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: Academic Affairs Dept/Division: Work-Integrated Education & Learning Wc

Contact Person: Cristina McDavid Phone: 304-696-248

Rationale for Request:

The Work-based Education & Learning workgroup has met over the past two years. The workgroup is comprised of faculty representatives from each of the colleges. The purpose and goals are outlined below.

Project Purpose

1. Create a list of experiential activities encompassing the university's various offerings.
2. Define the experiential activities so they can be accurately identified in all sources (catalog, Banner, etc.) shared with various university constituencies, colleges, and departments.
3. Define the experiential activities so that the data gathered accurately reflects the student experiences.

Project Goals

1. To identify work-based education and work-based learning experiences and create appropriate definitions to describe what is offered through Marshall University programs.
2. To develop clarity, common understanding, and shared language around the different types of experiences, which can then be used to accurately promote these opportunities to various

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 N/A Date

Registrar Date 9/19/2023

College Curriculum Committee Chair Date 9/19/2023
(or Dean if no college curriculum committee)

Graduate Council Chair Date 10/11/23

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

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

Internships
Internships are supervised, contractual work-study arrangements with profes•sional agencies or institutions.
https://catalog.marshall.edu/graduate/academic-requirements-regulations/

Practicum
A practicum is a learning activity that involves the application of previously learned processes, theories, systems, etc. Generally, credit is assigned on the same basis as that of a laboratory.
https://catalog.marshall.edu/graduate/academic-requirements-regulations/

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

See attached.

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

See attached.

Request for Graduate Non-Curricular Changes – Page 5

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

Type of change request:

Department:

Degree program:

Effective date (fall/spring/summer, year): Spring 2024

GC#7: Course Change

Request for Graduate Course Change

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

College: COEPD Dept/Division: Special Education Current Alpha Designator/Number: CISP 673

Contact Person: Dr. Wendi Dunham Phone: 304-696-2856

CURRENT COURSE DATA:

Course Title: Field Exp Preschool Sp Ed

Alpha Designator/Number: C I S P 6 7 3

Title Abbreviation: F i e l d E x p P r e s c h o o l S p E d

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 Khelra Lockwood	Date 6-26-23
Registrar	Date 6/29/2023
College Curriculum Chair McKenzie Brittain	Date 8/24/23
Graduate Council Chair	Date 10/11/23

Request for Graduate Course Change - Page 2

College: COEPD Department/Division: Special Education Alpha Designator/Number: CISP 673

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

Change in CATALOG TITLE: ☑ YES ☐ NO

From: Field Exp Preschool Sp Ed (limited to 30 characters and spaces)

To: Clinical: Preschool Sp Ed

If Yes, Rationale: Per the West Virginia Department of Education policy 5100 section for initial teaching licensure, student teaching should be called "clinical" rather than a "field experience." Section 6.4.b.5 (clinical definition) 6.4.b.3 (field experience definition).

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

College: COEPD

Department: Special Education

Course Number/Title: CISP 673 Field Exp Preschool Sp Ed

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

Not Applicable

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

Not Applicable

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

Not Applicable

Request for Graduate Course Change - Page 5

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

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

COURSE TITLE CHANGE

Department: COEPD/Special Education

Current Course Number/Title: CISP 673 Field Exp Preschool Sp Ed

New Course Title: CISP 673 Clinical: Preschool Sp Ed

Rationale: Per the West Virginia Department of Education policy 5100 section for initial teaching licensure, student teaching should be called "clinical" rather than a "field experience". Section 6.4.b.5 (clinical definition) 6.4.b.3 (field experience definition).

Catalog Description: N/A

GC#7: Course Change

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: Special Education Current Alpha Designator/Number: CISP 674

Contact Person: Dr. Wendi Dunham Phone: 304-696-2856

CURRENT COURSE DATA:

Course Title: Clinical: Preschool Sp Ed

Alpha Designator/Number: C I S P 6 7 4

Title Abbreviation: C l i n i c a l : P r e s c h o o l Sp Ed

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

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

Dept. Chair/Division Head Rhelsea Lockwood	Date 6-26-23
Registrar	Date 6/30/2023
College Curriculum Chair McKenzie Brittain	Date 8/24/23
Graduate Council Chair	Date 10/11/23

Request for Graduate Course Change - Page 2

College: COEPD | Department/Division: Special Education | Alpha Designator/Number: CISP 674

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

Change in CATALOG TITLE: ☑ YES ☐ NO

From: Clinical: Preschool Sp Ed (limited to 30 characters and spaces)

To: Field Exp: Preschool Sp Ed

If Yes, Rationale: Per the West Virginia Department of Education policy 5100 only initial teaching licensure, student teaching (CISP 673) should be called "clinical" thus the existing title for CISP 674 cannot be the same title. The course meets the definition of "field experience" and should reflect this wording. Section 6.4.b.5 (clinical definition) 6.4.b.3 (field experience definition)

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: Catalog Description: Emphasis on infants and toddlers identified as at-risk or with special needs. Clinical observations of practitioners (developmental specialists/service coordinator) and service providers are required.

To: Catalog Description: Emphasis on infants and toddlers identified as at-risk or with special needs. Field experience observations of practitioners (developmental specialists/service coordinator) and service providers are required.

If Yes Rationale: The wording will need to be changed in the catalog description to match the course title. The wording will be changed from "clinical" to "field experience."

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

College: COEPD

Department: Special Education

Course Number/Title: CISP 674 Clinical: Preschool Special Education

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

Not Applicable

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

Not Applicable

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

Not Applicable

Request for Graduate Course Change - Page 5

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

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

COURSE TITLE CHANGE

Department: COEPD/Special Education

Current Course Number/Title: CISP 674 Clinical: Preschool Sp Ed

New Course Title: CISP 674 Field Experience: Preschool Sp Ed

Rationale: Per the West Virginia Department of Education policy 5100 only initial teaching licensure, student teaching (CISP 673) should be called "clinical" thus the existing title for CISP 674 cannot be the same title. The course meets the definition of "field experience" and should reflect this wording. Section 6.4.b.5 (clinical definition) 6.4.b.3 (field experience definition).

Catalog Description: Emphasis on infants and toddlers identified as at-risk or with special needs. Field experience observations of practitioners (developmental specialists/service coordinator) and service providers are required.

GC#6: Course Addition

Request for Graduate Course Addition

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

College: COHP Dept/Division: Social Work Alpha Designator/Number: 657 (X) Graded ( ) CR/NC

Contact Person: Robin Looney Phone: 304-696-2665

NEW COURSE DATA:

New Course Title: Prevention in School of Social Work

Alpha Designator/Number: 657

Title Abbreviation: Prevent int School SW

(Limit of 25 characters and spaces) Ok shortened from title in GC minutes

Course Catalog Description: (Limit of 30 words)

This course addresses the challenges facing teachers, youth, and families in our current environment. We will discuss childhood trauma while practicing methods of teaching youth.

Co-requisite(s): None First Term to be Offered: Spring 2024

Prerequisite(s): None Credit Hours: 3

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

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

Dept. Chair/Division Head Peggy Proudfoot Harman	Date 1/25/2023
Registrar Sonya M C	Date 1.25.2023
College Curriculum Chair Zach Garrett	Date 2.28.23
Graduate Council Chair D S L	Date 10/11/23

Request for Graduate Course Addition - Page 2

College: COHP Department/Division: SW Alpha Designator/Number: 657

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

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

Frances Pack, Robin Looney, Debra Young

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

Not Applicable

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

Not Applicable

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

Not Applicable

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

Not Applicable

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

Please See Syllabus Learning Outcomes

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

Please See Syllabus

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

Please See Syllabus

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

Please See Syllabus

Request for Graduate Course Addition - Page 4

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

Please See Syllabus

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

Please See Syllabus

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

Please See Syllabus

Request for Graduate Course Addition - Page 5

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

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

Department: Social Work; Course Number and Title: SWK 657 Prevention Interventions in School Social Work; Catalog Description: This course addresses the challenges facing teachers, youth, and families in our current environment. Much time will be spent examining the course and impact of the substance use crisis in our region over the past several years. We will discuss childhood trauma while practicing, in class, methods of teaching youth self-regulation skills. Prerequisites: SWK 656 Social Work in School Settings. First Term Offered Spring 2024; Credit Hours: 3

Marshall University Syllabus
College of Health Professions
Social Work Graduate Program

Course

Prevention and Building Youth Resiliency through School-based Social Work Practice

SWK 657 Sections 101,102,103

Course Description

This course addresses the challenges facing teachers, youth, and families in our current environment. We will examine the trajectory and impact of the substance use crisis in our region over the past several years. We will discuss childhood trauma while practicing, in class, methods of teaching youth self-regulation skills. Age appropriate tools will be provided for your practice. Experiential strategies will largely focus upon the elementary population as the foundation for resiliency begins at an early age. There will be information provided related to engaging with older youth. Learning will take place through lectures, video/audio assignments, guest speakers, supplemental reading, and practice of skills in class. Discussion and active participation are welcomed and encouraged.

Credits
3.0 Graduate

Prerequisites
None

Term/Year

Fall 2022

Class Meeting Days/Times/Location

3 consecutive weekends:

Friday 5:30-9:30 pm, Saturday 8:30 – 12:30 pm

Friday November 4th, Saturday November 5th

Friday November 11th, Saturday November 12th

Friday November 18th, Saturday November 19th

(This instructor will visit all campuses for at least one "in person session." You are expected to be present on your designated campus for those "in person" dates.

(These dates to be announced based upon final enrollment.)

Academic Calendar

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

Instructor

Robin L. Looney

Contact Information

- Office Hours: W 10-4:30 pm.
- Marshall Email: looney5@marshall.edu
- Office Phone: 304-696-2665
- You may request a virtual appointment outside of office hours if needed. I want you to feel comfortable asking questions or discussing concerns.
- Contact me by email and I will respond within 24 hours. I do not usually check email late Saturday or on Sundays. Please check your email regularly in order to respond to my communication in a timely manner.
- Use my Marshall email. To create a clear line of communication, do not email me through Blackboard or chat via Teams.

Health and Safety Information

All members of the Marshall University community are expected to always observe health and safety protocols. This includes general health and safety protocols as well as specific protocols that might emerge in response to community and campus health conditions.

Required Texts and Materials

No text. Supplemental materials will be provided under Content on Blackboard.

Grading Policy

Due to this being an elective with no text and no exams, we will move forward with a simple 100 point grading scale with points given for participation and assignments. You have an opportunity to provide excellent work for a grade of "A" but note that failure to complete an assignment or participate could easily result in loss of letter grades. You will note under course assignments and due dates that such are spread over the course of the semester and provide you with ample time for completion. Do not attempt to submit late work. Missing a class will result in no participation points for that date. If circumstances are unusual and you are able to

submit supporting documentation, points will not be deducted.

Excellent	90-100	A
Good	80-89	B
Average	70-79	C
Poor	60-69	D
Fail	Below 60	F

Attendance/Participation Policy

Participation is required in this class and makes the experience more beneficial for everyone. You need to be visibly physically present (no avatars), on time **and** engage in discussion in order to receive participation points. If extreme circumstances arise, contact this instructor so that possible options can be discussed.

(This instructor will visit all campuses for at least one "in person session." You are expected to be present on your designated campus for those "in person" dates. These dates to be announced based upon final enrollment.)

Use of cell phones and other devices can be a distraction for other students and the presenter. Be professional. If one's employment requires you to be available by phone, leave the area if necessary and return when the issue is resolved.

Your focus and contributions in class create a foundation for professional conduct which is crucial for best practice in social work.

University Policies

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

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

Course Student Learning Outcomes

The table below illustrates how each student's learning outcome will be practiced and assessed in the course.

Competency	**Learning Outcome – Student will be able to...**	**Method of Assessment**
Competency 1: Demonstrate Ethical and Professional Behavior	Use reflection and self-regulation to manage personal values and maintain professionalism in practice situations	Classroom and Blackboard discussion
Competency 4 : Engage in Practice-informed Research and Research informed practice	Use and translate research evidence to inform and improve practice, policy, and service delivery. Discuss factors related to the adverse child and community experiences typical of the region.	Blackboard discussion Attend Healthy Connections conference Reflection paper
Competency 6: Engage with Individuals, Families, Groups, Organizations, and Communities	Apply knowledge of human behavior and the social environment, person -in-environment, and other theoretical frameworks to engage with clients and constituencies. Be familiar with family dynamics surrounding SUD/other types of trauma as well as understanding of social work roles with youth and families.	Participation Response to guest speakers Reflection paper Observation of practice skills to aid youth in self-regulation
Competency 8: Intervene with Individuals, Families, Groups, Organizations and Constituencies	Critically choose and implement interventions to achieve practice goals and enhance capacities of clients and constituencies Be familiar with tiers of intervention within the school system.	Classroom discussion Creation of video utilizing practice skills

Course Requirements/Due Dates

Week	Assignment	Due	Points
1-2	Register for Healthy Connections conference	By 8/31	n/a
1-2	Schedule appt with instructor via email/meet virtually	Meet by 9/9	5 points Participation
3-4	Review of West Virginia data	By 9/11	10 points Discussion Board
5-6	Respond to assigned Podcast	By 9/25	10 points Discussion Board
6-8	Attend 9/22 Healthy Connections conference	By 10/16	20 points Reflection paper
10-12	Attend class and contribute	1st 3 weekends in November	5 points per class 30 points
12-13	Demonstrate intervention	By 11/27	25 points video

Tentative Course Schedule:

Specific information regarding your assignments is provided below. See the preceding course requirements section for due dates.

At start of fall semester: Go to https://healthyconnectionswv.org/2022-Fall-Conference.aspx Register for the free fall one day conference. There are various options for participation.

Week 1 -3, Email Instructor (looney5@marshall.edu) and schedule Teams meeting in order to "get started/ask questions/voice expectations."

Week 3-4, Students will become familiar with the demographics of infants, school

age youth, and families in West Virginia. Visit the Kids Count 2022 Data Book to increase awareness of challenges facing West Virginia families. See the interactive data book at the left of this page: https://www.aecf.org/resources/2022-kids-count-data-book
See also: https://datacenter.kidscount.org/ (The bottom of the 2022 data book will take you to this link). First view data related to the state. Next view counties: Examine any information you choose but pay particular attention to Cabell and your home counties.
1)What are your thoughts about how West Virginia ranked overall in various categories? 2)Did anything surprise you?
3)How might certain issues impact youth within the learning environment/the home/the community?
4)What about this data informs you regarding the needs of youth within the school system?
Participate in a discussion with peers via Blackboard. Each student is expected to begin a minimum of three threads and also reply to a minimum of three student comments. There are no wrong comments. Contribute to the discussion.

Week 5-6 Students will increase their understanding of the factors which contributed to the substance use crisis in the region as well as the status of current litigation. Go to: https://www.npr.org/2022/08/01/1114976349/how-the-opioid-industry-operated-like-a-cartel

Simply fuel for thought:

1) Were you aware of the complexity of issues related to opiate prescribing and distribution?
2) What were your thoughts as you listened to the podcast? Your feelings?
3) If comfortable, could you share any personal or professional experiences related to the opiate crisis in our region?

Participate in a discussion with peers via Blackboard. Each student is expected to begin a min. of three threads and also reply to a min. of three student comments.

Week 6-8 Healthy Connections Fall Conference 9/22.
View the HC website and learn about this community collaborative at https://healthyconnectionswv.org.
You can register via this site (top tab) or go directly to:
https://healthyconnectionswv.org/2022-Fall-Conference.aspx
You can attend in person or virtually the day of the session. You can also watch recorded sessions at a later date. Availability of recorded sessions to be announced. The conference content relates to the emotional and physical well-being of infants and school aged youth as well as resources that are available. After you register, updates will be forwarded via your email. To view recorded sessions, you will create an account through the Substance Use Education Portal. **(more information to be provided)**
The assignment: A 4-6 page, double-spaced, 12 pt font, Times New Roman reflection paper. Consider the information presented at the Conference. What did you learn? Points will be awarded based upon:

1) How comprehensive was your reflection/was it clear that you attended all available sessions?

2) How thoroughly did you interpret the information? What did you learn?
3) Thinking through the lens of a social worker, what information did you find particularly valuable?
4) Given the information presented, what are your thoughts about the status of our region and the impact upon families moving forward?

All papers submitted (regardless of your method of attendance) are due through Blackboard by 10/16.

Week 10-12 Class sessions. See attendance and participation policy section on page 3.

Week 12 Following experiential activities in class, research mindful/trauma focused strategies for elementary aged youth. You will be provided with some resources under "Content" on Blackbooard. You can also view strategies filmed by past Marshall University social work graduate students on the Mindfulness for Kids You Tube site created by the Trauma Informed Mindfulness Engagement For Kids project: https://bit.ly.wvtime4k Do not duplicate anything already offered on the website.

Assignment: Create a 3-5 minute video with the target audience being elementary aged children. You can do so using your cell phone, an iPad, or use a voiceover with apps such as iMovie. Be creative. If needed, you can request some "tools" from the instructor to aid in your presentation.

Submit via Blackboard. With your permission, your video will be uploaded to increase our channel library. Ideas will be discussed in class.

In order to receive all credit:

1) Did you address your target audience?
2) Was your intervention of sufficient length/original (not an exact duplication of content already available?)
3) Did your intervention contain therapeutic content? (such as teach a skill, aid in self-regulation, etc.)
4) How creative/engaging were you in presenting the intervention?
5) Subscribe to the channel and insure that 4 peers/others subscribe.

GC#6: Course Addition

Request for Graduate Course Addition

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

College: COHP Dept/Division: Social Work Alpha Designator/Number: 656 (●) Graded ( ) CR/NC

Contact Person: Peggy Proudfoot Harman Phone: 304-746-2515

NEW COURSE DATA:

delete DSD

New Course Title: Social Work in School Settings

3 SWK

Alpha Designator/Number: 656

Title Abbreviation: SW IN SCHOOL SETTINGS

(Limit of 25 characters and spaces)

Course Catalog Description: The skills of a trained social worker, include clinical, consultative, assessment and program development. Upon completion of the course students will be prepared to begin practice in school social work.

(Limit of 30 words)

Co-requisite(s): None ~~First Term~~ to be Offered: Fall 2023 / Spring 2024 DSD

Prerequisite(s): None Credit Hours: 3

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

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

Dept. Chair/Division Head Peggy Proudfoot Harman Date 1/25/23

Registrar Sonya M C Date proudfoothar 2023-01-25 14:44:42

College Curriculum Chair Zach Garrett Date 1/25/2023

Graduate Council Chair D S L Date 2.28.23

10/11/23

Request for Graduate Course Addition - Page 2

College: COHP Department/Division: SW Alpha Designator/Number: 656

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.

Frances Pack, Robin Looney, Debra Young

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

Not Applicable

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

Not Applicable

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

Not Applicable

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

Not Applicable

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

Please See Syllabus Learning Outcomes

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

Please See Syllabus

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

Please See Syllabus

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

Please See Syllabus

Request for Graduate Course Addition - Page 4

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

Please See Syllabus

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

Please See Syllabus

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

Please See Syllabus

Request for Graduate Course Addition - Page 5

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

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

Department: Social Work; Course Number and Title: SWK 656 Social Work in School Settings; Catalog Description: School social work practice within the educational setting recognizes the importance of the home-school-community in the success of the student. The skills of a trained social worker, which include clinical, consultative, assessment and program development, provides the foundation for the school social worker. Upon completion of the course the student will be able to begin practice as a school social worker by removing barriers students experience within the school system thereby accessing the educational resources available for their success. Prerequisites: None; First Term
Offered Fall 2023; Credit Hours: 3

College of Health Professions Dept of SW

SWK 656 Social Work in School Settings

Course Description:School social work practice within the educational setting recognizes the importance of the home-school-community in the success of the student. The skills of a trained social worker, which include clinical, consultative, assessment and program development, provides the foundation for the school social worker. Upon completion of the course the student will be able to begin practice as a school social worker by removing barriers students experience within the school system thereby accessing the educational resources available for their success.

Credits

3

Prerequisites

None

Term/Year

Fall 2023

Class Meeting Days/Times

3 consecutive weekends, Friday 5:30-9:30, Saturday 8:30-12:30

Friday March 24, Saturday March 25

Friday March 31, Saturday April 1

Friday April 7, Saturday April 8

Location

This instructor will be in person on the South Charleston campus on Friday evenings, Rm GC 135 and on the Huntington Campus on Saturday mornings, Pritchard Hall Rm 324. You are expected to be present on your designated campus for those "in person" dates.

Academic Calendar

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

Instructor

Frances Pack, MSW

Contact Information

- Office: South Charleston Campus GC 230G

  Office hours and appointments may be held in person or virtually at the instructor's discretion. Masks are required in the instructor's office or in any alternate indoor meeting location. Virtual meetings will be held via Zoom. Please arrange any virtual of in person appointments with the instructor.
- Office Phone: 304-746-2515 ex 62515 or cell phone 304-545-7522
- Marshall Email: packf@marshall.edu

Preferred Communication Method and Expected Response Time

Students may contact me either through my Marshall email or my personal cell phone, 304-545-7522. Only use my cell phone, via text, for urgent matters. Do not email me through Blackboard or chat via Teams. I will respond to you within 24 hours. I check my email throughout the day.

Health and Safety Information

All members of the Marshall University community are expected to always observe health and safety protocols. This includes general health and safety protocols as well as specific protocols that might emerge in response to community and campus health conditions.

Required and/or Recommended Texts and Materials

Required Texts and Materials

Keller, JoDee (2022), School Social Work. Springer Publishing.

Recommended/Optional Texts and Materials

Allen-Meares, Paula (2015), Social Work Services in Schools, Seventh Edition. Person Publication.

Massat, C., Kelly, M., Constable, R. (2016), School Social Work, Practice, Policy, and Research, Eighth Edition. Oxford University Press.

Cox, T., Fitzgerald, T., Alvarez, M. (2022), The Art of Becoming Indispensable. What School Social Workers Need to Know in Their First Three Years of Practice. Oxford University Press.

Technology and Technical Skill Requirements

- Students must be proficient in the use of computers, the Internet, browsers, Microsoft Office Word, and other common applications.
- Students must be able to use Marshall email, as well as the following tools in Blackboard: course messages, assignments, discussion board forums, tests, blogs, journals, wikis, and groups. Links to Blackboard Help and tutorials are available on the Start Here page and on the Tech Support tab in Blackboard.
- Virtual (VC) courses may require a webcam and microphone to use Microsoft Teams (or Zoom, with permission from IT) for synchronous meetings.
- See the Tech Support tab in Blackboard for additional information on browsers, technology, and apps.

Technology Assistance

- Blackboard Support (URL: https://www.marshall.edu/design-center/support-ticket/)
- Marshall Information Technology (IT) Service Desk (Help Desk) (URL: https://www.marshall.edu/it/departments/it-service-desk/)
    - Huntington: (304) 696-3200
    - South Charleston: (304) 746-1969
    - Email the IT Service Desk (itservicedesk@marshall.edu)

Attendance/Participation Policy

Participation is expected in this class, either physically or virtually. If you are enrolled as a Huntington cohort you are expected to attend the live classes on Saturday at Pritchard Hall. If you are enrolled as a South Charleston cohort you are expected to attend the live classes on Friday evening in room GC 135. Participation and attendance points will be given for each class. Anyone late by more than 30 minutes forfeits their attendance points for that class. If extreme circumstances emerge, please contact me via email or text prior to the class meeting. We will discuss make-up options.

When attending a lecture virtually, your camera must be on at all times. You must actively participate and pay full attention to the lecture. Lack of full attention and participation will result in loss of participation points.

Course Student Learning Outcomes

The Table below shows the following relationships: How each student learning be assessed.

Competency	**Learning Outcome-** **Student will be able to...**	**Method of Assessment**
Competency 1: Demonstrate Ethical and Professional Behavior	Understand the school as a system and the relevant laws and regulations that impact their practice within a school setting. Articulate the role of social work as an ancillary service in a host setting. Understand the history of school social work.	Federal law to student handbook assignment. Reflection paper
Competency 2: Engage Diversity and Difference in Practice.	Understand the role of the school social worker in promoting diversity, equity, and inclusion.	School and Community Context Paper
Competency 3: Advance Human Rights and Social, Economic, and Environmental Justice.	Recognize the importance of federal, state and local county school policy as a means of advocating for student's rights.	Federal law to student handbook assignment. School and Community Context Paper
Competency 4: Engage in Practice-informed Research and Research-informed Practice	Understand how research evidence informs and improves practice and programs. Understand how research can be used to inform policy and practice.	Research on trauma informed practice. Include in School Social Work Handbook

Competency	Learning Outcome- Student will be able to...	Method of Assessment
Competency 5: Engage in policy practice	Identify and assess social policies at the local, state, and federal levels that impact well-being, service delivery, and access to social services. Demonstrate an understanding of the Individuals with Disabilities Education Act (IDEA) Demonstrate an understanding of Section 504 of the Rehabilitation Act of 1073.	Federal Law to student handbook assignment
Competency 6: Engage with Individuals, Families, Groups, Organizations and Communities	Understand how their own experiences affect their ability to engage clients. Utilize interviewing skills to engage all clients, from students to educational staff, to parents, to care givers and community organizations.	Resource Fair
Competency 7: Assess Individuals, Families, Groups, Organizations, and Communities	Understand the types of assessments used in schools (Social Developmental Study, Functional Behavioral Assessment. Discuss the importance of assessing strengths. Apply theoretical perspectives to understand and analyze information gathered from client systems.	School Social Work handbook

Competency	**Learning Outcome- Student will be able to...**	**Method of Assessment**
Competency 8: Intervene with Individuals, Families, Groups, Organizations and Communities	Understand the Multitiered System of Supports (MTSS) framework. Understand how social workers develop a preferred therapeutic approach. Understand Tier 1 interventions within the MTSS model. Discuss the importance of parent/family engagement in the school setting.	Paper on the development of a Tier 1 intervention for a specific school in your district. Include in School Social Work Handbook
Competency 9: Evaluate Practice with Individuals, Families, Groups, Organizations, and Communities	Describe the steps in evaluating Tier 1, Tier 2 and Tier 3 interventions. Understand the importance of evaluating outcomes, related to legislation (ESSA, IDEA, state school laws, county policies)	Paper on Tier I Include in School Social Work Handbook.

Course Schedule/Requirements/Tentative Due Dates

Module	Assignment	Due	Points
1	Read chapters 1 and 3 in textbook Reflection paper	1/31/23	10 pts
2	Read chapter 2 in textbook School and Community Context Paper	2/28/23	10 pts
3	Reading material provided School law assignment	4/1/23	10 pts
4	Resource Fair Presentation	4/8/23	20 pts
5	School Social Work Handbook	4/8/23	20 pts
6	Attendance/Participation (5 pts for each scheduled class session)	4/8/23	30 pts

Tentative Course Schedule

Module 1: 1/9/23 – 1/31/23

- Independent reading assignments, Chapter 1 – The Context of School Social Work: Historical Background and Current Trends in Schools and

Chapter 3 – Professional and Ethical Practice in School Settings.

- **Assignment – Reflection Paper due 1/31/23**

Module 2: 2/1/23 – 2/28/23

- Independent reading assignment, Chapter 2 in textbook
- **Assignment – School and Community Context Paper due 2/28/23**

Module 3: 3/24/23 – 3/25/23

- Reading assignment – Textbook Chapters 4,5,6,7 and 8
- Federal/State laws pertaining to Public School Education
- The Exceptional Student/IDEA

Module 4: 3/31/23 – 4/1/23

- Reading assignment – Textbook Chapters 9 and 10
- School Social Work in local county school districts
- **Assignment due – School law assignment**

Module 5: 4/7/23 – 4/8/23

- Reading assignment – Textbook Chapters 11, 12, 13, and 14
- Multi-Tier Systems of Support (MTSS)
- Resource Fair Presentations
- **Assignments due – Resource Fair Presentation and School Social Work Handbook**

Course Policies

By enrolling in this course, you agree to the following course policies.

Grading Policy

Grading Scale

Assessment Classification	Range	Letter Grade
Excellent	90-100	A
Good	80-89	B
Average	70-79	C
Poor	60-69	D
Fail	Below 60	F No Credit

Assignments are to be posted on Blackboard, by 11:59pm on the due date. Blackboard will close after due date, any submissions after the deadline will be discussed with Professor Pack for allowed late submissions. Late submission requests must be submitted 48 hours prior to due date. Revisions may be made to submitted assignments only after approval from the instructor.

Anticipated Response Time for Grading and Feedback

Coursework will be graded within 2 weeks of submission.

University Policies

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

- Academic Dishonesty Policy
- Academic Dismissal Policy

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

Students with Disabilities

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

Marshall University E-Mail Accounts

You must have and use your MU email account. Your personal email accounts will not be used for official communication with Marshall University programs and personnel. You may redirect your MU email to your own personal email account, but you must sign in to your MU account to do that. Marshall University uses Office 365 email. For more information, visit Marshall IT: Office 365 (URL https://www.marshall.edu/it/office365/).

Course Assignments

Module # 1 Reflection Paper (2-3 pages)

Chapter 1 of the text, School Social Work: A Skills Based Competency Approach, provides a historical background for the practice of Social Work in the school system. Chapter 3 of the text provides information on professional and ethical practice in the school setting. Each chapter provides information on the role of the school social worker and how a school social worker shall adhere to the NASW professional and ethical practice of social work.

West Virginia has not yet recognized a specific licensure for School Social Workers as has been established for School Psychologists and School Counselors. Lack of licensure and credentialing may create confusion in the local school as to the specific duties of the School Social Worker. Lack of specific standards presents challenges to the school social worker in West Virginia. Within the past few years many counties within West Virginia have begun hiring School Social Workers, with varying job descriptions. Lack of clarity of appropriate job responsibilities for the professional school social worker increases the possibility of frustration for both the school and the social worker.

Reflecting on the information in both chapters please answer the following questions

1. How would you introduce yourself as the school social worker to the faculty of the school (s) you serve? Would your role be different in each school if you served more than one school, such as an elementary school and a high school?

2. What are the unique ethical issues and challenges that you might encounter in working with minors? Think about your own views regarding the rights and interests of parents and the rights and interests of students regarding their own personal information and exercising control over that information. *This question is from your text on page 67.*

Your reflection includes information from your textbook and your own personal experience. Answer each question thoroughly, with correct punctuation and grammar, typed 12 font, double spaced and at least 2 pages but no more than 3 pages. Points will be deducted if questions are not fully answered.

Module #2 School Community Context Paper (6-10 pages)

For this paper, refer to Chapter 2 on the school culture and community context. You will need to select elementary, middle or high school in your district to answer the following questions. Choose a specific school for the Personal Analysis section.

School

A. The Elementary and Secondary Education Act of 1965, as amended by Every Student Succeeds Act (ESSA), requires every school district in every state to publish a report card. **West Virginia satisfies this requirement by utilizing the Balanced Scorecard. The statewide accountability system methodology may be reviewed online via the WVDE website. Please select your county and report the following characteristics of either the elementary, middle, or high school. This will be under the county summary.**

    1. What are the Academic Indicators for your selected

school? This would be either elementary, middle or high school.

2. What are the Student Success Indicators for your selected school?

3. Which subgroup within your school would you focus on after reviewing the data?

Community

Describe the following characteristics of the geographic community served by the school, using census data and any information the school district maintains. This information will be on a countywide basis.

A. Income range and average income. (Explain how the average income range impacts the school.)

B. Race and ethnicity. (Does the diversity of the school reflect the diversity of the community?)

C. Population density. (What is the density of the community – see census data?)

D. The sense of safety in the neighborhood. (Describe security issues facing students in the school and community.)

E. What social service agencies are located in the community? What agencies are utilized as a referral source by the social worker(s)? How are these social service agencies utilized? Is there a key contact person? What is the referral process, etc.?

Personal Analysis *Describe the "climate" of your school. You may select a specific school in response to these questions. Please identify the school you have selected.*

A. What is your assessment of the underlying expectations for students?

B. What is the morale of the teachers? (What does the morale of the teachers tell you about the administrative focus?)

C. How stable is the administration?

D. What are the common attitudes of the parents concerning the schools?

E. In your opinion, how do you think the "climate" is impacting academic as well as social and emotional learning in your school?

F. What are common attitudes toward social work services in your school?

G. Are the overall values and priorities of the school (administration, teachers) consistent with the values of professional social work?

Paper: Narrative description of above components. Typed, double-spaced, one-inch margins, 6-10 pages. Follow APA format.

Criteria for Grading:

- Organization and clarity
- Thoroughness of responses to questions
- Quality of writing (grammar, spelling and word usage)
- Use of APA format.

Module #3 Federal Law to Student Handbook Paper

Students will choose 3 federal laws pertaining to the school system. Each law will be followed by federal policy, state law, state policy and finally county policy. Each law will be properly cited, with thorough explanation. You may format this as a flow chart that explains the progression from law into practice.

Module #4 Resource Fair Presentation

Identify four or five resources that are appropriate for your school (these can include interventions as well as resources in the community. Interventions may include curricular information, social/emotional learning (SEL) activities, ice breakers to use in small groups, evidence-based prevention/intervention programs. Community resources can be a one-page sheet of community resources, including referral process, contact information, and services/eligibility criteria.)

You should consider:

- The population served within your school/community,
- The age or developmental stages of the children served,

- The needs addressed by the resources,
- The cultural responsiveness of resources.

Students are expected to present the information in a consumable format for the class (e.g., create a handout, post on Blackboard). As appropriate, demonstrate games, icebreakers, or other interactive resources. Students may complete this assignment in pairs. Take 10 to 15 minutes for the presentation/demonstration.

Module #5 School Social Work Handbook

The School Social Worker's Handbook will be compiled during the semester. Specific entry requirements will be given at the beginning of the semester. The handbook will be due at the last live class.

GC#7: Course Change

Request for Graduate Course Change

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

College: Health Professions Dept/Division: Physical Therapy Current Alpha Designator/Number: PT 793

Contact Person: Gretchen Prather Phone: 6-5608

CURRENT COURSE DATA:

Course Title: Clinical Internship III

Alpha Designator/Number: P T 7 9 3

Title Abbreviation: C l i n i c a l I n t e r n s h i p I I I

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 D S Dunn	Date 8-16-23
Registrar Sonja McC	Date 8/16/23
College Curriculum Chair Zach Garrett	Date 8/29/23
Graduate Council Chair D S Dunn	Date 10/11/23

Request for Graduate Course Change - Page 2

College: Health Professions Department/Division: Physical Therapy Alpha Designator/Number: PT 793

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

Change in CATALOG TITLE: ☐ YES ☑ NO

From ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ (limited to 30 characters and spaces)

To ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

If Yes, Rationale

Change in COURSE ALPHA DESIGNATOR:

From: ☐☐☐☐ To ☐☐☐☐ ☐ YES ☑ NO

If Yes, Rationale

Change in COURSE NUMBER: ☐ YES ☑ NO

From: ☐☐☐☐ To: ☐☐☐☐

If Yes, Rationale

Change in COURSE GRADING

From ☐ Grade To ☐ Credit/No Credit

Rationale

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

From

To

If Yes Rationale

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

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

From: 8

To: 6

Change in COURSE CONTENT: ☑ YES ☐ NO

From: 15 weeks of full-time supervised clinical education.

To: Reduced duration of the clinical by 3 weeks to 12 weeks of full-time supervised clinical education.

Rationale: Decreased supervised, full-time clinical education experiences from 15 weeks to 12 weeks. This reduction in contact hours warranted a reduction in credit hours from 8 to 6. This decision was made to ease the burden on clinical partners due to the proliferation of PT programs and the challenge/competition for a finite number of clinical placements, particularly in non-ambulatory settings. Overall, this reduces the curriculum's full-time clinical education instruction weeks from 35 to 32 weeks. The Commission on Accreditation of Physical Therapy Education (CAPTE) requires a minimum of 30 hours of clinical education; therefore, the program continues to exceed the minimum recommended standard.

Request for Graduate Course Change-Page 4

College: Health Professions

Department: Physical Therapy

Course Number/Title PT 793 Clinical Internship III

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

NOT APPLICABLE

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

NOT APPLICABLE

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

NOT APPLICABLE

Request for Graduate Course Change - Page 5

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

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

COURSE CREDIT HOUR CHANGE:
Department: School of Physical Therapy
Current Course Number/Title (no change): PT 793 Clinical Internship III
Catalog Description(no change): Supervised clinical education experience emphasizing continued development and reinforcement of clinical skills in various clinical settings. Competence is expected in areas of the material presented to date in the curriculum.
Credit hours (old): 8
Credit hours (new): 6
Rationale: Decreased supervised, full-time clinical education experiences from 15 weeks to 12 weeks. This reduction in contact hours warranted a reduction in credit hours from 8 to 6. This decision was made to ease the burden on clinical partners due to the proliferation of PT programs and the challenge/competition for a finite number of clinical placements, particularly in non-ambulatory settings. Overall, this reduces the curriculum's full-time clinical education instruction weeks from 35 to 32 weeks. The Commission on Accreditation of Physical Therapy Education (CAPTE) requires a minimum of 30 hours of clinical education; therefore, the program continues to exceed the minimum recommended standard.

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 Lambert **Phone:** 3047468959

Rationale for Request:

Students often take the GRE or MAT just before the semester starts and they do not have their scores back in time to apply. We want to increase our chances that they will enroll at Marshall by allowing conditional acceptance based on the pending scores.

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 Lambert **Date** 8/29/23

Registrar Sonja H C **Date** 8/29/23

College Curriculum Committee Chair McKenzie Brittain Digitally signed by McKenzie Brittain Date: 2023.09.14 08:45:53 -04'00' **Date** 9/14/23
(or Dean if no college curriculum committee)

Graduate Council Chair D S Lo **Date** 10/11/23

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.**

Admission Requirements for Educational Leadership Area of Emphasis
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:

Each candidate for the Educational Leadership Area of Emphasis 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 accepted, accredited institution must be on file at the time of admission. Students must score at least a 392 on the Miller Analogies Test. Students who take the Graduate Record Examination must have a combined score of 286 (combined verbal and quantitative). Students must hold a Professional Teaching Certificate and have a minimum of two years of teaching experience at the time of admission to the program.

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.

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: Each candidate for the Educational Leadership Area of Emphasis 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 accepted, accredited institution must be on file at the time of admission. Students must score at least a 392 on the Miller Analogies Test. Students who take the Graduate Record Examination must have a combined score of 286 (combined verbal and quantitative). Students must hold a Professional Teaching Certificate and have a minimum of two years of teaching experience at the time of admission to the program.

Applicants may be conditionally admitted pending acceptable GRE or MAT scores. The student will be directed that they can enroll for one semester pending acceptable scores. Once scores are posted, those students whose scores meet the above pass rate will be fully admitted. Those students whose scores do not meet the pass rates will not be able to register for further classes until which time their scores do meet acceptable standards.

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.

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: Each candidate for the Educational Leadership Area of Emphasis 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 accepted, accredited institution must be on file at the time of admission. Students must score at least a 392 on the Miller Analogies Test. Students who take the Graduate Record Examination must have a combined score of 286 (combined verbal and quantitative). Students must hold a Professional Teaching Certificate and have a minimum of two years of teaching experience at the time of admission to the program.

Applicants may be conditionally admitted pending acceptable GRE or MAT scores. The student will be directed that they can enroll for one semester pending acceptable scores. Once scores are posted, those students whose scores meet the above pass rate will be fully admitted. Those students whose scores do not meet the pass rates will not be able to register for further classes until which time their scores do meet acceptable standards.

Request for Graduate Non-Curricular Changes -- Page 5

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

Type of change request: Non Academic

Department: Leadership Studies

Degree program: Principalship, MA

Effective date (fall/spring/summer, year): Spring 2024

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: Dr. Eugenia Lambert Phone: 6-8959

Rationale for Request:

To improve the quality of applicants to the Leadership Specialist, MA.

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 Lambert Date Jul 19, 2023

Registrar Sonja G Cantrell-Johnson Digitally signed by Sonja G Cantrell-Johnson Date: 2023.07.20 09:45:57 -04'00' Date

College Curriculum Committee Chair (or Dean if no college curriculum committee) McKenzie Brittain Digitally signed by McKenzie Brittain Date: 2023.08.24 14:53:37 -04'00' Date August 24, 2023

Graduate Council Chair D S L Date 10/11/23

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

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

Admission Requirements for Leadership Specialist Area of Emphasis
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. Applicants should select the Distance-Only application and under programs, select "Leadership Studies (M.A.): Leadership Specialist" on the application.

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

A bachelor's degree from an accepted, accredited institution; and
An undergraduate Grade Point Average (GPA) of 3.00 or higher on a 4.00 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, then the applicant will be fully admitted to the degree program.

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.

Admission Requirements for Leadership Specialist Area of Emphasis
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. Applicants should select the Distance-Only application and under programs, select "Leadership Studies (M.A.): Leadership Specialist" on the application.

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

A bachelor's degree from an accepted, accredited institution; and

An undergraduate Grade Point Average (GPA) of 3.00 or higher on a 4.00 scale.

Applicants may be admitted provisionally with a GPA of 2.5 - 2.99. 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, then the applicant will be fully admitted to the degree program.

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

Admission Requirements for Leadership Specialist Area of Emphasis
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.
Applicants should select the Distance-Only application and under programs, select "Leadership Studies (M.A.): Leadership Specialist" on the application.
In addition to Marshall University's requirements for graduate admission, applicants must have:

A bachelor's degree from an accepted, accredited institution; and

An undergraduate Grade Point Average (GPA) of 3.00 or higher on a 4.00 scale.
Applicants may be admitted provisionally with a GPA of 2.5-2.99. 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, then the applicant will be fully admitted to the degree program.

Request for Graduate Non-Curricular Changes – Page 5

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

Type of change request: Non-academic

Department: Leadership Studies

Degree program: Leadership Specialist, MA

Effective date (fall/spring/summer, year): Spring 2024

GC#3: Intent to Plan

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: CECS Dept/Division: CECS

Contact Person: Greg Michaelson Phone: 304-696-5606

New Degree Program Doctor of Philosophy in Engineering

Effective Term/Year Fall 20 24 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 31-Aug-2023
College Curriculum Chair	Date 8/31/2023
College Dean	Date 8/31/2023
Graduate Council Chair	Date 10/11/23
Provost/VP Academic Affairs	Date
Presidential 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 separate document.

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.

No additional resources requested.

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.

5. *New* Catalog Description

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

The Marshall University Doctor of Philosophy in Engineering program is a research-based doctoral program that combines a disciplined approach to scholarship with a focus on applications of theoretical and applied research to engineering problems. Students will study foundational and advanced engineering subjects to develop research questions in their area of interest. They will perform literature reviews, design and perform research studies, analyze data, and draw relevant conclusions that affect innovative problems in engineering, and write a doctoral dissertation to document their contributions. The degree will be awarded for demonstrated scholarly excellence in study and research that provides a significant contribution to specific areas in the field of engineering.

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: College of Engineering and Computer Sciences
New Major or Degree: Doctor of Philosophy in Engineering
Credit Hours: 68
Rationale: The PhD in Engineering is a research-based degree that requires the student to have foundational knowledge in engineering as well as a base of graduate level knowledge in their chosen area of research sufficient to support independent research and expanding the state of the art. This program is not based on coursework per se, but on the conduct of independent research culminating in a dissertation of sufficient quality so as to be recognized as a contribution to the state of the art in the chosen area of research. Students will be required to take a minimum of 48 hours of graduate coursework beyond the B.S. level as well as 20 hours of dissertation research. They will be required to pass qualifying (breadth) examinations as well as candidacy (depth) examinations, submit a written dissertation proposal and a written dissertation approved by a committee of faculty to graduate.

August 31, 2023

MEMORANDUM FOR: Graduate Council, Marshall University

SUBJECT: Intent to Plan for PhD in Engineering

To Whom It May Concern:

Enclosed, please find the Intent to Plan for a PhD in Engineering from CECS. This has been in the works for a long time, and I am glad that we are finally getting it moving forward. In support of this Intent to Plan, we are enclosing the Hanover Market Research Study, and letters of support from the Dean of every academic college at Marshall University, as well as the Vice President for Research, the Provost and Chief Financial Officer, and a host of students, alumni, advisory board members, and others.

I hope for a favorable consideration of this submission in the Planning Committee and the Graduate Council as a whole, so we can try to get this program started by August 2024.

Sincerely,

David A. Dampier
Dean and Professor of Computer Science

Marshall University
College of Engineering and Computer Sciences
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/CECS

MARSHALL UNIVERSITY
COLLEGE OF ENGINEERING AND COMPUTER SCIENCES

August 3, 2023

Intent to Plan
DOCTOR OF PHILOSOPHY IN ENGINEERING

Effective Date of Proposed Action: Fall 2024

Prepared By:

Gregory K. Michaelson, Ph.D., P.E.
Associate Dean, College of Engineering and Computer Sciences

Wook-Sung Yoo, Ph.D.
Director of Research, College of Engineering and Computer Sciences

Brief Summary Statement

The College of Engineering and Computer Sciences (CECS) proposes the establishment of a doctoral program in engineering at Marshall University. The program would be a Doctor of Philosophy (Ph.D.) Program in Engineering. The proposed Ph.D. program will require students to prepare a research proposal and dissertation in addition to limited graduate coursework. Students will be able to choose among concentrations in any of the different fields in the college, currently Biomedical Engineering, Civil and Environmental Engineering, Computer Science, Electrical and Computer Engineering, Engineering Management, Mechanical Engineering, and Industrial and System Engineering. The proposed program **does not** anticipate the need for additional faculty lines, major funding, or other resources to establish the program leveraging existing resources in the college to offer this timely program. The program aims at enrolling 25 students and graduating 3 students in the fifth year of the program. The projected net revenue in the fifth year is estimated at $107,244. The program will generate approximately $313,859 in new revenues during its first 5 years.

1. Program Description

The College of Engineering and Computer Sciences (CECS) at Marshall University proposes the initiation of a research-based post-graduate Ph.D. program in Engineering. The purpose of the Ph.D. program in engineering is to produce graduates who can think independently and develop creative and innovative solutions to engineering problems of interest to mankind. CECS strongly believes that the establishment of this program is timely given the strong potential of this degree program to increase the College's research impact and productivity, increase the enrollment, and stimulate economic development in the area, meeting the state's job demands that require more advanced research skills and qualifications.

1.1 Program Mission

The mission of the proposed program is to equip students with skills needed for producing high-quality scholarly work and research and to prepare students for success in higher education. The proposed program supports the mission of Marshall University by:

- offering high-quality, affordable graduate education to benefit the state and surrounding region,
- promoting and supporting research activities by students and faculty, providing professional education that prepares students to think, learn, work, and live in an evolving global society,
- advancing the public good through innovative educational programs.

1.2 Program Features

A graduate program leading to a PhD in Engineering is proposed by CECS, with the following specializations:

- Biomedical Engineering
- Civil and Environmental Engineering
- Computer Science
- Electrical and Computer Engineering
- Engineering Management
- Industrial and Systems Engineering
- Mechanical Engineering

The Department of Biomedical Engineering, the Department of Civil Engineering, the Department of Computer Sciences and Electrical Engineering, and the Weisberg Department of Mechanical and Industrial Engineering will participate in the program. The general requirements for the doctoral program are the same for all departments. The admission requirements, application procedures, admission to candidacy, degree requirements, and other such details are described herein.

1.2.1 Program Learning Outcomes

Upon completion of this program:

1. The student should demonstrate breadth of knowledge in the discipline and depth of knowledge in the specific area of his/her research topic.
2. The student should gain experience in and demonstrate the ability to do independent academic work and research.
3. The student should demonstrate his/her ability to identify and define a research topic.
4. The research work performed by the student should contribute to the existing knowledge in the engineering field and the discipline.
5. The student should demonstrate the ability to clearly communicate complex engineering and research topics in both verbal and written form.

1.2.2 Additional Program Outcomes

The PhD in Engineering degree program will make Marshall University a recognized leader in education, research and practice in Engineering fields and the program expects to achieve:

- A critical mass of graduates with terminal degrees who advance in their fields and/or become full-time faculty members,
- An impact on economic development and innovation locally, regionally, and globally,
- Increased research impact and productivity,
- Outreach opportunities developing partnerships and alliances with external corporate and industry organizations for pursuing joint educational and research opportunities.

1.2.3 Admissions and Performance Standard

The doctoral degree is a research degree granted on the basis of broad knowledge of engineering and in-depth study in a specific area leading to a dissertation reflecting original work by the doctoral candidate. When applying for admission, a student must state on the application the major area of study for which admission is requested (i.e., biomedical engineering, civil engineering, etc.) and meet the following minimum requirement for admission to the program in addition to the general requirements of Graduate Studies at University:

- Earned Master's degree in a relevant discipline with a minimum GPA of 3.0 on a 4.0 scale
  OR
  Bachelor's degree in a relevant engineering or computing discipline with a minimum GPA of 3.5 on a 4.0 scale;
- A minimum GRE score of 310 in Verbal and Quantitative combined (a least 160 on the quantitative portion) and a 3.5 on the analytical portion. *GRE is not required for students with BS degrees in related fields from Marshall University*;
- Three (3) letters of recommendation that demonstrate strong evidence for a high potential for success in doctoral studies and research;
- International students must qualify for admission to the university through the TOEFL or IELTS.

Fulfilling the minimum requirements does not guarantee admission and factors such as appropriateness of the applicant's research objectives to the research interests of the program faculty, availability of faculty to supervise the applicant's research, and prior research accomplishments of the applicant will also influence the admission decision. The criteria described below are used to evaluate admission to the program:

- Prior experience in undergraduate or graduate research.
- Post-BS degree and/or professional experience relevant to the planned degree of study.
- Peer-reviewed publications and/or award-winning presentations in technical conferences.
- Availability of appropriate faculty to serve as research advisor(s).
- The applicant's test scores, recommendations, and relevant work experience must indicate a high potential for success in doctoral studies and research.

- In addition, an applicant who does not meet the minimum requirements may still be admitted with provisional standing if they have potential for success as a doctoral student. His/her status may be changed to full standing after satisfying requirements specified by the director of the program, in consultation with the appropriate department chairperson, at the time of admission.

If admitted in provisional standing, the student must remove all deficiencies and apply for reclassification to full standing prior to the completion of fifteen (15) graduate credit hours. Although the general requirements for the doctoral program are the same for all departments in CECS, each department may include additional degree requirements for students pursuing specialization in that department to support specialized research.

1.2.4 Program Requirement

The doctoral degree requires academic work, consisting of course work and dissertation work in a specialized area, beyond baccalaureate work. Qualifying and comprehensive examinations and dissertation are also required. The catalog description of the proposed Ph.D. in Engineering degree program is shown in the following two pages. Following subsections (1.2.4.1 – 1.2.4.3) describe the requirements and process in detail.

1.2.4.1. Academic Requirements

The doctoral degree requires a minimum total of 38 credit hours (students admitted with master's degree) or 68 credit hours (students admitted without master's degree) of academic work, consisting of course work and dissertation work, beyond baccalaureate work, subject to the following:

- *Required Coursework (18 CR or 48 CR)*
    1) For Students Admitted with a master's degree (18 CR)

       A minimum of eighteen (18) credit hours of coursework beyond the master's degree, including six (6) credit hours of full graduate courses acceptable to the student's advisory committee. If a student completed a thesis at the M.S. level, then 6 hours of thesis research can be substituted for graduate coursework.

Required courses for all disciplines include:

- ENGR 701: Research Methods for Doctoral Students 3 hours
- EM 660: Project Management 3 hours
- EM 675: Engineering Economics 3 hours

An additional 9 hours of graduate coursework is required in the chosen discipline. This coursework is to be negotiated with the student's dissertation committee and taken at the full graduate (600 or above) level.

2) For Students Admitted with a bachelor's degree (48 CR)

- A minimum of twenty-seven (27) credit hours at the full graduate (600 or above) level, including those courses in 1) above, and

- A maximum of fifteen (15) credit hours at the 500-level, acceptable to the student's advisory committee.

- *Doctoral Research or Dissertation Courses (20 CR)*

A minimum of twenty (20) credit hours of doctoral research and dissertation (ENGR 702) built upon the student's course of study and making a significant contribution to the state of knowledge or to the art of the engineering profession is required; not more than 12 credit hours may be earned in a particular semester:

ENGR 702 Dissertation Research (can be taken as 0-12 hours at a time)

- *Residence Requirement (4 semesters)*

Residence of four (4) regular semesters, with at least two (2) semesters in continuous residence, is required. For students who wish to complete the doctoral program in a part-time capacity due to employment in a local industry, accommodation on residency will be negotiated between the student and his/her dissertation committee.

All students must complete a qualifying examination based mostly on undergraduate materials in their chosen discipline through a formal process established by the department prior to the end of the first year of doctoral study. Students admitted with a bachelor's degree on an exceptional basis must successfully complete the qualifying examination before the end of the regular semester of enrollment in which the student is completing 24 hours or more of graduate coursework. The process should include, at a minimum, an examination of the student's fundamental knowledge managed by the Graduate Committee of the department. Based on the

student's performance on the qualifying examination, the student may be (i) permitted to continue in the doctoral program or (ii) advised to transfer to a M.S. degree program in an appropriate discipline in the College (for students admitted without an M.S. in their chosen discipline), or (iii) recommended for termination from the graduate program of the College.

All requirements, including the dissertation, must be completed within a period of eight consecutive years. Maintenance of a minimum quality point average of 3.0 and adherence to the general regulations of Graduate Studies is expected.

1.2.4.2. Dissertation Committee

Each doctoral student's dissertation committee must be formed after the successful completion of the student's qualifying examination or the second semester in the program. The committee *consists* of a minimum of four (4) voting members from two or more disciplines in the academic unit at Marshall University or **another accredited university**. Additionally, should none of the four committee members chosen have experience with serving on a doctoral committee, a fifth member with experience may be appointed by the Dean in consultation with the Program Director from outside the department, college, **or university**. The Associate Dean of CECS (or his/her designee) may serve as an ex officio, nonvoting member as deemed necessary by the Department. This does not preclude the Associate Dean from serving as a voting member of a committee, should they be requested. The student is responsible for identifying, in consultation with the department chairperson or program director, a faculty member who is willing to chair his/her advisory committee. The chairperson of the committee and the student are responsible for identifying the other faculty members required/desired and determining if they are willing to serve. If necessary, the dissertation committee may be co-chaired. Changes in a doctoral dissertation committee must adhere to all policies and procedures governing graduate study at the University. Failure to be able to form a committee is a cause for transfer to non-degree status. Further regulations concerning the membership, appointment, and responsibilities of the advisory committee as required by the University will be followed.

The student's Dissertation Committee shall formally meet with the student to make an objective assessment of the student's knowledge relative to the field of study. The Plan of Study should reflect such an assessment. The Plan of Study based on this assessment must be completed

before the end of the second semester of enrollment for the degree or completion of 12 credit hours of graduate courses, whichever comes first. A form indicating the date of this meeting and members of the Dissertation Committee in attendance shall be transmitted along with the Plan of Study to the Dean's Office.

All courses shown on the Plan of Study, including background courses, are indicators of the student's depth and breadth of knowledge in the discipline and shall be considered by the committee when designing the written part of the student's comprehensive examination. In determining the time limits for taking the comprehensive examination, for earning the degree, and for determining eligibility for financial aid, the time that the background courses were completed shall not be considered.

Each proposed Plan of Study must be approved by the student's dissertation committee, the department chairperson, the program Director, and the Dean. There will be a hold placed on a student's registration if his/her Plan of Study has not been filed in the Dean's office by the time 15 credit hours have been earned.

1.2.4.3. Comprehensive Examination and Admission to Candidacy

The comprehensive examination will consist of a written portion and an oral defense of the written research proposal. The written portion will consist of several parts as appropriate to the major discipline and the research area. This examination will test the student's breadth of knowledge in the discipline, depth of knowledge in selected areas, and the ability to integrate the knowledge acquired from several courses. This examination must be given after the student has completed at least eighty (80) percent of the coursework beyond the master's degree with a point average of 3.0 or above, as prescribed in the program of study. However, the written comprehensive examination should be completed before the end of the semester following completion of the coursework prescribed in the Plan of Study. The extension of this deadline is possible with the appropriate justification. A student desiring an extension shall make a request in writing to the Program Director. The request must include justification and a schedule for completion. If the student is not satisfied with the decision of the Program Director, the decision may be appealed to the Engineering Graduate Committee, with the Dean of Engineering substituting for the Associate Dean as chair of the committee.

All parts of the written examination should be completed within a period of two (2) weeks. Other details of this examination, including format, content, method of evaluation and timing, will be left to the discretion of the dissertation committee. All voting members of the committee should participate in evaluating the student's performance in the written parts of the examination.

The written research proposal should, as a minimum, consist of the development of the research problem from the extant knowledge in the area, the approach and methodology to be followed, the expected original contribution to the extant knowledge, and the expected timeline for the completion of the research. The student should submit copies of the written proposal to the committee within thirty (30) days from the date of taking the final part of the written examination, and the proposal defense will be scheduled shortly thereafter. The student will be informed of the results of the entire comprehensive examination (written part and proposal presentation) at the end of the defense of the research proposal.

On passing the entire comprehensive examination, the student will be admitted to candidacy for the doctoral degree. Normally, a student not passing any part of the comprehensive examination will not be permitted to continue in the doctoral program. However, at the request of the student and the agreement of the committee, a second chance may be given to the student to pass that part of the examination that he/she did not pass within a year. The committee may prescribe additional academic work to be undertaken by the student prior to making the second attempt. No student will be permitted to continue in the program if he/she does not successfully complete all parts of the comprehensive examination after the second attempt.

1.2.5 Program Delivery

All coursework will be offered on the Huntington campus following classical instructional mechanisms. Laboratory facilities are available on the Huntington Campus (see *3.6 Facilities Requirements* for more details). As online courses are available in the college in some subjects, students will be allowed to take online courses should they choose and count them in their program of study.

2. Program Needs and Justification

2.1 Existing Programs

There is only one other in-state institution (West Virginia University in Morgantown, WV) that offers doctoral programs in engineering. Table 1 shows the programs with available doctoral degrees.

Table 1: University with Ph.D. in Engineering Program in West Virginia

Institution	Degree	Public College	Distance from MU
West Virginia University	Ph.D. in Aerospace Engineering, Biomedical Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Computer Science, Industrial Engineering, Material Science and Engineering, Mechanical Engineering, Mining Engineering, Occupational Safety and Health, Petroleum and Natural Gas Engineering	Yes	207 miles

There are several institutions in surrounding states, including Ohio, Virginia, Maryland, Pennsylvania, and Kentucky that offer doctoral programs. However, the University of Ohio is the only school offering a Ph.D. in Engineering within 100 miles from the Marshall University campus.

Table 2: University with Ph.D. in Engineering within 100 miles from Marshall University

Institution	Degree	Public College	Distance from MU
Ohio University	Ph.D. in Chemical Engineering, Civil Engineering, Electrical Engineering and Computer Science, Mechanical and System Engineering	Yes	80 miles

2.2 Program Planning and Development

The proposed doctoral program is targeted toward developing opportunities for graduates with terminal degrees in West Virginia. Numerous current and recent Marshall engineering graduates have already expressed interest in the proposed program. Please see letters from our graduates (national applicants) and a copy of emails with application materials from prospective external students (international students) attached as samples among many inquiries with the intention of joining the Ph.D. program. The proposed program will also have tremendous appeal to other regions in the U.S. and across the globe. A recent NSF report shows nearly 40 percent of U.S.-trained doctorate holders were born outside the United States, and 73 percent of this group remained in the United States.

CECS has grown significantly in the last 10 years and has been laying the foundation for this proposed doctoral program for some time, strongly believing that the establishment of this program is appropriate at this time. There are currently eight (8) undergraduate degree programs and seven (7) Master's degree programs in the college, all with considerable emphasis on research. CECS has excellent faculty who conduct state-of-the-art research in the state-of-the-art facility in the WAEC building. The college already offers graduate courses (at both the 500-level and 600-level) to support existing degree programs and the proposed doctoral program.

The college convened an ad hoc doctoral steering program committee with five faculty members representing all departments in the college in Spring 2021 to assess the potential and details of the doctoral program. In 2022, Hanover Research provided a report assessing the demand for doctoral programs in engineering, specifically highlighting demand trends within Marshall University's custom region, including an examination of student and labor market demand, and an analysis of potential competitor programs. The report recommended moving forward with developing the doctoral program in engineering with the expectation that initial support may be small. The report also recommended to include Electrical and Mechanical Engineering in the initial concentration offering and offer a part-time program option to differentiate the program from its competition. Based on the study by the doctoral program committee and the recommendation of Hanover Research, the proposed doctoral program in engineering designed with specialization areas will be flexible enough to adjust the number of doctoral students depending on the market

demand and readiness of each program in the college. The program will increase institutional revenue and provide a source of highly skilled labor for both research and teaching.

2.2.1 Clientele and Need

As our society relies further on technology and engineering for economic development and prosperity, the vitality of the STEM workforce and researchers help keep the country's knowledge industries at the forefront of the global economy. To keep its global leadership and competitiveness, it is important for the United States to produce a new crop of American scientists and engineers to fill the growing number of jobs offered by academic, industrial, and government employers. A recent survey of doctorate recipients conducted by the National Science Foundation (National Center for Science and Engineering Statistics, 2015) shows that 47 percent of working doctorate holders were employed in the business/industry sector and 45 percent at educational institutions. The proposed PhD program in Engineering will enable the concept of approaching applied problems via a holistic solution-oriented approach. It is envisioned that this new degree program will increase the level of multi-disciplinary learning and research interaction among the faculty and graduate students. Some specializations in the proposed degree program, such as Biomedical Engineering and Computer Science (especially, in the areas of Bioinformatics and Data Science), are interdisciplinary by nature and many existing faculty in CECS have been involved in collaborative research working with other colleges on their research with multiple interdisciplinary research grants and publications. Although the topic of a dissertation may be selected by Ph.D. students, interdisciplinary research will be strongly encouraged by CECS advisors who already have funding in interdisciplinary research. As stated in section 1.2.4.2., the dissertation committee consists of a minimum of four (4) voting members from two or more disciplines in the academic unit at Marshall University or another accredited university, which will bring more members from the outside of the academic unit promoting interdisciplinary research. CECS is excited about this new program to provide the opportunity to expand its interdisciplinary research.

Graduates will be afforded opportunities at colleges/universities, national laboratories, and government regulatory and research agencies and will also be qualified for a wide array of public-sector and private-sector engineering positions (e.g., consulting, design engineer, etc.).

In addition, according to the Vision 2025: West Virginia Science and Technology Plan published by the West Virginia Higher Education Policy Commission in April 2021, one of the

HEPC's primary goals is to increase the number of doctoral graduates to support research activity; the proposed degree program would align well with this strategic vision (Vision 2025, 2021).

2.2.2 Employment Opportunities

The employment market for doctoral graduates is heterogeneous. The rate of R&D as a primary activity ranged from 18 percent for psychology doctorate holders to 54 percent for engineering doctorate holders (National Science Foundation, 2017). Even in Engineering-related fields, there are both shortages and surpluses depending on the area of study and particular job market segment.

In the academic job market, overall employment of postsecondary teachers is projected to grow 12 percent from 2020 to 2030, faster than the average for all occupations. According to research in Q2 of 2021, over 570 postings were found on Academic Keys which required terminal degrees in engineering or closely related fields (AcademicKeys, 2021). Additional data can be found in Table 3, which details available job postings in the U.S. according to the Chronicle of Higher Education (Chronicle of Higher Education, 2021).

Table 3: Employment Projections (Taken from the Chronicle of Higher Education)

Job Classification Search	Position Type				
	Non-Tenured	Tenured	Postdoc	Executive	Fellowship
Engineering (General)	193	151	36	64	12
Biomedical	48	39	15	7	7
Civil	125	93	29	37	11
Computer	304	192	45	94	15
Electrical	36	27	7	4	2
Mechanical	51	37	15	20	3

In the government and government-related job sector, certain STEM disciplines have a serious shortage of positions at the doctoral level in general (e.g., systems engineers, cybersecurity, and intelligence professionals) due to the U.S. citizenship requirement. In contrast, an oversupply of biomedical engineers is seen at the Ph.D. level, and there are shortages of electrical engineers and mechanical engineers at advanced-degree levels (NSF: Science & Engineering Indicators, 2022).

In the private sector, software developers, petroleum engineers, data scientists, and those in skilled trades are in high demand; there is an abundant supply of biomedical, chemistry, and physics Ph.D.'s; and transient shortages and surpluses of electrical engineers occur from time to time. The proposed doctoral program will include a greater level of infusion of management principles and solutions-oriented research coupled with significant industry input to prepare graduates for private sector.

The doctoral graduates earn about 35% more than an engineer with a bachelor's degree on average according to the latest Engineering Income and Salary Survey and the doctoral degree in engineering-based fields will open exclusive job opportunities in both research and academic institutions (Survey Engineer Salary, 2021).

2.2.3 Program Impact

The proposed doctoral program will leverage the college's already existing graduate programs: M.S. in Computer Science, M.S. in Cybersecurity, M.S. in Data Science, M.S. in Electrical and Computer Engineering, M.S. in Engineering, M.S. in Environmental Safety and Health, M.S. in Mechanical Engineering. It will enhance the College's brand and improve its reputation among alumni, many of whom may wish to enroll in the program. The doctoral program can increase general gift-giving, fundraising, and promote industry partnerships in addition to research productivity and application for grant awards.

The doctoral program will strengthen the collaboration with programs in other colleges at Marshall University, creating new pathways for education and research with an option of enhancing their course offerings and opportunities to participate in interdisciplinary research projects. The doctoral program will also help faculty create research partnerships with other universities and research institutions. Please see supporting letters for this new program from the Deans of College of Science, College of Education and Professional Development, College of Liberal Arts, School of Medicine, School of Pharmacy, College of Health Professions, College of Arts and Media, and Lewis College of Business.

Research expenditures in CECS have increased from $1,198,652 in 2019-2020 to $3,248,493 in 2020-2021 to over $4 million in 2021-2022. In 2022-2023, the college already has over $10 Million on contract for research and additional proposals are pending. This increase in research expenditures is expected to enable the funding of research assistantships in the doctoral

program at an increased rate, and the addition of the doctoral program will enable the faculty to pursue higher and more prolonged levels of research funding for government-sponsored projects.

2.2.4 Cooperative Arrangements

CECS has strong partnerships with several industry partners and state government agencies. The proposed program has strong support from local, state, and regional industries and employers. In addition, the CECS Advisory Board has expressed strong support for the proposed program. All the departments in CECS, including the Department of Biomedical Engineering, the Department of Civil Engineering, the Department of Computer Sciences and Electrical Engineering, and the Weisberg Department of Mechanical and Industrial Engineering will participate and cooperate in the implementation of the program. Please see six supporting letters from Advisory Board and industry partners.

2.2.5 Alternatives to Program Development

There are no alternatives to the proposed degree program at Marshall University. The proposed doctoral program will be one of only two doctoral engineering programs in West Virginia and will create opportunities both for students to increase their skillsets and qualifications as well as for the institution to expand its research profile and capabilities.

3. Program Implementation Projected Resource Requirements

The program does not require additional resources from the university in its initial stage and can be sustainable by leveraging already existing resources available at the CECS. These resources include existing external grant funding, expected additional grant funding, as well as indirect cost recovery generated from the external research grants. Additional resources might be needed when the number of students reaches 30 students after 5th year of the program. The program will provide multiple benefits at a low cost to the institution. Scenarios that examine the Return on Investment (ROI) of this timely program have shown it to be a lucrative addition to Marshall University.

3.1 Program Administration

CECS will house the proposed program. The Associate Dean of CECS will serve as Director of the program with oversight by the Dean of CECS. The college does not project any changes in the administration of the associated departments with the addition of this proposed

program. The Department of Biomedical Engineering, the Department of Civil Engineering, the Department of Computer Sciences and Electrical Engineering, and the Weisberg Department of Mechanical and Industrial Engineering will participate in the program. Each department will provide appropriate degree requirements for the specific discipline of the student.

3.2 Enrollment Projections

Based on student inquiries and interest in the proposed program and the recommendation by Hanover Research of a slow growth program, it is conservatively estimated that there will be twenty-five (25) students enrolled in or graduated from the program within five years. Table 4 details the enrollment projections for the program's first five years if students will complete the program over a four-year period.

Table 4: Student Enrollment Projections

Enrollment Year	Academic Year				
	23-24	24-25	25-26	26-27	27-28
2022-23	3	3	3	3	
2023-24		3	3	3	3
2024-25			5	5	5
2025-26				7	7
2026-27					10
Total Enrollment	**3**	**6**	**11**	**18**	**25**

(FORM 1: FIVE-YEAR PROJECTION OF PROGRAM SIZE)

CECS currently uses *eCAS* from Liaison with a built-in recruiting mechanism for graduate applications (WebAdmin, 2023) and has invested $14,000 in 2022, and another $30,000 in 2023 for a marketing campaign which could easily be redirected to the proposed Ph.D. program without any additional cost to the college or university to recruit students. In addition to the existing means of recruitment, we expect faculty to be more active in recruitment using the existing networks in their research areas and be involved in the selection process of the final candidates.

3.3 Faculty Instructional Requirements

Fully staffed, CECS has the administrative system and necessary faculty to support the proposed doctoral program for the first few years. The faculty in the college possesses the

necessary technical expertise to support the program with excellent research and publication records. Since the proposed Ph.D. in Engineering program is a research-based program, not a course-based program, there is almost no extra teaching load to existing faculty with only three required courses (ENGR701 Research Methods, EM 660, EM 675) for all disciplines. Among them, ENGR 701 is the only new lecture-based course. The college does not anticipate creating any new additional Ph.D. level courses in the future other than those proposed in the Intent to Plan and there is no need of creating multiple sections for existing graduate courses to support the small number of Ph.D. students as shown in Table 4: Student Enrollment Projection. When the program is successful in recruiting a large number of students in the future, however, additional faculty and adjuncts may be necessary.

The college believes the current teaching load (3+3) is more than sufficient to absorb all Ph.D. students in intent to plan and the proposed Ph.D. program may even reduce the teaching load of the existing faculty since Ph.D. students can be hired as teaching assistants to teach undergraduate and/or master-level courses.

3.4 Library Resources and Instructional Materials

Marshall University Libraries have most of the resources needed to support the proposed degree program. However, a few additional library collections may need to be added over time to support the doctoral program. Initial budget costs associated with the library will be provided to cover the costs of document delivery as the program grows. In the 4th and 5th years, substantial investments in the library holdings are anticipated to be available.

3.5 Support Service Requirements

All support services currently available to Marshall University students will be adequate to support the proposed program and the college cannot foresee any huge impact on other University support services required for this small-sized Ph.D. program (25 students maximum) other than the library and MURC. Please see the library cost estimate in our budget. For MURC, the college believes the Ph.D. program will help to bring more grants to the University which will benefit MURC and reduce the burden. Please see a support letter from MURC attached to the application.

3.6 Facilities Requirements

No additional facilities requirements are currently necessary to initiate the proposed program.

The College of Engineering and Computer Sciences (CECS) is housed in the Weisberg Applied Engineering Complex, a state-of-the-art multi-story facility with adequate classrooms, dedicated student study rooms, and multiple computer lab facilities. Also available to CECS is the 13,000 ft^2 Weisberg Engineering Laboratories (WEL), which contains laboratory spaces used to support multiple degree programs in CECS.

CECS has the following designated laboratory spaces available to support the proposed program:

- The WAEC Building has designated spaces for the Advanced Materials Testing lab, Environmental Engineering lab, Thermal Engineering lab, Hydraulics and Pneumatics lab, Fluids and Hydraulics lab, Controls and Instrumentation lab, Industrial Controls lab, Circuits and PLC lab, Biomedical Engineering Lab, and a Machine Shop.
- The WEL Building has the 3-D printing, manufacturing machine-shop/capstone labs, Robotic and Autonomous Control lab, and the Materials/Soils Lab.

CECS currently has enough space for students conducting research. As the program grows, it may be necessary to procure additional space for doctoral students to have a personal workspace, but the college will attempt to satisfy those needs in house if at all possible. Some majors in CECS such as computer science and cybersecurity program do not require much extra space while some Engineering majors may need more space if the new program grows. Faculty with funding are entitled to research space, while faculty without funding have space on as available basis. Should additional laboratory equipment or facilities be required to support a student's chosen dissertation topic, an appropriate proposal will be made to an external funding agency to secure this equipment. CECS will also constantly work on finding more space for research by renovating labs (ex. VisLab), sharing space, and negotiating with the university for any extra space (ex. 4th floor in WAEC).

3.7 Operating Resource Requirements

As an integral part of the CECS, the doctoral degree program will share the operating resources with the other programs offered by the CECS. Table 5 provides a summary of the operating resource requirements. For the administrator, we anticipate the Associate Dean of the College will be the administrator of the program, and 0.125 FTE anticipates one course release for this person to administer the program for the first 3 years, and two course releases in the 4^{th} and

5th year. For faculty, existing faculty will be used to support the program. We anticipate no additional faculty requirements in the first five years of the program. If the program grows beyond expectations, additional faculty may be required. For the purposes of this budget, 1 FTE for a faculty member is equivalent to 8 course releases. A faculty member would have one-course release to advise two doctoral students. By the 5th year, when we anticipate having 25 students in the program, we expect to use 12.5 course releases for those faculty advising doctoral students, which is equivalent to 1.56 Faculty FTEs. The courses released would be covered by adjunct faculty or teaching assistants. The college will admit students with different funding sources including students' own savings, scholarships/fellowships, tuition reimbursement/assistance from companies, research assistantship by grant funding of Ph.D. advisors, etc. Any student admitted to the program should show the funding to support their first two years and it will be reviewed by college admissions committee. Since very few research grants in engineering are more than 2 or 3 years, the college can provide support to bridge the gap through teaching assistantships. We anticipate offering teaching assistantships to one-half of the admitted students for their last two years (3rd and 4th years) teaching two courses per year with the funding at $18,000, which will save adjunct faculty salary.

Additionally, we anticipate using existing clerical staff to handle the additional work associated with the doctoral program. We do not anticipate needing additional clerical staff at this time, but should the program grow beyond current expectations, we anticipate that additional staff may be necessary. Other costs for repair, equipment, and library are also included in Table 5.

Table 5: Five-Year Projection of Total Operating Resources Requirements

	Year 1 2023-24	Year 2 2024-25	Year 3 2025-26	Year 4 2026-27	Year 5 2027-28
A. FTE POSITIONS					
1. Administrators	0.125	0.125	0.125	0.25	0.25
2. Faculty Course Releases	**1.5**	**3**	**5.5**	**9**	**12.5**
3. Adjunct Faculty	2	3	3	3	5
4. Graduate Assistants			1.5	3	4
5. Other Personnel:	0	0	0	0	0
a. Clerical Workers	0.125	0.125	0.125	0.25	0.25
b. Professionals	0	0	0	0	0

B. OPERATING					
1. Personal Services:					
a. Administrators	$15,000.00	$15,000.00	$15,000.00	$30,000.00	$30,000.00
b. Full-time Faculty	$15,000.00	$30,000.00	$55,000.00	$90,000.00	$125,000.00
c. Adjunct Faculty	$6,000.00	$9,000.00	$9,000.00	$9,000.00	$15,000.00
d. Graduate Assistants			$27,000.00	$54,000.00	$72,000.00
e. Non-Acad Pers:	$0	$0	$0	$0	$0
Clerical Workers	$3,125.00	$3,125.00	$3,125.00	$6,250.00	$6,250.00
Professionals	$0	$0	$0	$0	$0
Total Salaries	**$39,125.00**	**$57,125.00**	**$109,125.00**	**$189,250.00**	**$248,250.00**
2. Current Expenses (Recurring)	$0	$0	$0	$0	$0
3. Repairs and Alterations (Lab)	$0	$0	$5,000.00	$5,000.00	$5,000.00
4. Equipment:	$0	$0	$0	$0	$0
Educational Equip.	$9,000.00	$9,000.00	$15,000.00	$15,000.00	$50,000.00
Library Resources	$5,000.00	$10,000.00	$25,000.00	$50,000.00	$100,000.00
5. Nonrecurring Expenses: (Lab)	$0	$0	$0	$0	$0
Total Costs	**$53,125.00**	**$76,125.00**	**$154,125.00**	**$259,250.00**	**$403,250.00**
C. Sources					
1. Tuition Revenue	$42,788.00	$85,576.00	$161,204.00	$269,672.00	$385,494.00
2. Grant Funding	$15,000.00	$30,000.00	$55,000.00	$90,000.00	$125,000.00
Total Revenue	**$57,788.00**	**$115,576.00**	**$216,204.00**	**$359,672.00**	**$510,494.00**
D. Net Revenue	**$4,663.00**	**$39,451.00**	**$62,079.00**	**$100,422.00**	**$107,244.00**

3.8 Source of Operating Resource

The proposed Ph.D. program will not require state funding but will generate a positive cash flow. Table 6 shows the estimated revenue generated by the proposed program during its first five years (Note that tuition and fees are based on 2022-2023 graduate tuition and fees and the estimated number of students in Table 4). Table 6 provides a detailed review of the tuition generated based on the majority of the students coming from in-state, and less coming from out of state. Should the program attract more students from out of state, the tuition generated could be greater.

Table 6: Proposed Program Budget & Revenue Generated in Five Years

Tuition and Fees		**Year 1 (23-24)**		**Year 2 (24-25)**		**Year 3 (25-26)**		**Year 4 (26-27)**		**Year 5 (27-28)**	
Student	*Annual*	*FTE*	*Revenue*	*FTE*	*Revenue*	*FTE*	*Revenue*	*FTE*	*Revenue*	*FTE*	*Revenue*
WV Resident	$9,948	2	$19,896	4	$39,792	7	$69,636	11	$109,428	14	$139,272
Metro	$17,302	0	$0	0	$0	0	$0	0	$0	1	$17,302
Non-Resident	$22,892	1	$22,892	2	$45,784	4	$91.568	7	$160,244	10	$228,920
Total		**3**	**$42,788**	**6**	**$85,576**	**11**	**$161,204**	**18**	**$269,672**	**25**	**$385,494**

The college has considerably increased the external research funding awards last five years (amount of total grant awards in CECS: $327,537 in 2019-20, $2,771,975 in 2020-21, $3,093,684 in 2021-22, and $12,887,873 in 2022-23), and expects more grant awards in the next five years. The College will provide grant funding to cover the expenses (Year 1: $15,000.00, Year 2: $30,000.00, Year 3: $55,000.00, Year 4: $90,000.00, Year 5: $125,000.00) and students will be covered for the four years of their program. Bridge resources for students between grants will be provided from the cost recovery account for the college. The amount of the indirect cost recovery funds (i.e., ICR or "overhead") of the college in reimbursement for services rendered in support of grants and contracts was $92,062.91 in 2021, $153,561.37 in 2022, and it is expected to grow more in the next five years as the college receives more grant awards. Tuition and fees will be covered as well under the doctoral graduate assistant category with full tuition and fees. These will be paid by the grant supporting them or funding obtained from MURC or the Indirect Cost Recovery account. We do anticipate collecting full tuition for all students and not asking the university for tuition remission.

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Appendix A: Courses Description in Ph.D. Program

ENGR 701 – Research Methods for Doctoral Students (NEW). 3 hrs.

An overview of research methodology including basic concepts employed in quantitative and qualitative research methods and processes of research defining research problems, collecting, analyzing, recording, and interpreting data to prepare a dissertation proposal.

ENGR 702 - Dissertation Research (NEW). 0 - 12 hrs.

Completion of dissertation research under the supervision of a faculty member. (PR: ENGR 701 and Approval of Dissertation Advisor)

Appendix B: Letters of Suppo

January 31, 2023

Dear Marshall University Graduate Council:

This letter is to communicate the support of Provost Avi Mukherjee and Matt Tidd, Chief Financial Officer, for the College of Engineering and Computer Sciences Intent to Plan for the Doctor of Philosophy (PhD) in Engineering program. This process began in Spring 2021 when the college created a Steering Committee of faculty to determine the need for a doctoral program, and what that program would look like.

We discuss the merits of the proposed program with Provost Mukherjee when he was made Interim Provost in July 2021 and again when he was appointed the Provost in 2022. We have also discussed this program with the previous Senior Vice President for Financial Affairs, Mark Robinson, the Interim Chief Financial Officer and again with the new Chief Financial Officer.

Based on a request from Provost Mukherjee, we contracted with Hanover Research to conduct a market survey to determine if there was sufficient need for the program. That report is enclosed in this package. Additionally, based on some concern for me influencing the process to get a positive vote, I engaged an independent arbiter to meet with the faculty of the college without any of the leadership present to determine if they truly understood the program and what it would mean for the college, and whether they agreed with moving forward. The faculty overwhelmingly voted to move the intent to plan forward.

We look forward to your consideration for our Intent to Plan for the PhD program. This program is integral to the strategic directions of the college and it's evolving research mission.

Sincerely,

David A. Dampier
Dean, College of Engineering and Computer Sciences
Marshall University
dampierd@marshall.edu
304-696-3066

Avinandan Mukherjee
Provost and Senior Vice President for
Academic Affairs
Marshall University

Matt Tidd
Chief Financial Officer
Marshall University

Marshall University
College of Engineering and Computer Sciences
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/CECS

MARSHALL UNIVERSITY
www.marshall.edu

Vice President for Research

November 14, 2022

David A. Dampier, Ph.D.
Dean
College of Engineering and Computer Sciences
Marshall University

Dean Dampier:

I am extremely supportive of your intent to create a doctoral program in Engineering at Marshall University. Our efforts to increase the research enterprise of the university align very well with your efforts to increase the research productivity in the College of Engineering and Computer Sciences. Doctoral students provide more incentive for faculty to engage in externally funded research, and having doctoral students in the budget for federal proposals, especially at the federal research funding agencies like the National Science Foundation or National Institutes of Health, increase the chances of funding as well as the amounts that are awarded.

I also understand that it is difficult to attract doctoral students to a program without some offer of funding up front. Most research-intensive universities that offer doctorates have the ability to offer a limited number of fellowships to incoming students to get their commitment to the program. As your program gets started, I pledge to work with you to provide at least some funding to support the offer of fellowships. The students that come to Marshall will need to be supported on research grants for most of their program, but in the case of very talented students, without current funding in external grants, a budget to provide for assistantships is necessary. With the increased research funding that the college has enjoyed over the last several years, I am confident that the program will be self-sustaining within a short period of time. I will work with you to support this effort, and we will get it done.

Sincerely,

John Maher, Ph.D.
Vice President for Research and Economic Development
Marshall University

MARSHALL UNIVERSITY
www.marshall.edu

College of Science
Office of the Dean

August 4, 2023

Dr. David Dampier
Dean of the College of Engineering and Computer Sciences
WAEC Room 2103
One John Marshall Drive
Huntington, WV 25755

Dear Dave,

This letter is to confirm our conversations about the proposed Engineering PhD program and my strong support for this proposal. As you know, I believe that your proposed PhD program is very important to the health of the research enterprise across the entire University. The addition of a PhD program in Engineering will be transformative not just for your college, but others as well, including the College of Science. Some of this will be just from the general elevation of the research tempo on campus and the more general availability of instrumentation and expertise. But I am most excited about the increase in collaborative work that will inevitably follow with the first students in the program. This isn't just my opinion, I have seen it in action elsewhere. In the course of my career, I have served on graduate committees for doctoral students in engineering and had engineers serve on my PhD students' committees. I have had engineering PhD students in my lab and sent my students to work in engineering labs. I am sure that something similar will happen here and that the students in your new program will be spending time in research labs in the College of Science and contributing to the general intellectual ferment across campus. (I only hope that we can get a PhD program here in Science soon so we can send our students into your labs.)

As you know, it is absolutely vital that Marshall maintains Carnegie R2 status. This status qualifies us for various grant programs, puts in higher categories in a number of ranking systems, and generally makes it more likely we will have a true national presence which is so important as the demographic cliff hits West Virginia harder and sooner than nearly every other state. In other words, our Carnegie status dramatically affects our ability to attract research funding, masters students, and even undergraduates. But, as you also know, the one thing under the current system that is most likely to result in Marshall's demotion is the lack of PhD graduates. We are comfortably over the qualifying line everywhere else. Like it or not, if we don't have PhD graduates we risk losing our R2 status. We absolutely must add PhD programs and I cannot overemphasize how important I think your proposed program is not just to Engineering, but to the College of Science as well.

If I can provide additional information to you or those reviewing the proposal, please do not hesitate to contact me (stites@marshall.edu).

Sincerely,

Wesley E. Stites

Wesley E. Stites
Dean, College of Science

MEMO

August 21, 2023

To whom it may concern:

As the Dean of the College of Education and Professional Development at Marshall University, I fully support and encourage the development of research doctoral programs. The Doctor of Philosophy in Engineering in the College of Engineering and Computer Sciences would be an excellent addition to the programs offered by Marshall University.

The Intent to Plan for this program demonstrates the resources needed for a slow growth doctoral program, supported by qualified faculty, providing meaningful research experience.

This is a solid program that will support high quality research in the college, and is designed to produce high quality, research capable doctoral graduates that will help to build Marshall's national reputation and growth as a research university.

Teresa Eagle

Teresa Eagle, EdD
Dean
t.eagle@marshall.edu
(304)696-6703

Marshall University
College of Education & Professional Development
Office of the Dean

100 Angus E. Peyton Drive
South Charleston, WV 25303-1600
Tel: 304-746-1992
Fax: 304-746-2074
marshall.edu

Memorandum

Date: August 14, 2023
To: Scott Davis, Graduate Council
From: R.B. Bookwalter, Dean, College of Liberal Arts
Subject: Proposed PhD in Engineering

As the Dean of the College of Liberal Arts I support my colleagues in their commitment to strengthening our standing as a Carnegie R2 institution. A critical component of maintaining this status is the production of research doctoral graduates. With that goal in mind, the College of Liberal Arts fully supports the development of a Doctor of Philosophy in Engineering. The College of Engineering and Computer Sciences has a record of excellence in research and the addition of a doctoral degree program in that college will help advance the university's standing as a national research university.

The current research load in the College of Engineering and Computer Sciences fully supports the slow growth doctoral program laid out in the Intent to Plan submitted. This is a solid program that will support high quality research in the college, and is designed to produce high quality, research capable doctoral graduates that will help to build Marshall's national reputation and growth as a research university.

College of Liberal Arts
Office of the Dean
One John Marshall Drive
Huntington, West Virginia 25755-2600
T: (304) 696-2350
F: (304) 696-4348
E: cola@marshall.edu
marshall.edu

MARSHALL UNIVERSITY
Joan C. Edwards School of Medicine

Office of the Dean

August 14, 2023

SUBJECT: Letter of Support for PhD in Engineering at Marshall University

Dear Provost Mukherjee and Members of the Graduate Council:

As the Dean of the Joan C. Edwards School of Medicine, I wish to state my support for the development of a Doctor of Philosophy in Engineering in the College of Engineering and Computer Sciences (CECS). Marshall University has made a commitment to maintaining its standing as a Carnegie R2 institution. A critical component of maintaining this status is the training of research doctoral graduates.

I have a long-standing history of collaborating with engineers throughout my career, especially in Biomedical Engineering, one of the programs in CECS. I believe that active research collaboration with the CECS would be advantageous to both of our schools and expand the training options of some of our students to include important and rapidly evolving professional capabilities as illustrated by innovation in diagnostic and therapeutic instrumentation, self-contained multiplexed disease models, nanotechnology, and artificial intelligence.

As I understand it, the current research load in the College of Engineering and Computer Sciences fully supports the establishment of the doctoral program laid out in the Intent to Plan submitted. This is a program that will support high quality research in the college, and is designed to produce high quality, research capable doctoral graduates that will help to build Marshall's national reputation and growth as a research university. I look forward to future collaboration and cooperation with CECS and its faculty and to partner in the selection of potential joint doctoral students.

Sincerely and with best regards,

David Gozal, MD, MBA, PhD (Hon)
Dean, Joan C. Edwards School of Medicine
Vice President for Health Affairs, Marshall University

/DG

MARSHALL

School of Pharmacy

August 4, 2023

David A. Dampier, Ph.D.
Dean
College of Engineering and Computer Sciences
Marshall University

Subject: Establishment of a Ph.D. Program in Engineering at Marshall University

Dear Dr. Dampier,

I am writing this letter to express my enthusiastic support for the College of Engineering and Computer Sciences' (CECS) proposal to establish a doctoral program in engineering at Marshall University. The introduction of a Doctor of Philosophy (Ph.D.) Program in Engineering aligns perfectly with the vision of academic excellence and innovation that Marshall University has consistently upheld.

The proposed Ph.D. program showcases a well-thought-out structure that emphasizes research excellence while also allowing students to delve into specialized concentrations within the various fields offered by the college. The inclusion of concentrations such as Biomedical Engineering, Civil and Environmental Engineering, Computer Science, Electrical and Computer Engineering, Engineering Management, Mechanical Engineering, and Industrial and System Engineering ensures that students can pursue their academic passions while contributing significantly to the advancement of knowledge in their chosen domains.

I am particularly impressed by the program's prudent utilization of existing resources within the college. Leveraging these resources not only demonstrates sound fiscal responsibility but also underscores the commitment of CECS to providing students with a high-quality educational experience without undue strain on the university's resources. This strategic approach ensures that the proposed program can be launched efficiently, thereby delivering benefits to students and the institution in a timely manner.

The projected enrollment and graduation figures speak to the careful planning that has gone into this proposal. By aiming to enroll 25 students and graduate 3 students in the fifth year of the program, the program demonstrates a realistic outlook that aligns with achievable milestones. Furthermore, the estimated net revenue of $107,244 in the fifth year, along with the projected new revenues of approximately $313,859 over the program's first 5 years, showcase the program's potential to contribute positively to the university's financial sustainability.

In addition, I firmly believe that the establishment of a Ph.D. program in engineering will undoubtedly enrich the academic landscape and foster a culture of advanced research and innovation. By offering students the opportunity to pursue in-depth research, the proposed program will attract driven and dedicated individuals who will not only enhance their own

knowledge but also contribute to the broader scientific community.

In conclusion, I am thrilled by the prospect of Marshall University taking this significant step towards academic advancement through the establishment of a Ph.D. program in engineering. I wholeheartedly endorse this proposal and am confident that it will yield remarkable outcomes for the university, the college, and the aspiring scholars who will benefit from the program.

Thank you for your dedication to driving excellence in education and research.

Sincerely,

Eric Blough, Ph.D.
Dean
School of Pharmacy

August 24, 2023

TO: David Dampier, Dean

College of Engineering and Computing Sciences

FROM: Michael Prewitt, Dean MWP

College of Health Professions

RE: Letter of Support of Intent to Plan

As the Dean of the College of Health Professions, I fully support the development of research doctoral programs at Marshall University, specifically the timely application for creating a Doctor of Philosophy in Engineering in the College of Engineering and Computer Sciences. Marshall has made a commitment to maintaining the universities' Carnegie R2 designation. A critical component of maintaining this status is the production of research doctoral graduates. The current research load in the College of Engineering and Computer Sciences fully supports the slow growth doctoral program laid out in the proposed Intent to Plan. This is a well-developed doctoral program that will support high quality research in the college, and is designed to produce high quality, research capable doctoral graduates who will help to build Marshall's national reputation and growth as a research university.

I'm pleased to support this Intent to Plan.

Thank you.

Marshall University
College of Health Professions

Office of the Dean

Prichard Hall 224
One John Marshall Drive
Huntington, WV 25755
Tel: 304-696-3765
Fax: 304-696-6739
marshall.edu

Brad D. Smith
Schools of Business

August 4, 2023

Re: Support for creating a Doctor of Philosophy program in the College of Engineering and Computer Sciences

Dear Graduate Council:

I offer my support for creating a Doctor of Philosophy program in the College of Engineering and Computer Sciences (CECS). Marshall is on the cusp of becoming a national research university. Recently awarded an R2 rating by the Carnegie classification system, Marshall needs additional research doctorate programs to ensure that the number of graduates increases to a level that will continually support the R2 rating and build toward a R1 rating. The Lewis College of Business has many opportunities to partner in research with the CECS. A research doctorate will bring the level of research necessary to support both colleges and the university in its quest.

I believe that the proposed Doctor of Philosophy in CECS is a well-defined program and will produce quality graduates that Marshall will be proud of, and that will help to make Marshall a more substantial national university.

Sincerely,

Don Capener
Dean, Lewis College of Business

Lewis College of Business
One John Marshall Drive
Huntington, WV 25755-2314
Tel: 304-696-2316
Marshall.edu

8 August 2023

Dear Graduate Council:

The College of Arts and Media (CAM) supports the proposed PhD Program in Engineering in the College of Engineering and Computer Sciences (CECS). CECS plans to leverage existing resources to establish the program, and engineering PhD students would aid with research, including interdisciplinary research, and potentially teach. CAM recognizes that this program would be invaluable in helping Marshall University maintain its R2 Carnegie classification (Doctoral Universities – High research activity).

Sincerely,

Maria P. Gindhart

Maria P. Gindhart, PhD
Dean
304.696.2964
gindhart@marshall.edu

College of Arts and Media
Office of the Dean
One John Marshall Drive
Huntington, WV 25755-2200
T: (304) 696-6433
marshall.edu

MARSHALL UNIVERSITY.

w w w . m a r s h a l l . e d u
Department of Computer Sciences and Electrical Engineering

26th March 2023

Subject: Support Letter for Ph.D. Program at College of Engineering and Computer Sciences

To whom it may concern,

I am an Associate Professor at the Department of Computer Science, College of Engineering and Computer Sciences at Marshall. I am twice the recipient of the John Marshall Scholar award, Marshall University Distinguished Scholar and Artist award, Weisberg Research Award and I have received numerous Best Papers awards since joining Marshall.

I am writing to express my enthusiastic support for the proposed Intent to Plan for a Ph.D. program. As a faculty member who has been teaching and conducting research in computer science for many years, I believe this program will play a critical role in driving innovation and advancing state-of-the-art in our field.

One of the key benefits of a Ph.D. program is that it provides a platform for training and developing the next generation of researchers and scholars. Ph.D. students bring fresh perspectives, creativity, and a willingness to tackle complex problems that can drive research forward in exciting new directions. Furthermore, Ph.D. students often play a critical role in facilitating the acquisition of research grants and funding, which is essential for supporting the research projects of the faculty and the department as a whole.

Without Ph.D. students, it can be challenging to secure competitive research grants. Grant reviewers often place a high emphasis on the involvement of Ph.D. students in research projects, as they are viewed as a key indicator of the quality and potential impact of the research. This is because Ph.D. students are often the driving force behind many research projects, bringing fresh ideas and a deep commitment to pursuing challenging research questions. They are also viewed as future leaders in the field, with the potential to make significant contributions to the academic and industry communities. Therefore, having a strong cohort of Ph.D. students is beneficial for their academic development and can also help attract funding and resources to support the college's research activities. I say this from my firsthand experience where many of my competitive NSF grants were turned down ONLY due to lack of Ph.D. students to maneuver the proposed project.

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w w w . m a r s h a l l . e d u
Department of Computer Sciences and Electrical Engineering

Ph.D. students play a crucial role in conducting high-end research and producing publications that can increase the research citation count for the college. Their research outputs can help elevate the reputation of the department and the university, leading to greater visibility and potential for being recognized as a Tier I, i.e. Research Intensive (RI) institution. Additionally, Ph.D. students often have the opportunity to collaborate with faculty members and other researchers within the college and across the university, contributing to interdisciplinary research that can significantly impact various fields. The presence of Ph.D. students also fosters a culture of research excellence, encouraging other students and faculty members to pursue high-quality research projects that can make a meaningful contribution to the broader academic community. Overall, the importance of PhD students in the research process cannot be overstated, and their contributions are essential to the success of the college and the university as a whole.

As the Program Chair for the past ten flagship conferences in computer science, I have had the opportunity to collaborate with other institutions on various research initiatives, joint funding applications, and fully-funded Ph.D. student exchange programs. However, I have also observed that the lack of a Ph.D. program in our college has often been a significant barrier to forming these collaborations. Many institutions prioritize partnerships with colleges that have strong Ph.D. programs, as these programs are seen as key indicators of the quality and potential impact of the research being conducted. Additionally, Ph.D. students are often viewed as essential contributors to research projects, and their absence can limit the ability of the college to compete for funding and collaborative opportunities. Despite the considerable talent and expertise of our faculty, the lack of a Ph.D. program has often been a limiting factor in the college's ability to participate fully in these opportunities.

As a member of the hiring committee for many faculty positions in the department and in the college, I have observed firsthand the impact of the lack of a Ph.D. program on our ability to attract and retain outstanding faculty and students. Many domestic and international top candidates are drawn to universities that offer strong Ph.D. programs in their field of expertise. These candidates are often seeking opportunities for advanced research and scholarship, and the absence of a PhD program in our college has been a significant deterrent. The addition of a Ph.D. program would provide a critical pathway for recruiting and retaining top talent, and would help to position the college and the university as a leading institution in the field of computer science.

By offering a rigorous curriculum and opportunities for independent research, the proposed Ph.D. program by College of Engineering and Computer Sciences will provide students with the skills

and knowledge they need to make significant

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w w w . m a r s h a l l . e d u
Department of Computer Sciences and Electrical Engineering

contributions to the academic and industry communities. In turn, these students will become important drivers of research in the college and beyond, fueling innovation and creating new knowledge that can lead to real-world impact.

I wholeheartedly endorse the proposed Intent to Plan for a Ph.D. program in the College of Engineering and Computer Sciences. I firmly believe that this program will be instrumental in advancing the research capabilities of the college, facilitating collaborative opportunities with other institutions, and attracting top-tier talent to the university. The benefits of a strong Ph.D. program extend far beyond the college and can help elevate the research profile and academic reputation of the university. With the presence of a Ph.D. program, the college will be well-positioned to compete for research grants and funding, produce high-impact publications, and foster a culture of research excellence. I am confident that the addition of a Ph.D. program will be a significant asset to the college and the university, and I offer my full support in its implementation.

Sincerely,

Haroon Malik

Haroon Malik, Ph.D.
Director of Global Education Initiatives | Associate Professor,
College of Engineering and Computer Sciences
Marshall University, Huntington, WV
Room: WAEC 3113
Phone: (304) 696-5655
Email: malikh@marshall.edu

College of Engineering & Computer Sciences
Weisberg Family Applied Engineering Complex
Marshall University

I am writing to express my strong support for the establishment of a Ph.D. in Engineering at our university. As a faculty member who has taught undergraduate courses in this field for several years, I believe that there is a significant demand for advanced study in this area, and that a Ph.D. in Engineering would be a valuable addition to our academic offerings.

First and foremost, I believe that a Ph.D. in Engineering in engineering would help to attract and retain top talent in the field. Many undergraduate students express a desire to pursue further study in this area, and having a Ph.D. program would provide them with the opportunity to do so without having to leave our university (for example Joshua Conrad and Baylee Weaver). Additionally, a Ph.D. in Engineering would attract applicants from other institutions, further enhancing our reputation in the field.

Furthermore, a Ph.D. in Engineering would allow for more advanced interdisciplinary research, which could lead to important breakthroughs and advancements in the field. Ph.D. program provide the chance for students to gain advanced education and specialized training in particular fields of study, enabling them to develop expertise in their chosen area. This type of program allows students to conduct research, acquire in-depth knowledge, and gain practical experience that is not typically available at the undergraduate level. Our faculty members are highly knowledgeable and experienced, and having a Ph.D. in Engineering would provide them with the resources and support they need to conduct cutting-edge research. Ph.D. programs often involve research projects that require funding. These projects can be attractive to funders who are interested in supporting innovative research that has the potential to address important societal challenges.

Finally, a Ph.D. in Engineering would help to meet the demands of employers in this field.
Many companies and organizations are looking for highly trained and specialized professionals in this area, and a graduate program would help to produce graduates who are well-equipped to meet these demands.

In conclusion, I strongly believe that establishing a Ph.D. in Engineering would be a valuable addition to our university. I hope that you will give serious consideration to this proposal.

Sincerely,

Nasim Nosoudi, Ph. D

Assistant Professor of Biomedical Engineering

Marshall University

MARSHALL UNIVERSITY

3/26/2023

Dear Graduate Council Members:

This letter is being written to support the application of PH.D. program by college of engineering and computer science.

A graduate program leading to a Doctor of Philosophy in Engineering was proposed more than two years ago in college of engineering and computer science. The college faculty had wide discussions about the feasibility and acceptability of implementing the PH.D. program, in several college meetings and PhD steering committee's meetings.

To push PH.D. program is critical to help moving university up to the research university hierarchy. Our faculty and graduate students have supported the program very much.

After two years' efforts in the college, the feasibility and acceptability of the program has been well defined in terms of all specialized fields, such as the general requirements, learning objectives, the admission requirements, application procedures, admission to candidacy, degree requirements, dissertation committee, comprehensive examination, etc.

The college has had sustained effort to build PhD engineering programs and support Marshall's mission. I have strongly supported the college's application for the PhD program. I believe that the college deserves to have PhD program. Thank you for considering the application.

Best regards,

Gang Chen, Ph.D.

Professor, Department of Mechanical and Industrial Engineering
College of Engineering and Computer Science
Tel: 304-696-3204, Fax: 304-696-5454,
https://www.marshall.edu/cecs/profile/dr-gang-chen/

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www.marshall.edu

Department of Computer Sciences and Electrical Engineering

March 30, 2023

Dear Sir/Madam,

I am writing to express my strong support for the establishment of a Ph.D. in Engineering program at Marshall University.

I joined Marshall University in 2020 as an Assistant Professor in the Computer Science and Electrical Engineering department after working as a research associate at Cornell University for five years. My research spans signal processing, machine learning, artificial intelligence, intelligent control, and robotics. I have successfully secured several internal research funding and am actively seeking larger external funding from agents, such as the National Science Foundation (NSF), the Office of Naval Research (ONR), and the National Aeronautics and Space Administration (NASA).

However, I have come to realize that the lack of Ph.D. students at our university is impacting my research progress and reducing my grant application success rates. My area of research in deep reinforcement learning requires the support of technically advanced research assistants and I have been struggling to recruit students with proper backgrounds and interests in my research area. So, I am very excited about the college's plan of establishing a Ph.D. program, which would tremendously help me take my research to the next level.

I believe that the Ph.D. in Engineering program will also enable me to extend my research to interdisciplinary topics, such as robotic swarms, which will allow me to apply my current theoretical research to medical and biological fields beyond my current software simulation study.

The establishment of a Ph.D. program in Engineering at our university will be a significant step toward achieving our education goals as an R2 university, and I wholeheartedly support this exciting program.

I will appreciate your favorable consideration of approving the establishment of the Ph.D. in Engineering program at Marshall University.

Sincerely,

Pingping Zhu

Pingping Zhu, Ph.D.

Assistant Professor,
Department of Computer Sciences and Electrical Engineering
College of Engineering and Computer Science
Marshall University

MARSHALL UNIVERSITY.
www.marshall.edu

Center for Business & Economic Research

To Whom it may concern:

As the Associate Vice President for Economic Development at the Marshall Research Corporation and the State Senator for the area representing Marshall University for 31 years, I fully support the development of research doctoral programs at Marshall University, specifically the timely application for creating a Doctor of Philosophy in Engineering in the College of Engineering and Computer Sciences.

Marshall has made a commitment to maintaining our standing as a Carnegie R2 institution. A critical component of maintaining this status is the production of research doctoral graduates. The current research load in the College of Engineering and Computer Sciences fully supports the slow growth doctoral program laid out in the Intent to Plan submitted. This is a solid program that will support high quality research in the college, and is designed to produce high quality, research capable doctoral graduates that will help to build Marshall's national reputation and growth as a research university.

Marshall University was the lead applicant in a consortium proposal to the University of Transportation Centers program grant through the US Department of Transportation. Despite an overall "Recommended" evaluation, the proposal was not selected.

The criticisms were few, primarily concerned with the narrow focus of the proposed projects. But these also included questions about why Marshall University was the lead applicant, especially given that the University did not offer a PhD program in Engineering or other related field while other consortium institutions do so. A specific comment wondered why "larger, more established institutions (UVA, WVU) are subservient to a smaller university (Marshall) in this proposed team". Despite the fact that quality research (and proposals) come from Marshall University, the lack of a doctoral-level offering affects the perception and reputation of the institution.

The offering of this PHD degree is extremely critical to the investment of $45 Million the State of West Virginia for the Institute for Cyber Security (ICS) and all affiliated programs and colleges.

Sincerely,

Robert H. Plymale

Robert H. Plymale
Associate VP of Economic Development
Chief Operating Officer of
Appalachian Transportation Institute (ATI)
And The Center for Business and Economic Research (CBER)

UNITED STATES CYBER COMMAND
JOINT FORCE HEADQUARTERS-
DEPARTMENT OF DEFENSE INFORMATION NETWORK
P. O. BOX 549
FORT MEADE, MARYLAND 20755-0549

24 February 2023

MEMORANDUM FOR Dr. David A. Dampier, Dean, College of Engineering and Computer Sciences, Marshall University

SUBJECT: Recommendation for the establishment of PhD program in Engineering

1. We have learned of the college's intent to start a PhD program in Engineering to boost research capabilities and to produce highly skilled research personnel that can join the government, academia, or industry after graduation. As an active supporter of cyber security research and education at Marshall University, we are very interested in hiring future graduates of this program with research experience in any field related to cyber security and national security operations. This includes industrial engineering, electrical engineering, and computer science, where the research is aligned with the needs of the government.

2. United States Cyber Command/JFHQ-DODIN have made significant investments in the expansion of cyber security education and research at Marshall, and potentially will be able to send service members and/or civilians to Marshall to obtain doctorate education. As a staunch supporter of the College of Engineering and Computer Sciences at Marshall, we do see the role a doctoral program can provide for faculty research and enhancing the reputation of Marshall, and we are in support of this goal.

3. Therefore, we offer our enthusiastic support for this effort, and hope that it is successful in not only enabling a PhD program, but also in producing high quality graduates for the government, industry, and academia that will increase the reputation of Marshall and the College of Engineering and Computer Sciences, as well as to provide much needed research capabilities.

WILLIAM J. WALKER
Deputy Executive Director

ServiceWireCo.
Manufacturing quality, Delivering service

310 Davis Road
Culloden, WV 25510
servicewire com

800-624-3572
304-743-8600
Fax: (304) 743-8610

ISO 9001

24 February 2023

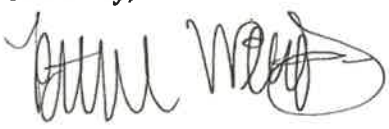
Dr. David A. Dampier
Dean, College of Engineering and Computer Sciences
Marshall University
One John Marshall Drive
Huntington, WV 25755-2586

Dear Dean Dampier,

We have learned of the college's intent to start a PhD program in Engineering to boost research capabilities and to produce highly skilled research personnel that can join industry after graduation. Although Service Wire Company does not currently have a need for doctoral level personnel, we can see that the future is unknown and that may arise in our future.

As a staunch supporter of the College of Engineering and Computer Sciences at Marshall, we do see the role a doctoral program can provide for faculty research and enhancing the reputation of Marshall, and we are in support of this goal. We may have a future need for research scientists in Mechanical, Electrical, or Industrial Engineering, either in a consulting capacity or potentially full-time employment. Therefore, we offer our enthusiastic support for this effort, and hope that it is successful in not only enabling a PhD program, but also in producing high quality graduates for industry and academia that will increase the reputation of Marshall and the College of Engineering and Computer Sciences. We are confident of the success of a program of this nature in the area and look forward to seeing it come to fruition for our community.

Sincerely,



Trish Weisberg
Director, Human Resources
Service Wire Company
310 Davis Road
Culloden, WV 25510
Trish.Weisberg@servicewire.com
281-543-1102

March 9, 2023

David,

Thank you for reaching out regarding your intent to plan for PHD program at Marshall University.

As you know, Alcon has donated quite a bit of equipment to the University in our effort to help grown the programs and support the local University in its pursuit to develop great talent. We have partnered to support of the college with guided tours and coming on campus to promote our own manufacturing site.

Over the past years, Alcon Research, LLC has been a staple in the community. Much of our talent has had to have been imported as we search for great employees that are the heart of our organization. As you know, a business can either develop internally, steal talent from other industries or hire from our educational system.

While Alcon has hired a few Marshall graduates, still much of our technical hiring is done from outside our area. Alcon would like to continue to support Marshall's growth and we would support your INTENT TO PLAN for a PHD in Engineering program, to further our partnership and grow local talent.

Kerry White
Director, Head of R&D
Alcon Research, LLC

strictly BUSINESS
COMPUTER SYSTEMS

03/22/2023

Wook-Sung Yoo, Ph.D.
Director of Research and Weisberg Professor,
College of Engineering and Computer Sciences,
WAEC 2103D,
Marshall University

Dr Yoo,

Strictly Business Computer Systems was founded in 1985 and initially we were unable to build our staff locally as Marshall University simply did not have the focus on Computer Science necessary to allow us to consider MU graduates for the positions being created in software engineering. Fast forward some 38 years and we have proudly and successfully employed nearly 50 Marshall graduates simply because the leadership there and likewise, Art Weisberg and the Weisberg family, recognized the importance of establishing a strong engineering program including Computer Science.

The continued success of our region is dependent on creating educational opportunities for the best and brightest and retaining their talent. The creation of a PhD program will create tremendous incentive for retention of our brightest minds. It takes a great deal of motivation and discipline to achieve a PhD and that is exactly the characteristics Strictly Business will look for in our next generation of leaders. Research in the Computer Science business is critical and having Marshall serve as the catalyst for those endeavors might well help propel SBCS and MU to achieve that which would have been unachievable without these efforts.

We're all for it.

Respectfully,

Mike Owens
President
Strictly Business Computer Systems Inc.

304-633-2178
mgowens@sbcs.com

PRIME ENGINEERING INCORPORATED

March 1, 2023
Dr Wook-Sung Yoo
Director of Research
College of Engineering and Computer Science
Marshall University

Re: Prime Engineering Letter of Support PhD Engineering Program

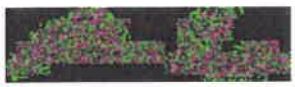
Dear Professor Yoo,

Thank you for allowing us to review your intent to plan the Doctor of Philosophy in Engineering. This is exciting news for the program and the engineering profession. I have been a part of the undergraduate and graduate program at Marshall. The capacity and quality of the facilities are very well suited for advanced research.

Furthermore, Prime Engineering provides consulting services in almost every industry across the country. Our experience provides insight into understanding the value and need of research and development stated in their intent to plan document.

We fully support Marshall University CECS on their intent.

Sincerely,



Adam Weible PE
Vice President
Prime Engineering, Inc.

3715 Northside Parkway, NW

300 Northcreek, Suite 200 ▪ Atlanta, GA 30327
main: 404-425-7100 ▪ fax: 404-425-7101 ▪ www.prime-eng.com

March 30, 2023

Dr. Wook-Sung Yoo
College of Engineering and Computer Sciences
WAEC 2103D,
Marshall University
Huntington, WV 25755

Dear Dr. Yoo,

My name is Trystan Willard and I am a current Cyber Security graduate student at Marshall University. I am writing to you to express my interest in continuing my education by pursuing a Ph.D. in Engineering at Marshall. The following is a brief history about my studies at Marshall and my interest in research: In the summer of 2022, I graduated with a Bachelor of Science in Computer and Information Security and with a minor in Computer Science. My overall GPA was 3.55 and I graduated with Cum Laude honors. I also made the dean's list five times and the presidents list once. For graduate school, my current GPA is 3.66 and my expected graduation date is summer 2023.

I also have a heavy interest in conducting research in my field. During undergrad, I did an internship where I performed research in open-source intelligence for a nonprofit company. This research involved identifying and reporting human trafficking networks across the U.S. by analyzing and exploiting publicly available data. I did another internship where I assisted with research in web development for Department of Homeland Security's Investigations. If Marshall can soon have a Ph.D. program in Engineering, I believe it would allow me to do the following: continue to grow sophisticated technical skills, improve soft skills to work and communicate with people, and just have the opportunity to assist other students that are in undergraduate, graduate, or higher-level education.

I hope this program is created very soon. It would be a wonderful thing for students at Marshall or other universities across the U.S. and international academic communities who have a similar interest in research as I do to have a new opportunity such as this. When I started out in undergraduate school, I've seen the college of engineering and computer sciences grow in many ways to help students. I'm one of those students who has been poured into by some great faculty members, and I hope that I get to further my education at Marshall and have a chance at giving back to the Marshall University community.

Kind regards,

Trystan Willard

Hwapyeong Song
2950 Auburn Rd,
Huntington, WV, 25704
song24@marshall.edu

March 23, 2023

Graduate Council
Marshall University
1 John Marshall Dr,
Huntington, WV 25755

Dear Graduate Council:

I am writing to express my strongest interest in pursuing a Ph.D. in Engineering at Marshall University. When I first heard about this new program development, I was extremely excited and have been following up on the progress of this excellent higher education opportunity.

I received my BS in computer science with a 3.81 GPA and MS in cybersecurity with a 4.0 GPA from Marshall University and maintained a good academic record throughout my educational track. I have been lucky to have had great opportunities to work with passionate, dedicated, and experienced faculty in my majors engaging in several projects. I have published multiple papers in peer-reviewed journals and conferences including the "Best Poster Award" at the Conference on Artificial Intelligence (AI) in Smart Cities with "A Study of Implementing Smart Combined Sewer Systems" in 2021 and have slowly developed my interest in research and pursuing higher education. I have also participated in a number of extracurricular activities and enjoyed my life in West Virginia and would like to continue to stay and develop my academic skills as well as professionalism at Marshall University.

Marshall University is conducting innovative and significant research in the broad engineering subject of applied computer science and interdisciplinary areas, which has especially piqued my interest in the college's engineering Ph.D. program. As a Marshall's daughter, I am very excited about the program working on a Ph.D. study with the accomplished scholars and professionals at Marshall and it would be an honor and pleasure to join such a great program at Marshall University. I believe that I can achieve in the discipline in which I have the most interest with organized training and education.

I hope the program is established as soon as possible to apply and it would be high praise to be a Marshall's Ph.D. student. Please consider my letter and contact me if you require any further information.

Sincerely,

Hwapyeong Song

Hwapyeong Song, M.S.

To whom it may concern:

My name is Austin Woodrum. I am currently wrapping up the last semester of my Bachelor's. I also just got accepted into the Master's program for Cybersecurity here at Marshall. Personally, I think a PhD is the perfect way to top off my skills after finishing my Master's. The wonderful thing about a PhD is that it teaches you how to conduct in-depth study. Master's and Bachelor's degrees are primarily concerned with teaching you what is previously known, but a PhD teaches you how to discover new information, conduct experiments, present results, and learn from your failures. I know that I myself look at failure in the same light as Thomas Edison, "I have not failed 10,000 times. I have succeeded in proving that those 10,000 ways will not work," he said of his method of experimentation. "When I have eliminated the ways that will not work, I will find the way that will work."

Regards,

Austin Woodrum

From: Leo Binoy <leobinoy008@gmail.com>
Subject: Inquiry regarding the vacancy for Ph.D. in Engineering

Respected Sir/Ma'am,

My name is Leo Binoy and I am 22 years old. I completed a Bachelor's degree in Mechanical Engineering in May 2022 with an overall CGPA of 8.9/10 from India and I am the mechanical department topper in my academics. I am writing this email to inquire about the MS/Ph.D. option in Engineering under your guidance and research support for the coming Fall of 2023. Your engineering research is the best I've read on the discipline, and it would be an honor to assist and work under your supervision. I have published 9 patents in several fields of engineering. My patent fields include Mechanical, Thermal, Fluid Mechanics & Nanotechnology, Material Science, and Manufacturing Engineering. I am a member of numerous prestigious organizations, like the American Physical Society, ASME, IFERP, IAAC, ASTM, AICTSD, SSPI, and IAENG.

For my research works and publications, I received the Green Thinkers ``International Young Scientist Award for Sustainable Development" in association with the University of Western Sydney, Australia, and Manchester UK. I am the youngest person who received that award so far. At present, I have cracked level 1 of the National Engineering Olympiad Test with top rank and qualified for the final level which will be in December 2022. That Young Scientist Award was just the beginning of my thousand-mile odyssey. Following that, I received a certificate of recognition from a prominent scientist in the Department of Meteorology, Government of India, for my invention relating to 3D-printed robot satellite mechanisms. I received a certificate of appreciation from the senior official of the Forest and Wildlife Department, Government of Kerala, for another invention related to an eco-friendly air pollution absorption system. But what made me the most thrilled was ISRO's offer to present my project at ISRO and have lunch with ISRO's senior scientists. Above all, I was offered the chance to present my scientific breakthrough invention, the Carbon Dioxide Absorbing Rover for Earth and Mars, to NASA. NASA was represented by one of its most senior scientists to hear my presentation. He lauded me on my contribution to society and recognized me by presenting me with a NASA certificate of appreciation. For my works and observations in the field of Astrophysics, I received a Certificate of Appreciation from SSERD in collaboration with Pan-Stars and NASA. I received a certificate of excellence from the IEEE for my Electronics based inventions. Along with these, I have completed several internships in the top government and private sectors in connection with my engineering degree.

I am writing this email to inquire about the possibility of submitting my application for an MS/Ph.D. degree in Mechanical Engineering for Fall 2023 under your research guidance. Also, Do I need a Master's degree to get admitted for Ph.D., or else will a direct Ph.D. work for me? So that I can develop new inventions. I can assure you that if I get a chance to study and research under your guidance with financial assistance, I can publish and develop so many breakthrough research works which will be helpful to society within a few months. My resume and my life are the best assurance of that. Apart from patents, Currently, I have one published research paper in the field of engineering and 4 research papers are under communication status which will be published soon. Ph.D. is my long-term goal and if there are no current vacancies for Ph.D. under your supervision I would like to do research with your guidance as an MS student.

I personally believe working with you will be a great honor for me as an Indian student have only mentioned some of my achievements in this and for your reference, I have attached a copy of "Appreciation from NASA, ISRO, etc, a Transcript of my Bachelor's Degree Completion, Projects and My Other Achievements PDF including Awards, etc., and my CV along with this email. Kindly please let me know if you plan on taking new students for Fall 2023 semester. I look forward to hearing from you soon.

Respectfully,

Leo Binoy

LEO BINOY

Puthanaprakunnel (H) Teekoy Po, Kottayam District Kerala State,
India, Pin Code: 686580
+919778072285 | leobinoy2020@gmail.com

OBJECTIVE

I seek challenging opportunities where I can fully use my skills for the success of the organization. My research field includes, Thermal Engineering, Mechanical & Manufacturing Engineering, Nanotechnology, Computational Analysis, Material Coating, Armospheric Climatic Science, Materials Science.

PERSONAL DETAILS

- Date of Birth : 04/03/2000
- Marital Status : Single

EDUCATION

- **Noorul Islam Centre For Higher Education, Tamil Nadu**
  2022
  Bachelor of Engineering in (BE) Mechanical Engineering
  8.9/10 CGPA (Topper)
- **St. Antony's Higher Secondary School, Mutholy**
  2018
  Higher Secondary School (12th Grade)
  7.5/10

AWARDS AND ACHIEVEMENTS

- **Preeminent International Young Scientist Award 2020**
  For Interdisciplinary Research for Sustainable Development and Energy conservation by IRSD in association with Western Sydney University, Australia and Wakelet, Manchester (UK) for Research and Innovation on "carbonfibre based carbondioxide absorbing rover using chemical sensor methodology".
  Fields Covered: Manufacturing Engineering, Thermal Engineering, Computational Material and material Analysis, Nanotechnology
- **Certificate of Appreciation from National Aeronautics and Space Administration (NASA), Avionics System Division**
  Research and Innovation based on Votex generator based carbondioxide absorbing eco-friendly chemical sensor rover for Earth and Mars.
  Fields Covered : Mechanical Engineering, Thermal Engineering, Material Science, Computational Analysis, Nanotechnology
- **Appreciation from Indian Space Research Organization (ISRO), Government of India**
  Research Project Presentation in IPRC, ISRO on topic "IoT and Radio Frequency based Robo Satellite Mechanism with Chemical Sensors for Easy and Faster Communication.
  Fields Covered : Thermal Engineering, Computational Analysis, Nanotechnology, Material Science, 3d Printing
- **Certificate of Appreciation from Meteorological Department (IMD), Government of India**
  Research, Analysis and Innovation based on "Nanotechnology based Radar controlled Advanced 3D printed Hexapod Robotic mechanism with Vortex Generators".
  Fields Covered : Atmospheric and Thermal Science, Computational Analysis, Nanotechnology, Chemical Sensors, Thermal Coating, Manufacturing Engineering
- **Certificate of Appreciation for Outstanding Research and Academic Achievements**
  Outstanding Research and Academic Award from "The Missile Woman of India" Dr. Tessy Thomas (Distinguished Scientist DRDO, Government of India) for exemplary contribution in the field of Computational Material Science Analysis and Thermal Engineering based research.

- **Certificate of Appreciation from SSERD in Association with NASA, IASC and Pan-STARRS**
  Computational Analysis, identification and research in field of space objects.
  Fields Covered : Computational Analysis, Astrometrica Software
- **Certificate of Appreciation from Kerala Forest and Wildlife Department, Government of Kerala**
  For the innovation for reducing pollutants in both Air and Water using advanced smart Mini vehicle using advanced chemical and electronic sensors.
  Fields Covered : Thermal Engineering, Computational Analysis, Pollutant Detection, Fluid Dynamics, Sustainable Engineering
- **Certificate of Appreciation from IEEE Photonics Student Chapter**
  International Engineering Student Project Competition based on "Earth Air Heat Exchange with Vortrx Generator".
  Fields Covered : Computational Analysis, Geothermal Engineering, Manufacturing Engineering
- **Certificate of Appreciation from I-Era Technical Solutions**
  For developing new technology and models for reducing waste pollutants in Water and Air using chemical coatings in 3d printed mechanics.
  Fields Covered : Thermal and Manufacturing Engineering, Computational molecular Structure Analysis, Chemical Coating, 3d Printing, Manufacturing.
- **Certificate of Appreciation from Advanced Educational Institutions**
  For developing the techniques based on concepts of Thermodynamics
- **Certificate of Appreciation from Thekkady Forest Range Office, Government of Kerala**
  Inventing Chemical based sensor hub for rover for climatic and weather analysis.
  Fields Covered : Thermal Engineering, Mechanical Engineering, Computational Material Analysis, 3d Printing, Electronics Engineering, Nanotechnology
- **Research Project with West Texas A&M University, USA**
  Research Project based on topic "3d printed Hexapod with IoT based Sensor Hub" with Assistant Professor Dr. Joshua Partheepan, College of Engineering, West Texas A&M University, USA.
  Fields Covered: Thermal and Manufacturing engineering, Atmospheric Science, Nanotechnology, Mechatronics

PATENT PUBLICATION

- **CO2 absorbing device using chemical and airflow technology with sliding tank mechanism**
  Fields Covered : Solar Thermal Engineering, Computational Analysis, Material characteristics and Analysis, 3d Printing, Electronics
  Patent Number: 2021407994IN
  Publication Date : 23/04/2021
  Status : Published
- **A Solar Air Heater based human body drier**
  Fields Covered : Solar Thermal Engineering, Nanotechnology, Mechanical Engineering Computational Analysis, Surface material Coating
  Patent Number: 202141044520IN
  Publication Date : 30/10/2020
  Status : Published
- **Earth Air Heat Exchange with Vortex Generator**
  Fields Covered : Mechanical Engineering, Solar Thermal Engineering, Geothermal Engineering, Fluid Dynamics
  Patent Number : 201941026672IN
  Publication Date : 14/06/2019
- **Earth Air Heat Exchanger with Water Injection and Humidity Controller**
  Fields Covered : Computational Analysis, Thermal Engineering, Chemical Sensors, Sustainable Engineering, Geothermal Engineering
  Patent Number: 202041045441N
  Publication Date : 30/10/2020
  Status : Published
- **Nanofluid supported Ball Tyre Mechanism**
  Fields Covered : Mechanical and Chemical Engineering, Computational Analysis, Nanomaterials
  Patent Number : 202241026672IN
  Publication Date : 25/05/2022
  Status : Published
- **Lead Screw with Motor Mechanism**

Fields Covered : Mechanical Engineering, Computational Analysis, Material composite designing
Patent Number: 202141445201N
Publication Date : 26/11/2021
Status : Published

- **Mechanical based Sliding Trolley**
  Fields Covered : Manufacturing Engineering, Computational Structural Analysis, Bio-Medical Engineering
  Patent Number: 202141044518IN
  Publication Date : 26/11/2021
  Status : Published
- **A Gyroscope based Aquatic transfer box**
  Fields Covered : Manufacturing and Mechanical Engineering, Computational Analysis, Sensors
  Patent Number: 202041006100IN
  Publication Date : 24/04/2020
  Status : Published
- **Radio Frequency based Robot satellite Mechanism with chemical coated sensors for faster data communication**
  Fields Covered : Manufacturing Engineering, Thermal Engineering, Computational Analysis, Electronics Engineering
  Patent Number: 202241005586
  Publication Date : 11/02/2022
  Status : Published

RESEARCH PAPER PUBLICATIONS

- **Barium Oxide Nanoparticle based nanofluids for improved heat transfer characteristics**
  Publisher : SSRN, ELSEIVER
  Reference ID : https:/papers.ssrn.com/papers.cfm_ID
  Status: Published 2022
- **Experimental investigations on the thermal properties of rare earth metal oxides based therminol nanofluids**
  Publisher : Journal of Materials Engineering and Performance, ELSEIVER
  Manuscript Number : JMEP-22-06-28645
  Status : Communication
- **Eco-friendly flame retardant polypyrrole based nanocomposite for heat dissipation applications**
  Publisher : Journal of Polymer Research, ELSEIVER
  Submission ID : JPOL-D-22-00873
  Status : Communication
- **A brief overview of the Design and Performance of Wind Energy conversion systems in South Asia**
  Publisher : Renewable and Sustainable Engineering Reviews, ELSEIVER
  Manuscript Number : RSER-D-22-02948
  Status : Communication
- **Lanthanum Oxide -Barium Oxide Nanofluid with Enhanced Thermal Engineering Applications**
  Publisher : Arabian Journal for Science and Engineering, Springer Journals
  EMID: e437e3e033e3cf71
  Status : Communication

EXPERIENCE

- **Kerala State Electronics Development Corporation LTD, Government of Kerala**
  2nd March 2022 - 12th October 2022
  BE, Engineering Research Project
  Research Project Title : "Mechanical and IOT based Technology for Advanced Weather Detection using Multiple Sensor Mechanism".
  Filed of work : Thermal and Manufacturing Engineering, Computational Material and molecular Analysis,
- **National Small Industries Corporation (NSIC), Government of India**
  20th May 2021 - 4th June 2021
  Project Intern
  Project Title : "Industrial based Application Design and Development".
  Field of work : Computational Analysis, 3D Printing based designing and manufacturing.

- **Society for Space Education, Research and Development (SSERD) in association with NASA, IHOU and IASC**
  3rd May 2021 - 28th May 2021
  Citizen Scientist
  Data analysis and observation related to astronomy and Space science. (Astroids)
  Mode : Astrometrica Software (Analysis)
  Field of work : Software Rest and Analysis
- **Magoin Private Limited**
  17th January 2020 - 31st January 2020
  Research Intern
  Rrsarch Project Title : "Development of solar based low cost and effective heat generation Mechanism".
  Field of work : Solar Thermal Engineering, Computational and Quality Analysis, Thermal Analysis, Material Science, Nanotechnology
- **Industrus Tech**
  5th December 2020 - 11th December 2020
  Intern
  Project Title: "Manufacturing and designing of the Hybrid Vehicles".
  Field of Work : Computational Mechanics, Thermal Engineering, Design and Manufacturing, Computational Analysis, Nanotechnology
- **Torc InfoTech**
  20th May 2021 - 4th June 2021
  Intern
  Project Title : "Electric vehicles and Engine Assembly".
  Field of work : Energy Reviews and Analysis, Manufacturing and Analysis
- **Kerala State Electronics Development Corporation Limited (KELTRON), Government of Kerala**
  22nd July 2019 - 28th July 2019
  Project Intern
  Project Title: "Security and Surveillance Mechanical development, Technology Developments, Computational Material and molecular Analysis, etc".
  Field of Work : Hardware Analysis, Software Analysis, Manufacturing Engineering

CERTIFICATE COURSES AND LISCENCES

- **Fundamental of Digital Marketing**
  Google Digital Garage
- **Microsoft**
  MIcrosoft Office Specialist Certification.
- **Robokart in Association with UMIC, IIT Bombay**
  Workshop and Course basedon E-Tabs and Tall Buildings.
- **Federal Aviation Administration**
  Aircraft Exhaust Systems (Amt Core Course 2018)
- **National Institute of Technology (NIT)**
  Course based on Cryogenics and Composites.
- **SIEMENS**
  Basics of Drivers - Conveters
- **Cognitive Class by IBM developer Skill Network**
  Python 101 for Data Science
- **Educoncepts**
  Workshop and Course based on 3D printing.
- **Infratech**
  Course based on AutoCAD.
- **Deakin University - Future Learn**
  Course based on Introduction to Sustainability and Development.
- **Technical University of Denmark - Future Learn**
  Course based on Wind Energy.
- **International Association of Chemical Safety**
  Training and Course based on workplace safety induction.

- **Energy Swaraj Foundation**
  Course based on designing solar home system.
- **NAASCOM Foundation**
  Course based on CAD and 3D printing
- **GUVI**
  Course based onRobotic Process Automation.

BOOKS PUBLISHED

- **Lead Screw with Motor Mechanism**
  Paperback based on Thermal Engineering, Computational Analysis and Design of material characteristics.

MEMBERSHIPS

- American Physical Society (APS)
- American Society of Testing and Materials (ASTM)
- American Society of Mechanical Engineers (ASME)
- Institute for Engineering Research and Publications (IFERP)
- International Association of Engineers (IAENG)
- American Indian Science and Engineering (AISES)
- Space and Satellite Professionals International (SSPI)
- International Association of Academic Plus Corporate (IAAC)
- All India Council for Technical Skill Development (AICTSD)

SKILLS

- Computational Material, Quality and Structural Analysis
- 3D Printing (Design and Manufacturing)
- Chemical Sensors Designing and Analysis
- Thermal Engineering Analysis Using ANSYS.
- AutoCAD

RESEARCH WORKSHOP

- **National Aeronautics and Space Administration (NASA), Exoplanet Science Institute, California Institute of Technology, USA**
  2022 Sagan Exoplanet Summer Workshop on "Exoplanet Science in Gaia Era".
  Fields Covered : Research Analysis, Space Science and Research

LANGUAGES

- English
- Malayalam
- Hindi
- Tamil

REFERENCE

- **George Salazar, P.E, ESEP, LSM-IEEE - "National Aeronautics and Space Administration (NASA)"**
  Senior Scientist/Engineer
  george.a.salazar@nasa.gov

- **N.T. Niyas - "Meteorological Department, Government of India"**
  Scientist D
  niyasiota@gmail.com
- **Dr. G.M Joselin Herbert - "Noorul Islam Centre For Higher Education "**
  Professor
  joselindev@yahoo.com
- **Dr. Indulal CR - "ST. Gregorios College, Kottarakara "**
  Assistant Professor and Captain Rank in Indian Army (Officer)
  captidrindulal@gmail.com

NOORUL ISLAM CENTRE FOR HIGHER EDUCATION

(Deemed-to-be-University Under section 3 of the U.G.C. Act 1956)
Kumaracoil - 629 180, Thukalay, Kanyakumari District, Tamilnadu.
Accredited by NAAC with 'A' Grade

PROVISIONAL CERTIFICATE

Folio No.: **U091269**

This is to certify that the undermentioned candidate has qualified for the award of Degree as detailed below:

Name	:	***Leo Binoy***
Register Number	:	***1120317901***
Degree	:	***Bachelor of Engineering***
Branch / Specialisation	:	***Mechanical Engineering***
Month & Year of Passing	:	***May-2022***
CGPA Obtained	:	***8.90***
Classification	:	***First Class***

Place : Kumaracoil

Date : **05 AUG 2022**

NOORUL ISLAM CENTRE FOR HIGHER EDUCATION * KUMARACOIL - 629 180 *

CONTROLLER OF EXAMINATIONS

NOORUL ISLAM CENTRE FOR HIGHER EDUCATION

(Deemed-to-be-University under section 3 of the UGC Act 1956)
Kumaracoil-629 180, Kanyakumari Dist., Tamilnadu, India

FOLIO NO. U093399

CONSOLIDATED GRADE STATEMENT

NAME OF THE CANDIDATE : Leo Binoy

REGISTER NO. : 1120317901

PROGRAMME : B.E. BRANCH : Mechanical Engineering

YEAR OF PASSING : May 2022

SEM	SUBJECT CODE	SUBJECT	MARKS	CREDITS	GRADE	GRADE POINT	MONTH & YEAR
1	CY100	Engineering Chemistry*	55	4	E	5	Dec-2018
1	CS2171	Computer Programming Laboratory	76	2	B	8	May-2021
1	PH110	Engineering Physics Lab*	83	1	A	9	May-2019
1	MA2101	Engineering Mathematics - I	85	4	A	9	May-2021
1	CS2101	Computing and Programming	70	4	C	7	May-2021
1	CY110	Engineering Chemistry Lab*	95	1	S	10	Dec-2018
1	EG2101	Technical English - I	66	4	C	7	May-2021
1	BS2101	Engineering Physics	84	3	A	9	May-2021
2	ME2271	Geometric Modeling Laboratory - I	91	2	S	10	May-2021
2	ME2202	Manufacturing Processes - I	88	3	A	9	May-2021
2	EE2261	Electrical Technology Laboratory	94	1	S	10	May-2021
2	ME2272	Manufacturing Processes Laboratory - I	89	2	A	9	May-2021
2	BS2103	Environmental Science	85	3	A	9	May-2021
2	ME2201	Engineering Graphics	90	3	A	9	May-2021
2	MA2102	Engineering Mathematics - II	87	4	A	9	May-2021
2	EE100	Basics of Electrical Engineering*	55	3	E	5	May-2019
2	EG2102	Technical English - II	77	3	B	8	May-2021
3	ME2206	Manufacturing Processes - II	84	3	A	9	May-2021
3	ME2203	Engineering Thermodynamics	94	3	S	10	May-2021
3	ME2276	Metallurgy Laboratory	92	1	S	10	May-2021
3	ME2273	Fluid Mechanics and Machinery Laboratory	81	1	A	9	May-2021
3	ME2205	Engineering Mechanics	81	3	A	9	May-2021
3	MA2201	Engineering Mathematics - III	86	4	A	9	May-2021
3	ME2275	Manufacturing Processes Laboratory - II	85	1	A	9	May-2021
3	ME2207	Engineering Materials and Metallurgy	94	3	S	10	May-2021
3	ME2204	Fluid Mechanics & Machinery	87	3	A	9	May-2021
3	ME2274	Mechanical Engineering Drawing	85	1	A	9	May-2021
4	ME2209	Kinematics of Machinery	78	3	B	8	May-2021
4	MA2204	Statistics and Numerical Methods	89	3	A	9	May-2021
4	ME2280	Manufacturing Processes Laboratory - III	93	1	S	10	May-2021
4	ME2225	Thermal Engineering	86	3	A	9	May-2021
4	ME2211	CAD/CAM	91	3	S	10	May-2021
4	ME2279	Geometric Modeling Laboratory - II	92	2	S	10	May-2021
4	ME232	Thermal Engineering Lab*	83	1	A	9	May-2020
4	ME2216	Automobile Engineering	86	3	A	9	May-2021
4	ME2210	Strength of Materials	73	3	B	8	May-2021
4	ME2278	Strength of Materials Laboratory	83	1	A	9	May-2021
5	ME2215	Mechanical Measurements and Metrology	78	3	B	8	Dec-2020
5	ME2212	Design of Machine Elements	80	4	B	8	Dec-2020
5	ME2283	Dynamics Laboratory	85	1	A	9	Dec-2020
5	ME2214	Finite Element Methods	70	3	C	7	Dec-2020
5	MS2201	Professional and Business Ethics	90	3	A	9	Dec-2020
5	ME2206	Heat and Mass Transfer	62	4	C	7	Dec-2020
5	ME2282	Simulation Laboratory - I	63	2	C	7	Dec-2020
5	ME2213	Dynamics of Machinery	65	3	C	7	Dec-2020
5	ME2284	Mechanical Measurements & Metrology Laboratory	93	1	S	10	Dec-2020
6	ME2281	Thermal Engineering Laborstory - II	89	2	A	9	Dec-2020
6	ME2256	Non-Destructive Evaluation & Testing	95	3	S	10	May-2021
6	ME2218	Mechatronics	94	3	S	10	May-2021
6	ME2285	Mechatronics Laboratory	82	2	A	9	May-2021
6	ME2201	Gas Dynamics and Jet Propulsion	87	3	A	9	May-2021
6	ME2285	Automobile Engineering Laboratory	89	1	A	9	May-2021
6	IT2218	Cyber Security	75	3	B	8	May-2021
6	ME22D4	Industrial Safety Engineering	94	3	S	10	May-2021
6	ME2219	Design of Transmission Systems	86	4	A	9	May-2021
6	ME2287	In plant Training & Seminar	90	2	A	9	May-2021
7	ME22A9	Industrial Robotics	85	3	A	9	Dec-2021
7	ME2221	Operations Management	92	4	S	10	Dec-2021
7	MS2202	Principles of Management	91	3	S	10	Dec-2021
7	ME22P1	Design and Fabrication Project	89	3	A	9	Dec-2021
7	ME22A1	Supply Chain Management	83	3	A	9	Dec-2021
7	ME2220	Energy Systems and Technologies	66	3	C	7	Dec-2021
7	ME2288	Simulation Lab-II	96	1	S	10	Dec-2021
7	ME2222	Computer Integrated Manufacturing	84	3	A	9	Dec-2021
8	ME22B7	Industrial Engineering and Psychology	91	3	S	10	May-2022
8	ME22D1	Technology of Surface Coating	89	3	A	9	May-2022
8	ME22P5	Project Work	96	12	S	10	May-2022

DATE : 05-08-2022

SEAL :

On Credit Transfer

CGPA	CLASS
8.90	First Class

CGPA - Cummulative Grade Point Average

Controller of Examinations

Award of Letter Grade :

Range of Marks	Letter Grade	Grade Points
91 to 100	S	10
81 to 90	A	9
71 to 80	B	8
61 to 70	C	7
56 to 60	D	6
50 to 55	E	5

Formulae for SGPA & CGPA

$$SGPA = \frac{\sum_{i=1}^{n} C_i GP_i}{\sum_{i=1}^{n} C_i} \qquad CGPA = \frac{\sum_{i=1}^{n} C_i GP_i}{\sum_{i=1}^{n} C_i}$$

where C_i - is the Credits assigned to the Course

GP_i - is the point corresponding to the grade obtained for each Course

n - is number of Courses successfully cleared during the particular semester in the case of SGPA and during all the semesters in the case of CGPA

Classification of Degree Awarded :

First Class with Distinction

- Securing a CGPA of not less than 8.50
- Students who obtained 'U' or 'RA' in any subject will not be classified under this category

First Class

- Securing a CGPA of not less than 6.50
- Passed in the prescribed course of the programme within the specified minimum number of semesters, plus one year (Two semesters)

Second Class

- All other students who qualify for the award of the degree

Sl.No. F 012486

Checked by

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
2101 NASA Parkway
Houston, Texas 77058-3696

To: Leo Binoy

July 14,2022

From: George Salazar P.E., ESEP,LSM-IEEE

Subject: Letter of Appreciation

Dear Mr. Leo Binoy,

Thank you for sharing your background and the work you and your team are doing in the "Vortex Generator-based Carbon Dioxide Absorbing Eco-friendly Rover for Earth and Mars" applications. Certainly, the invention has applicability on Earth to help contain the growth of carbon dioxide (CO2). On Mars, CO2 is the dominant part of the atmosphere. A system such as this could help supply oxygen to the visiting astronauts. It's an amazing and interesting invention that I am sure society will benefit from.

In short, I appreciated you sharing this interesting invention with me. I look forward to hearing about the evolution of this invention. Best of luck in your future endeavors.

Sincerely

7/14/2022

X 

Signed by: GEORGE SALAZAR

George A. Salazar, P.E., ESEP, LSM-IEEE
Human-Computer Interface Technical Discipline Lead/EV3
Human Interface Branch. Avionics Systems Division
Houston, Texas, 77058

I2OR
India

Green
ThinkerZ

4 QUALITY EDUCATION

Wakelet
Manchester, UK

Sustainable
Cosmos

IRSD

Preeminent Young Scientist Award 2020

presented to

Mr. Leo Binoy

from

Noorul Islam Centre for Higher Education, Tamil Nadu

at 5th International Conference on **Interdisciplinary Research for Sustainable Development** held virtually on 25 December 2020 in association with Centre for Smart Modern Construction, Western Sydney University, Australia and Wakelet, Manchester(UK)

Er. Tanvir Singh
Convener
vIRSD 2020

Dr. S. Negi
Patron
vIRSD 2020

vIRSD2020/A-15

HANOVER RESEARCH

ACADEMIC PROGRAM ASSESSMENT

Ph.D. In Engineering

Prepared for Marshall University

May 2022

In the following report, Hanover assesses demand for doctoral programs in engineering, specifically highlighting demand trends within Marshall University's custom region. This report includes an examination of student and labor market demand, and an analysis of potential competitor programs.

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5 / Student Demand Analysis

6 / Labor Market Demand Analysis

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8 / Industry Trends

9 / Competitor Analysis

13/ Benchmarking Summary

EXECUTIVE SUMMARY

RECOMMENDATIONS

Based on an analysis of degree completions, labor market demand, and market competitors, Hanover recommends that Marshall University (Marshall):

MOVE FORWARD WITH DEVELOPING THE PROPOSED DOCTORAL PROGRAM IN ENGINEERING WITH THE EXPECTATION THAT INITIAL COHORTS MAY BE SMALL.

Conferrals in engineering doctoral programs in Marshall's region grew slower than average, but the reverse is true nationally. Related occupations are projected to grow at average rates across geographic levels, suggesting that employment opportunities for graduates should be steady through 2031. So long as Marshall's enrollment goals are modest, the program should be viable.

INCLUDE ELECTRICAL AND MECHANICAL ENGINEERING IN THE INITIAL CONCENTRATION OFFERINGS.

These are two disciplines of engineering that exhibit larger conferral volumes across the observed geographies and are among the most common concentrations offered by potential competitor programs. Additionally, a scan of real-time job postings indicates that these are two of the largest programs requested by employers in job listings for Marshall's region. Therefore, these concentrations should be offered at the onset of the program.

HIGHLIGHT DIFFERENTIATING FEATURES OF THE PROGRAM ON ITS WEBSITE, SUCH AS THE AVAILABILITY OF A PART-TIME OPTION.

Part-time options are not often mentioned on profiled program pages. If Marshall offers a part-time program option, it will differentiate the program from its competition, and that should be part of the marketing strategy. Overall, reviewed program webpages are not detailed. Marshall should customize its program pages to create a holistic ideal of what the program has to offer and how it will benefit prospective students. Features such faculty spotlights, facilities, research, or other engaging details will also allow it to stand out from its possible competitors.

EXECUTIVE SUMMARY

KEY FINDINGS

Student demand indicators are more positive for the nation as a whole than for West Virginia or Marshall's designated region. Nationwide, from 2016 to 2020, conferrals for doctoral programs in engineering grew faster than average. For the state and region, conferral trends are less positive, demonstrating slower than average growth at both levels. Thus, student demand indicators are mixed for the proposed program.

Labor market projections for engineering-related occupations are steady across geographic regions. Within the state, region, and nation, in aggregate, reviewed engineering occupations are expected to keep pace with the growth of all other occupations. A scan of real-time job listings also indicates that regional employment is strong, with over 60,000 job postings being generated over the last six-months.

The pre-dissertation credit requirements of benchmarked programs align with those proposed by Marshall. Programs report that incoming students with master's degrees are required to take between 15 and 24 hours of coursework, whereas those with only a bachelor's degree take 30 to 48. Thus, Marshall's plan to require 48 credit hours for students with bachelor's and 18 for those with master's degrees is in line with competitor programs.

None of the profiled institutions advertise part-time programs. Should Marshall move forward with offering a part-time doctoral program in engineering, it will be a distinguishing characteristic. This could help to differentiate its program from those of its competitors and attract students who are unable to commit to a full-time program.

Common areas of focus for reviewed programs are electrical and computer engineering and mechanical engineering. Other popular concentrations include biomedical, chemical, and systems engineering.

REGIONAL BENCHMARK ANALYSIS

Comparison of doctoral engineering completions and relevant labor market to all completions and all occupations in the region

Marshall University Region

STUDENT DEMAND ANALYSIS

REGIONAL DEGREE COMPLETIONS

Region-wide distribution of degree completions from 2016 to 2020

Source: IPEDS

ANALYSIS

Student demand indicators for engineering doctoral programs are mixed. Nationally, doctoral programs in engineering performed better than average through the 2016 to 2020 period; aggregated conferrals grew 2.7 percent. *Electrical and Electronics Engineering* and *Mechanical Engineering* were the largest programs by conferral volume, while *Computer Science* and *Industrial Engineering* experienced the greatest growth in conferrals for the period. Regionally, the data is similar, except that *Electrical and Electronics Engineering* outpaces *Industrial Engineering* in annualized growth at the regional-level. West Virginia has few conferrals for these types of programs. As conferral volumes are strongest in the areas of *Electrical and Electronics Engineering* and *Mechanical Engineering*, these would likely be viable concentrations with which to start the proposed program.

TOTAL DEGREE COMPLETIONS

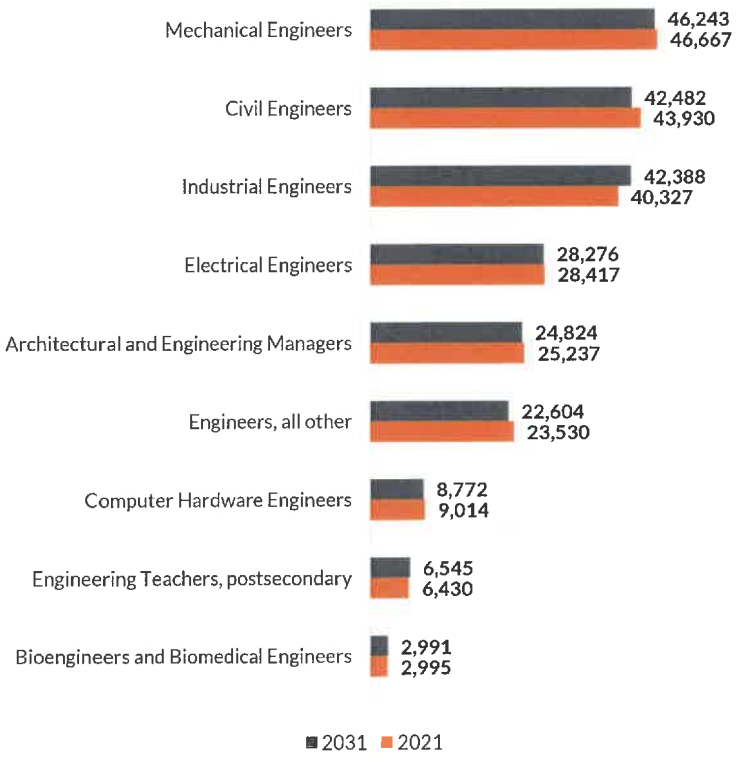
Aggregate degree completions by geographic level (2020)

	State	Regional	National
Engineering, General.	38	144	454
Computer Science.	1	98	1,217
Bioengineering and Biomedical Engineering.	0	166	1,085
Civil Engineering, General.	0	122	1,107
Computer Engineering, General.	0	76	388
Electrical and Electronics Engineering.	0	342	2,324
Industrial Engineering.	0	50	387
Systems Engineering.	0	15	114
Mechanical Engineering.	0	242	1,700
Total Completions, Observed Fields	**39**	**1,255**	**8,776**
Growth Rate, Observed Fields	**-3.0%**	**-0.5%**	**2.7%**
Growth Rate, All Fields	**0.8%**	**2.4%**	**1.6%**

LABOR MARKET ANALYSIS

REGIONAL PROJECTED EMPLOYMENT

Region-wide engineering-related positions as of 2021 and 2031 (projected)



Source: JobsEQ

ANALYSIS

Employment outlooks for graduates of the proposed program are steady across the observed regions. In fact, growth for the reviewed occupations is in sync with the averages of all occupations across geographical levels. Nationally, all examined occupations are expected to see positive growth trends, with *Industrial Engineers* experiencing the greatest employment gains (10.1 percent through 2031), followed by *Engineering Teachers, postsecondary* (7.3 percent).

At the state and regional levels, most of the observed occupations are projected to have negative growth; however, these trends align with overall employment trends for these regions. State and regional occupation growth trends are similar to the nation's in that *Industrial Engineers* and *Engineering Teachers, postsecondary* are expected to see the fastest growth through 2031.

TOTAL LABOR MARKET

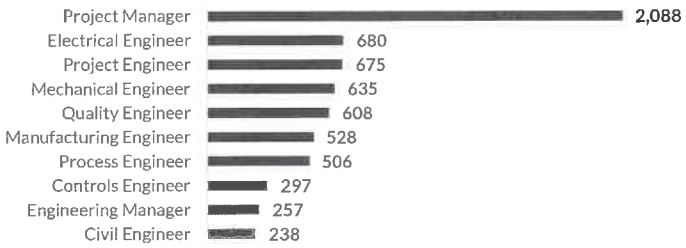
Aggregate projected employment growth by geographic level

	State	Regional	National
Estimated Employment (2021)	5,482	226,547	1,576,682
Projected Employment (2031)	5,031	225,125	1,644,677
Total Annual Openings, Observed Occupations	328	15,774	120,273
Employment Growth, Observed Occupations	-8.2%	-0.6%	4.3%
Employment Growth, All Occupations	-8.2%	-0.6%	4.3%

REAL-TIME JOB POSTINGS INTELLIGENCE

TOP ENGINEERING-RELATED JOB TITLES

Region-wide engineering-related positions by job title.



TOP CREDENTIALS AND SKILLS

Top Skills

- **Microsoft Office Suite**
- **Autodesk AutoCAD**
- **Manufacturing**
- **Computer Aided Design Software (CAD Software)**
- **Computer Programming/Coding**
- **Mathematics**
- **Presentation**
- **Lean Six Sigma**
- **Agile**
- **MATLAB**

Top Certifications

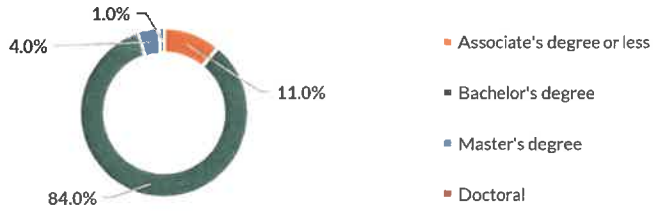
- **Licensed Professional Engineer**
- **Project Management Professional (PMP)**
- **Engineer in Training (EIT)**
- **Certified Quality Engineer (CQE)**
- **Six Sigma Green Belt Certification (SSGB)**
- **OSHA 30**
- **Certified Associate in Project Management (CAPM)**
- **Certified Safety Professional (CSP)**

Note: For this analysis, Hanover retrieved job postings data for engineering-related positions in Marshall University's custom region from JobsEQ, a proprietary database providing real-time job postings aggregated from thousands of websites. All data reflect the 180-day period as of May 2022.

ANALYSIS

Career prospects are excellent for graduates of engineering programs within Marshall's custom region. During the past six months, more than 60,000 jobs were posted for reviewed occupations. The most often cited degrees sought by employers are engineering, mechanical engineering, electrical engineering, computer engineering, and civil engineering. Virginia, Pennsylvania, and Ohio generated the most ads at 16,305, 14,912, and 13,425, respectively. West Virginia had the lowest number of job postings for engineer-related occupations at 1,544. When filtered by educational attainment criteria, 331 regional job postings specified a doctoral degree. This suggests that graduates of the proposed program would be competitive on the labor market.

EDUCATION REQUIREMENTS



Note: 13,994listings did not specify educational attainment requirements.

TOP REGIONAL EMPLOYERS

The total number of job ads is listed in parentheses

- Boeing (1,408)
- Northrop Grumman (1,184)
- Lockheed Martin (792)
- Jacobs (739)
- Honeywell (342)
- Owens Corning (506)
- Actalent (388)
- BAE Systems (386)
- Leidos (366)

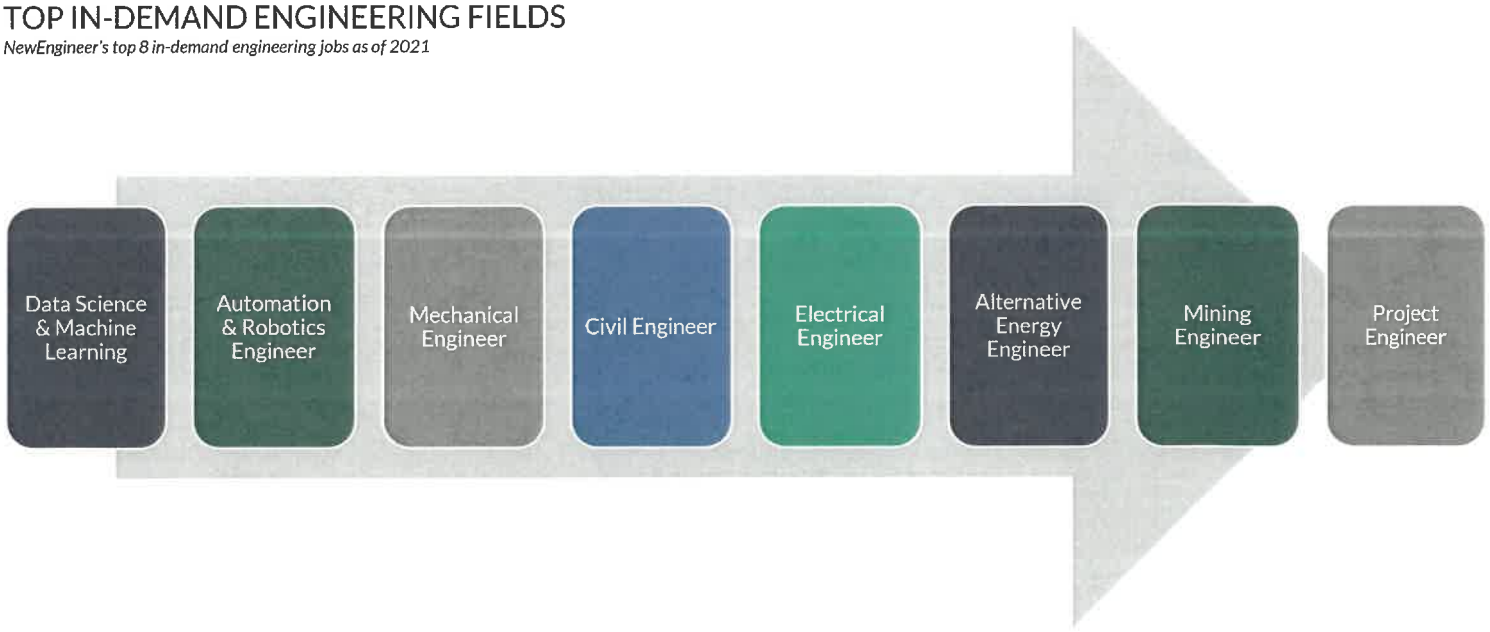
INDUSTRY TRENDS

ANALYSIS

Experts indicate that information technology-related fields are growing . These fields include data science & machine learning and automation & robotics engineering. However, more traditional fields such mechanical, civil, and electrical engineering are still in demand, along with emerging fields like alternative energy engineering. *Indeed* also lists occupations such as chemical, industrial, geotechnical, environmental, biomedical, electrical, robotics, materials, health and safety, and aero space engineering as fast-growing career fields.

TOP IN-DEMAND ENGINEERING FIELDS

NewEngineer's top 8 in-demand engineering jobs as of 2021



Source: NewEngineer

COMPETITOR ANALYSIS

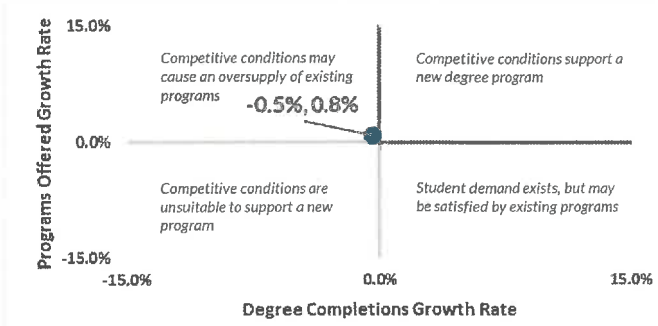
ANALYSIS

Regional market conditions are tight; new programs may face heavy competition. During the 2016 to 2020 period, Marshall's region experienced slight decreases in doctoral conferrals for engineering programs and few new programs were established. This suggests that existing programs may already be meeting student demand. However, at the state-level, Marshall has only one competitor program at West Virginia University.

To aid Marshall in better understanding the current market for doctoral programs in engineering, Hanover benchmarked six general engineering programs and two programs which Marshall specified as competitor programs.

REGIONAL MARKET SATURATION

Regionally do competitive conditions support an additional doctoral program in engineering?



BENCHMARKED PROGRAMS

Institution	Program	Location
Cleveland State University	PhD in Engineering	Cleveland, OH
Ohio University	PhD in Electrical Engineering and Computer Science	Athens, OH
Louisiana Tech University	PhD in Engineering	Ruston, LA
Old Dominion University	D.Eng in Engineering	Norfolk, VA
Tennessee Tech University	PhD in Engineering	Cookeville, TN
University of Akron	PhD in Engineering	Akron, OH
West Virginia University	PhD in Civil Engineering	Morgantown, WV
Wright State University	PhD in Engineering	Dayton, OH

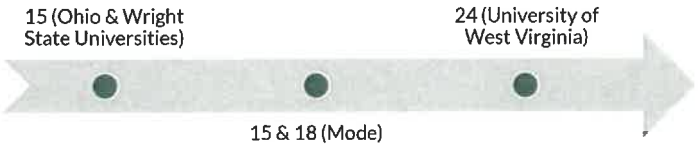
PROGRAM TRENDS: CREDITS & CONCENTRATIONS

PRE-DISSERTATION CREDITS

Marshall's plan to require 48 credit hours of coursework for incoming students with a bachelor's degree and 18 for those with a master's is comparable to what other profiled institutions require. Some institutions, like Old Dominion University. do not supply specific credit hour totals, but state that the program requires a minimum of 24 credits of coursework beyond a master's degree. Cleveland State University's program requires 40 graduate coursework credit hours beyond a bachelor's degree. However, most programs do state a range of credits for students coming into the programs depending on their previous credentials. The most common credit hours requirement for coursework for bachelor's degree holders is 42. For students entering the program with a master' degree, profiled programs often require 15 or 18 credit hours of coursework.

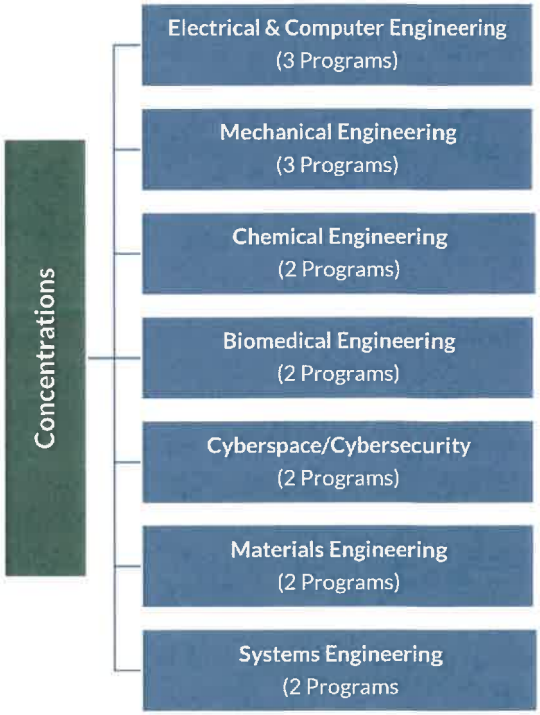
CREDIT REQUIREMENTS: WITH BACHELOR'S

CREDIT REQUIREMENTS: WITH MASTERS



CONCENTRATIONS

Profiled programs commonly offer concentrations in electrical and computer engineering and mechanical engineering. Less common concentration areas are in education and modeling and simulation.



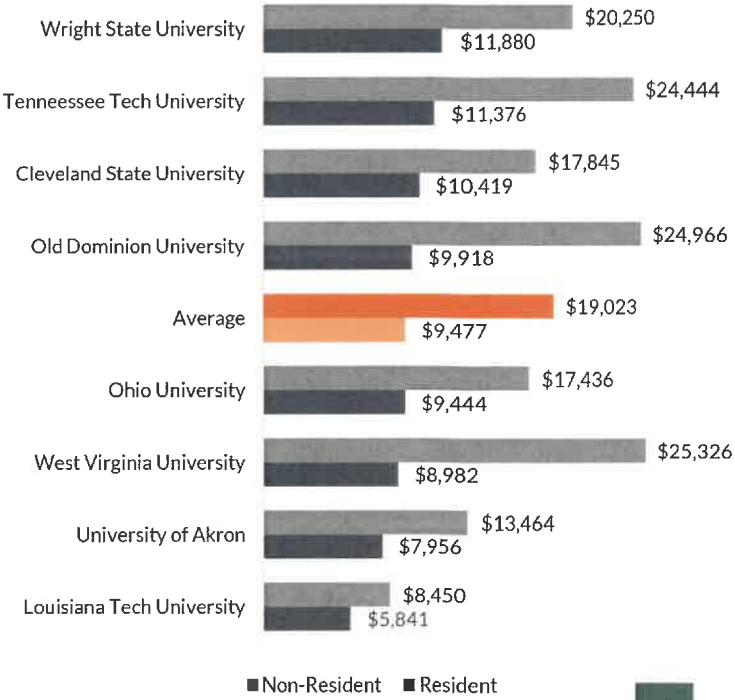
PROGRAM TRENDS: TUITION

PER-CREDIT TUITION

Average per-credit tuition rates for profiled institutions are $534 for residents and $1,071 for non-residents. Per-credit tuition ranges from $324 at Louisiana Tech to $660 at Wright State for in-state students. Non-resident per-credit rates span $469 at Louisiana Tech to $1,407 at West Virginia University.

ANNUAL TUITION

Annual tuition averages $9,477 for in-state students and $19,023 for non-residents for benchmarked institutions. For residents, Louisiana Tech has the lowest tuition rate at $5,841, whereas Wright State has the highest at $11,880. Non-resident annual tuition ranges from $8,450 at Louisiana Tech to $25,326 at West Virginia University.



PROGRAM TRENDS: MESSAGING

ANAYSIS

Overall, profiled institutions have minimalist webpages for these programs; however, notable value propositions include skills building, funding opportunities, career preparation, and specializations. Benchmark institutions use simple webpages to market their programs. None of the reviewed programs provided interactive elements such as videos, for instance. However, practical details such as learning outcomes, skills building, career information, and the types of focus areas students could choose are often highlighted.

MARKETING SPOTLIGHT: WRIGHT STATE UNIVERSITY

Wright State University provides prospective students with details about the program's ranking, focus areas, research, facilities, and student success stories. These features allow prospective students to gain better insight into the culture and benefits of the program.

MESSAGING

Skills and Knowledge	*"The Ph.D. Engineering is an interdisciplinary degree with a strong research emphasis, preparing graduates for academic and industrial careers. The program prepares its graduates to respond to the needs and challenges of the ever-changing world and provide them the knowledge, skills, ethics, creativity and critical thinking skills necessary for professional competence and life-long learning."* - ***Louisiana Tech University***
Funding Opportunities	*"Our school offers several forms of financial aid including research assistantships, teaching assistantships and graduate assistantships (grading positions). All financial aid for graduate students is awarded competitively based on standardized test scores and academic performance."* - ***Ohio University***
Career Preparation	*"This program was designed to provide the Commonwealth and the nation with exceptionally educated engineering practitioners. These individuals will have developed the highest possible capability to provide innovative solutions in specialized engineering endeavors. The graduates of the program will meet the highest standards for advanced level engineering and leadership positions in industry and government."* - ***Old Dominion University***
Specializations	*"A graduate program leading to a Doctor of Philosophy (Ph.D.) in Engineering is offered by the College of Engineering, and starting in fall of 2021, with several distinct concentrations. Currently, the departments of Chemical Engineering, Civil and Environmental Engineering, Computer Science, Electrical and Computer Engineering, and Mechanical Engineering offer concentrations in their respective fields."* - ***Tennessee Tech University***

PROGRAM BENCHMARKING

Benchmarked programs were selected in conjunction with Marshall.

Institution	Program	Tuition		Pre-Dissertation Credits	Concentrations	Notable Features
Cleveland State University *Cleveland, OH*	PhD in Engineering	**Resident** Pre-Year: $10,419* Per-Credit: $579	**Non-Resident** Pre-Year: $17,845 Pre-Credit: $991	40 credits of coursework beyond a bachelor's degree	• Applied Biomedical Engineering • Chemical Engineering • Electrical Engineering • Mechanical Engineering	--
Ohio University *Athens, OH*	PhD in Electrical Engineering and Computer Science	**Resident**: Per-Year: $9,444 Per-Credit: $583	**Non-Resident**: Per-Year: $17,436 Per-Credit: $1,079	With a bachelor's degree: 30 With a master's degree: 15	Offers Doctoral Programs in: • Chemical Engineering • Civil Engineering • Electrical Engineering and Computer Science • Mechanical and Systems Engineering	• Advertises GAANN Fellowships for students with goals of becoming university faculty members
Louisiana Tech University *Ruston, LA*	PhD in Engineering	**Resident** Per-Year: $5,841 Per-Credit: $324	**Non-Resident** Per-Year: $8,450 Per-Credit: $469	Minimum of 32^ graduate hours of coursework required	• Cyberspace Engineering • Engineering Education • Engineering Physics • Materials and Infrastructure Systems • Micro/Nanoscale Systems	• Advertised as an interdisciplinary program with a strong research emphasis • Prepares students for both academic and industry careers
Old Dominion University *Norfolk, VA*	D.Eng in Engineering	**Resident** Per-Year: $9,918* Per-Credit: $551	**Non-Resident** Per-Year: $24,966 Per-Credit: $1,387	Program requires a minimum of 24 credits of coursework (beyond a master's degree)	• Cybersecurity • Electrical and Computer Engineering • Management and Systems Engineering • Modeling and Simulation	• Program is for students seeking advanced level and leadership positions in industry and government

*Note: Annual tuition was calculated at 9 credit hours a semester.
^Note:. There is no distinction made between resident and non-resident students. Cost per-credit hours are not set but fluctuate depending on the number of credit hours taken. Quarter credits were converted to semester credit hours (48 coursework credits divided by 1.5).
Source: Institutional Websites (see embedded hyperlinks)

PROGRAM BENCHMARKING

Benchmarked programs were selected in conjunction with Marshall.

Institution	Program	Tuition		Pre-Dissertation Credits	Concentrations	Notable Features
Tennessee Tech University *Cookeville, TN*	PhD in Engineering	**Resident** Per-Year: $11,376 Per-Credit: $632	**Non-Resident** Per-Year: $24,444 Per-Credit: $1,358	With a bachelor's degree: 42 With a master's degree: 18	• Chemical Engineering • Computer Science • Civil Engineering • Electrical and Computer Engineering • Mechanical Engineering	• The program has an enrollment of 106 students as of Spring 2021 with Mechanical Engineering being the largest concentration by volume
University of Akron *Akron, OH*	PhD in Engineering	**Resident** Per-Year: $7,956 Per-Credit: $442	**Non-Resident** Per Year: $13,464 Per-Credit: $748	With a bachelor's degree: 36 With a master's degree: 18	--	• Advertised as an interdisciplinary program • The degree must be completed in 10 years
West Virginia University *Morgantown, WV*	PhD in Civil Engineering	**Resident** Per-Year: $8,982 Per-Credit: $499	**Non-Resident** Per-Year: $25,326 Per-Credit: $1,407	With a bachelor's degree: 42 With a master's degree: 24	Other programs are offered in: • Computer Engineering • Electrical Engineering • Industrial Engineering • Aerospace Engineering • Materials Science and Engineering • Mining Engineering • Petroleum and Natural Gas Engineering • Chemical Engineering • Biomedical Engineering	• The doctoral programs prepare graduates for leadership in industrial, government or academic fields
Wright State University *Dayton, OH*	PhD in Engineering	**Resident** Per Year: $11,880* Per-Credit: $660	**Non-Resident** Per Year: $20,250 Per-Credit: $1,125	With a bachelor's degree: 45 With a master's degree: 15	• Biomedical Engineering • Industrial and Human Factors Engineering • Materials Science and Engineering • Mechanical and Aerospace Engineering	• The program advertises several industrial laboratories as well as on-campus facilities such as the Fritz and Delores Russ Engineering Center • Advertises U.S. News and World Report rankings • The degree should be completed in 10 years

*Note: Per-credit rates were multiplied by 18 to get the annual tuition rate.
Source: Institutional Websites (see embedded hyperlinks)

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CONTACT

Eve Proper, PhD

Content Director, Higher Education

E: eproper@hanoverresearch.com

P: 202-978-3019

hanoverresearch.com