degree from Marshall University or are currently in graduate programs at Marshall University, need not apply and can contact the Leadership Studies department to register for classes. Applicants who have not been admitted to a graduate program at Marshall should follow the graduate admission process in this catalog and on the Marshall website at www.marshall.edu/admissions/apply. Applicants should apply on the graduate application and select "Professional Development: Leadership Studies" on the application form.

Coursework for Career and Technical Education School Principal -- 6 hours

LS 604 CTE Leadership Studies I

LS 608 CTE Leadership Studies II

Request for Graduate Course Change

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

College: COEPD Dept/Division: Leadership Studies Current Alpha Designator/Number: LS 660

Contact Person: Eugenia Damron Phone: 6-8959

CURRENT COURSE DATA:

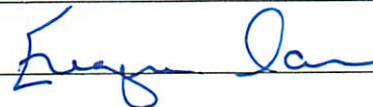



Course Title: Internship-School Management 2

Alpha Designator/Number: L S 6 6 0

Title Abbreviation: I n t e r n s h i p - S c h o o l M a n a g e m

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

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

Dept. Chair/Division Head <u></u>	Date <u>8-1-19</u>
Registrar <u></u>	Date <u>8-15-19</u>
College Curriculum Chair <u></u>	Date <u>8-28-19</u>
Graduate Council Chair <u></u>	Date <u>9/29/19</u>

Request for Graduate Course Change - Page 2

College: COEPD

Department/Division: Leadership Studies

Alpha Designator/Number: LS 660

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

Change in CATALOG TITLE: ☒ YES ☐ NO

From (limited to 30 characters and spaces)

To

If Yes, Rationale

Change in COURSE ALPHA DESIGNATOR:

From: To: ☐ YES ☒ NO

If Yes, Rationale

Change in COURSE NUMBER: ☐ YES ☒ NO

From: To:

If Yes, Rationale

Change in COURSE GRADING

From ☐ Grade To ☐ Credit/No Credit

Rationale

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

From

To

If Yes
Rationale

Request for Graduate Course Change - Page 3

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

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

From

To

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

From

To

Rationale

Request for Graduate Course Change-Page 4

College: COEPD

Department: Leadership Studies

Course Number/Title LS 660/Capstone: School Management

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

NOT APPLICABLE

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

NOT APPLICABLE

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

NOT APPLICABLE

Request for Graduate Course Change - Page 5

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

COURSE DESCRIPTION CHANGE

Department:

Course Number and Title:

Rationale:

Course Description (old)

Course Description: (new)

Catalog Description:

COURSE NUMBER CHANGE

Department:

Current Course Number/Title:

New Course Number:

Rationale:

Catalog Description:

Credit hours:

COURSE TITLE CHANGE

Department:

Current Course Number/Title:

New Course Title:

Rationale:

Catalog Description:

COURSE TITLE CHANGE

Department: Leadership Studies

Current Course Number/Title: LS 660/Internship-School Management 2

New Course Title: Capstone: School Management

Rationale: Implement changes consistent with expectations of new accrediting body

Catalog Description: (No changes)

REGISTRAR'S OFFICE
15 AUG '19 AM 10:51

Request for Graduate Course Change

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

College: COEPD

Dept/Division: Leadership Studies

Current Alpha Designator/Number: LS 685

Contact Person: Eugenia Damron

Phone: 6-8959

CURRENT COURSE DATA:

Course Title: Internship: Portfolio Assessment

Alpha Designator/Number: L S 6 8 5

Title Abbreviation: I n t e r n : P o r t f o l i o A s s e s s m

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

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

Dept. Chair/Division Head <u>Eugenia Damron</u>	Date <u>8-1-19</u>
Registrar <u>Sonya L. C. J.</u>	Date <u>8-15-19</u>
College Curriculum Chair <u>[Signature]</u>	Date <u>8-28-19</u>
Graduate Council Chair <u>[Signature]</u>	Date <u>9/29/19</u>

Request for Graduate Course Change - Page 2

College: COEPD

Department/Division: Leadership Studies

Alpha Designator/Number: LS 685

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

Change in CATALOG TITLE: ☒ YES ☐ NO

From I n t e r n s h i p : P o r t f o l i o A s s e s s m e (limited to 30 characters and spaces)

To C a p s t o n e : P o r t f o l i o A s s e s s m e n t

If Yes, Rationale Implement changes consistent with expectations of new accrediting body

Change in COURSE ALPHA DESIGNATOR:

From: To: ☐ YES ☒ NO

If Yes, Rationale

Change in COURSE NUMBER: ☐ YES ☒ NO

From: To:

If Yes, Rationale

Change in COURSE GRADING

From ☐ Grade To ☐ Credit/No Credit

Rationale

N/A

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

From

To

If Yes
Rationale

Request for Graduate Course Change - Page 3

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

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

From

To

Change in COURSE CONTENT: ☐ YES ☒ NO

From

To

Rationale

Request for Graduate Course Change-Page 4

College: COEPD

Department: Leadership Studies

Course Number/Title LS 685/Capstone: Portfolio Assessment

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

NOT APPLICABLE

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

NOT APPLICABLE

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

NOT APPLICABLE

Request for Graduate Course Change - Page 5

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

COURSE DESCRIPTION CHANGE

Department:

Course Number and Title:

Rationale:

Course Description (old)

Course Description: (new)

Catalog Description:

COURSE NUMBER CHANGE

Department:

Current Course Number/Title:

New Course Number:

Rationale:

Catalog Description:

Credit hours:

COURSE TITLE CHANGE

Department:

Current Course Number/Title:

New Course Title:

Rationale:

Catalog Description:

COURSE TITLE CHANGE

Department: Leadership Studies

Current Course Number/Title: LS 685/Internship: Portfolio Assessment

New Course Title: Capstone: Portfolio Assessment

Rationale: Implement changes consistent with expectations of new accrediting body

Catalog Description: (No changes)

REGISTRAR'S OFFICE
15 AUG '19 AM 10:51

Request for Graduate Course Change

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

College: COEPD Dept/Division: Leadership Studies Current Alpha Designator/Number: LS 692

Contact Person: Eugenia Damron Phone: 6-8959

CURRENT COURSE DATA:

Course Title: Internship: School Social Services

Alpha Designator/Number: L S 6 9 2

Title Abbreviation: I n t e r n : S c h S o c i a l S e r v i c e

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

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

Dept. Chair/Division Head <u>Eugenia Damron</u>	Date <u>8-1-19</u>
Registrar <u>Sydney C. G.</u>	Date <u>8-15-19</u>
College Curriculum Chair <u>[Signature]</u>	Date <u>8-28-19</u>
Graduate Council Chair <u>Lauri Howard</u>	Date <u>9/29/19</u>

Request for Graduate Course Change - Page 2

College: COEPD

Department/Division: Leadership Studies

Alpha Designator/Number: LS 692

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

Change in CATALOG TITLE: ☒ YES ☐ NO

From I n t e r n s h i p : S c h o o l S o c i a l S e r v (limited to 30 characters and spaces)

To C a p s t o n e : S c h o o l S o c i a l S e r v i c e s

If Yes, Rationale Implement changes consistent with expectations of new accrediting body

Change in COURSE ALPHA DESIGNATOR:

From: To: ☐ YES ☒ NO

If Yes, Rationale

Change in COURSE NUMBER: ☐ YES ☒ NO

From: To:

If Yes, Rationale

Change in COURSE GRADING

From ☐ Grade To ☐ Credit/No Credit

Rationale N/A

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

From

To

If Yes
Rationale

Request for Graduate Course Change - Page 3

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

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

From

To

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

From

To

Rationale

Request for Graduate Course Change-Page 4

College: COEPD

Department: Leadership Studies

Course Number/Title LS 692/Capstone: School Social Services

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

NOT APPLICABLE

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

NOT APPLICABLE

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

NOT APPLICABLE

Request for Graduate Course Change - Page 5

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

COURSE DESCRIPTION CHANGE

Department:

Course Number and Title:

Rationale:

Course Description (old)

Course Description: (new)

Catalog Description:

COURSE NUMBER CHANGE

Department:

Current Course Number/Title:

New Course Number:

Rationale:

Catalog Description:

Credit hours:

COURSE TITLE CHANGE

Department:

Current Course Number/Title:

New Course Title:

Rationale:

Catalog Description:

COURSE TITLE CHANGE

Department: Leadership Studies

Current Course Number/Title: LS 692/Internship: School Social Services

New Course Title: Capstone: School Social Services

Rationale: Implement changes consistent with expectations of new accrediting body

Catalog Description: (No changes)

REGISTRAR'S OFFICE
15 AUG '19 AM 10:51

Request for Graduate Course Change

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2. E-mail one identical PDF copy to the Graduate Council Chair. If attachments included, please merge into a single file.
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College: COEPD

Dept/Division: Leadership Studies

Current Alpha Designator/Number: LS 756

Contact Person: Dr. Bobbi Nicholson

Phone: 6-2094

CURRENT COURSE DATA:

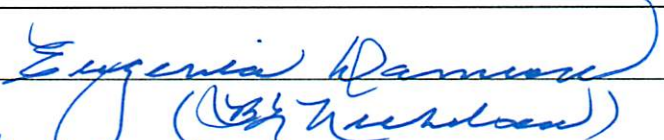

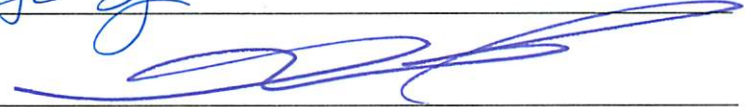

Course Title: Current Issues in Higher Education

Alpha Designator/Number: L S 7 5 6

Title Abbreviation: C u r r e n t I s s u e s i n H i g h e r

1. Complete this **five** page form in its entirety and route through the departments/committees below for changes to a course involving: course title, alpha designator, course number, course content, credit hours, or catalog description.
2. If this change will affect other departments that require this course, please send a memo to the affected department and include it with this packet, as well as the response received from the affected department.
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Signatures: if disapproved at any level, do not sign. Return to previous signer with recommendation attached.

Dept. Chair/Division Head 	Date <u>8-15-19</u>
Registrar 	Date <u>8-26-19</u>
College Curriculum Chair 	Date <u>8-28-19</u>
Graduate Council Chair 	Date <u>9/29/19</u>

AUG 20 2019 PM 12:39

P1-85

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[Handwritten signature]

Request for Graduate Course Change - Page 2

College: COEPD

Department/Division: Leadership Studies

Alpha Designator/Number: LS 756

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

Change in CATALOG TITLE: ☒ YES ☐ NO

From C u r r e n t I s s u e s i n H i g h e r E d u c a (limited to 30 characters and spaces)

To C u r r e n t I s s u e s i n L e a d e r s h i p

If Yes, Rationale From a focus on higher education to a broader focus on multiple organizations, which is more reflective of students in the Ed.D.

Change in COURSE ALPHA DESIGNATOR:

From: To: ☐ YES ☒ NO

If Yes, Rationale

Change in COURSE NUMBER: ☐ YES ☒ NO

From: To:

If Yes, Rationale

Change in COURSE GRADING

From ☐ Grade To ☐ Credit/No Credit

Rationale

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

From This course focuses on current and emerging problems of higher education. It deals with both societal and internal factors which impinge on the administration of colleges and universities.

To The course focuses on current and emerging problems of leadership among varied organizational types.

If Yes Rationale From a focus on higher education to a broader focus on multiple organizations, which is more reflective of students in the Ed.D.

AUG 20 2019 PM 12:38

Request for Graduate Course Change - Page 3

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

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

From

To

Change in COURSE CONTENT: ☒ YES ☐ NO

From the specific issues related to higher education

To the broader issues of leadership

Rationale From a focus on higher education to a broader focus on multiple organizations, which is more reflective of students in the Ed.D.

AUG 20 2019 PM12:38

Request for Graduate Course Change-Page 4

College: COEPD _____

Department: Leadership Studies _____

Course Number/Title LS 756/Current Issues in Leadership _____

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

NOT APPLICABLE

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

NOT APPLICABLE

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

NOT APPLICABLE

AUG 20 2019 PM12:38

Request for Graduate Course Change - Page 5

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

COURSE DESCRIPTION CHANGE

Department:

Course Number and Title:

Rationale:

Course Description (old)

Course Description: (new)

Catalog Description:

COURSE NUMBER CHANGE

Department:

Current Course Number/Title:

New Course Number:

Rationale:

Catalog Description:

Credit hours:

COURSE TITLE CHANGE

Department:

Current Course Number/Title:

New Course Title:

Rationale:

Catalog Description:

COURSE TITLE CHANGE and COURSE DESCRIPTION CHANGE

Department: COEPD

Current Course Number/Title: LS 756/Current Issues in Higher Education

New Course Title: Current Issues in Leadership

Rationale: From a focus on higher education to a broader focus on multiple organizations, which is more reflective of students in the Ed.D.

Course Description (old): This course focuses on current and emerging problems of higher education. It deals with both societal and internal factors which impinge on the administration of colleges and universities.

Course Description (new): The course focuses on current and emerging problems of leadership among varied organizational types.

AUG 20 2019 PM12:38