From:	Smith, Randy
To:	Massari, Anthony T.
Cc:	Andridge, Rebecca; Reed, Katie; Smith, Randy; Miriti, Maria; Bricker, Adrienne; Duffy, Lisa; MacKay, Allison A.; Quinzon-Bonello, Rosario; Tomasko, David
Subject:	Proposal establish a combined Bachelor of Science in Civil Engineering and a Master of Structural Engineering program
Date:	Thursday, March 23, 2023 8:28:52 AM
Attachments:	image001.png

Anthony:

The proposal from the Department of Civil, Environmental, and Geodetic Science and the Knowlton School of Architecture to establish a combined Bachelor of Science in Civil Engineering and a Master of Structural Engineering program was approved by the Council on Academic Affairs at its meeting on March 22, 2023. Thank you for attending.

No additional level of internal approval is necessary. This action will be included in the Council's next Annual Activities Report to the University Senate (July 2023).

The Office of the University Registrar will work you with any implementation issues.

Professor Maria Miriti, Interim Associate Dean, Graduate School will address any follow-up issues relating to the Ohio Department of Higher Education.

Please keep a copy of this message for your file on the proposal and I will do the same for the file in the Office of Academic Affairs.

If you have any questions please contact the Chair of the Council, Professor Rebecca Andridge (.1) or me.

I wish you success with this important program development.

Randy

THE OHIO STATE UNIVERSITY

W. Randy Smith, Ph.D.
Vice Provost for Academic Programs
Office of Academic Affairs
203 Bricker Hall, 190 North Oval Mall, Columbus, OH 43210
614-292-5881 Office
smith.70@osu.edu

From:	Carpenter, TJ
To:	Reed, Katie
Cc:	Massari, Anthony T.; Quinzon-Bonello, Rosario; Miriti, Maria
Subject:	Combined BS in Civil Eng and MStruc Eng
Date:	Tuesday, March 7, 2023 3:36:22 PM
Attachments:	Combined BS Civil and MStucENG Combined Proposal 3-7-23.pdf image001.png

Katie,

Please find a proposal to establish a combined BS in Civil Engineering and Master of Structural Engineering in the Knowlton School of Architecture in the College of Engineering.

The Department of Civil, Environmental and Geodetic Engineering in the College of Engineering is proposing to establish a combined program in Civil Engineering (BS) and a Master of Civil Engineering. The College of Engineering establishes these programs to allow for exceptional undergraduate students to begin their graduate course work while finishing their undergraduate degree. This initiative supports the College of Engineering initiative to retain and support exceptional students at OSU. Eligible students must have at least a 3.5 CGPA, completed at least 90 undergraduate credits hours in order to apply for consideration for entering the combined degree program.

This proposal has been reviewed and approved by the combined GS/CAA subcommittee and Graduate Council. The contacts for the proposal are cc'd on this email.

Please let me know if you need additional information to add this proposal to the agenda of the upcoming CAA meeting.

THE OHIO STATE UNIVERSITY
GRADUATE SCHOOL

Dr. Maria N. Miriti
Professor, Dept. of Evolution, Ecology, and Organismal Biology
Interim Associate Dean of Academic Affairs, Graduate School
Carole A. Anderson Faculty Fellow, OSU Office of Academic Affairs
614-292-6997 Office
miriti.1@osu.edu

TJ Carpenter, MS
Administrative Coordinator
The Ohio State University
Graduate School
250H University Hall, 230 North Oval Mall, Columbus, OH 43210
614-688-0230 Office
carpenter.1112@osu.edu / www.gradsch.osu.edu
Pronouns: He/Him/His

TO: Randy Smith, Vice Provost for Academic Programs

FROM: Graduate School Curriculum Services

DATE: March 7, 2023

RE: Proposal to establish a combined Bachelor of Science in Civil Engineering and Master of Structural Engineering in the College of Engineering

The College of Engineering is proposing to establish a combined Bachelor of Science in Civil Engineering and Master of Structural Engineering.

The proposal was received by the Graduate School on November 3, 2022. The combined GS/CAA subcommittee first reviewed the proposal on November 10, 2022, and requested revisions. Revisions were received on February 17, 2023. GS/CAA conducted a second review of the proposal and recommended it for approval by the Graduate Council on February 27, 2023. The proposal was approved by the Graduate Council on March 7, 2023.

From: Massari, Anthony T.
To: Carpenter, TJ
Cc: Quinzon-Bonello, Rosario
Subject: BS/STREN-MSE Combined program
Date: Friday, February 17, 2023 4:51:18 PM
Attachments: Civ_BS-STRENG-MSE__Combined_Program_Proposal_UPDATED.pdf
image001.png

Hi TJ,
I did my best to incorporate all the comments from your review in the newly updated proposal, as well as answer the additional questions as were posed in previous correspondence with Mrs. Quinzon-Bonello. Please see attached revised proposal along with questions answered below:

As part of proposing a new combined degree program, the following questions will need to be completed to meet state compliance:

1. How will students be informed of this combined program? How will students be advised regarding the opportunities and challenges associated with the option?
    a. The program will be advertised on the CEGE website as well as being promoted by faculty associated with structural engineering. Meetings with the program coordinator will be made available for all students interested in the program.
2. How will the program ensure that students meet the expected baccalaureate program outcomes before the baccalaureate degree is awarded?
    a. Using the provided academic advising form, coordinated with the graduate and undergraduate program coordinators.
3. How will the success of the combined program be monitored?
    a. Using the provided advising sheet in the program by the program coordinator and academic advisors/associated faculty in the program
4. Describe the options available for students who wish to leave the combined program with a bachelor's degree before finishing the graduate level work.
    a. Students who leave the program prior to completing their graduate work but meet the bachelorette degree requirements will not receive a graduate degree.
5. Please detail the options for students who may wish to leave the program with a bachelor's degree before finishing the graduate course work.
    a. Students who leave the program prior to completing their graduate work but meet the bachelorette degree requirements will not receive a graduate degree.
6. Clarify if any courses are being changed or added. If so please provide short syllabi for those courses. If no courses are being changed, please state in the proposal.
    a. No new courses are being added/changed. Stated in proposal.
7. How will ENG work with Fisher to ensure that students in the Master of Structural Engineering program will be able to take these courses?
    a. Prior to the start of a semester, STRENG-MSE students are to send the graduate program coordinator a list of Fisher courses they intend to enroll in for the semester. The graduate program coordinator will then collaborate with the FCOB Associate Director of Graduate Academic Services to determine seat availability. Once seat availability is confirmed, the graduate program coordinator will enroll students in Fisher courses.

THE OHIO STATE UNIVERSITY

Anthony Massari, PhD, P.E., LEED AP
Associate Professor of Practice (Structures)
CEGE Professional Programs Director
Chair of Senate Council on Physical Environments (COPE)
Affiliated Faculty, Sustainability Institute
College of Engineering Civil, Environmental and Geodetic Engineering
491C Hitchcock Hall, 2070 Neil Avenue, Columbus, OH 43210
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THE OHIO STATE UNIVERSITY

College of Engineering

Department of Civil, Environmental and Geodetic Engineering

470 Hitchcock Hall
2070 Neil Avenue
Columbus, OH 43210-1275

Phone: (614) 292-2771
Fax: (614) 292-3780

ceg.osu.edu

2/17/2023

To whom it may concern,

My name is Dr. Anthony Massari and I am an Associate Professor of Practice in Structural Engineering at The Ohio State University, and I am Chair of the Undergraduate Studies Committee in the Civil, Environmental and Geodetic Engineering (CEGE) Department. I am writing this letter in support of the new BS/MS in Structural Engineering program being developed in our department. This program will be consistent with all other degree paths in our CEGE department, and we look forward to promoting this new and exciting way forward for our students to pursue graduate education. We have voted and approved this program though our committee and at the department level.

Kind regards,

Anthony Massari. PhD, P.E., LEED AP
The Ohio State University
201-982-0850
Massari.8@osu.edu

THE OHIO STATE UNIVERSITY

College of Engineering

Department of Civil, Environmental and Geodetic Engineering

470 Hitchcock Hall
2070 Neil Avenue
Columbus, OH 43210-1226

614-292-2771 Phone
614-292-3780 Fax

ceg.osu.edu

February 17, 2023

RE: The BS/MS Structural Engineering program

To whom it may concern:

As the Graduate Studies Committee Chair of the Department of Civil, Environmental and Geodetic Engineering (CEGE) here at The Ohio State University, I am submitting this letter to express my enthusiastic support for the new BS/MS program in Structural Engineering being developed in our Department. The proposed program has been approved by the relevant Departmental committees and the faculty at large, and we look forward to the implementation of this new and exciting option for our students to pursue a graduate education within CEGE. Please feel free to contact me via phone (614-292-7176) or e-mail (kubatko.3@osu.edu) if I can be of any further assistance in the approval process.

Sincerely,

Ethan Kubatko
Associate Professor and Graduate Studies Committee Chair
Department of Civil, Environmental and Geodetic Engineering

THE OHIO STATE UNIVERSITY
FISHER COLLEGE OF BUSINESS

Office of the Dean
201 Fisher Hall
2100 Neil Avenue
Columbus, OH 43210-1144

614-292-2666 Phone
614-292-7999 Fax
fisher.osu.edu

April 30, 2021

Dean Ayanna Howard
College of Engineering
2070 Neil Avenue
Columbus, Ohio 43210

Ref: Professional Masters in Structural Engineering (PMSE)

Dear Dean Howard:

I am writing to indicate the Fisher College of Business' strong support for the College of Engineering's proposed Professional Masters in Structural Engineering (PMSE). Students attracted to this program will benefit from the unique combination of technical and professional content available between both of our colleges, and will no doubt better prepare our graduates for careers in engineering leadership.

We are happy to cooperate with Engineering in developing this new degree, specifically by offering accessibility to the array of courses in our graduate MBA program indicated in the PMSE proposal. We look forward to working with the College of Engineering on this new masters degree and hope to develop additional cooperative ventures as we move forward.

Sincerely,

Anil K Makhija

Anil K. Makhija
Dean and John W. Berry, Sr. Chair in Business

THE OHIO STATE UNIVERSITY

Curriculum Proposal Checklist

Title of Program: Combined Bachelor of Science in Civil Engineering and Professional Master of Structu

Engineering

Effective term: Autumn 2023 ☐ **College:** Civil, Environmental & Geodetic Engine

New/Establish: ☑ **Secondary Major Eligible:** **Academic Unit:**

Revise: ☐ **50% Revision:** ☐ **Mark Up:** ☐ **Program Contact:** Graduate Program Coordinator

Terminate: ☐ **Suspend:** ☐ **Certificate Category*:**

Degree/Credential: Bachelor of Science in Civil Engineering

Program of Study : Joint Program **Title:** Combined Civil BS/Professional Master of Struc

Code:

Program Focus*: Option

Combined BS/MS Degree

Credit hours to degree/credential: 149 **Is this a change to the current total?** ☐ **Yes** ☑ **No**

Program offered only online? ☐ **Yes** ☑ **No** **If yes, is there a signed MOU with ODEE?** ☐ **Yes** ☐ **No**

Campus(es) where offered: ☑ **Columbus** ☐ **ATI** ☐ **Lima** ☐ **Mansfield** ☐ **Marion** ☐ **Newark**

Rationale: The College of Engineering currently offers several combined degree (BS/MS) programs for outstanding undergraduate students. These programs aim to promote the attainment of advanced degrees and to retain talented undergraduate students at the Ohio State University (OSU) for graduate study. Through such programs, well-qualified undergraduate students at OSU can start graduate study before completing their undergraduate degree and are eligible to double-count up to 9 semester credit-hours of courses towards both their BS and MS degrees. Consistent with the goals outlined by the College to retain outstanding students at OSU and in order to fulfill a desire voiced by both students and faculty within the Department, CEGE is proposing to implement a BS/STRENG-MSE program in Professional Master of Structural Engineering as early as Autumn 2023.

Student Curriculum Sheet Required: ☑

Four Year (or appropriate) Plan: ☑

Academic Unit Curriculum Committee approval date: 9/21/22

College Curriculum Committee approval date:

Graduate School Council approval date*:

Regional Campus approval date*:

Council on Academic Affairs approval date:

University Senate approval date*:

Board of Trustees approval date*:

ODHE approval date*:

* If applicable

Proposal for Civil BS/Professional Master of Structural Engineering Program in the Department of Civil, Environmental and Geodetic Engineering

Rationale

The College of Engineering currently offers several combined degree (BS/MS) programs for outstanding undergraduate students. These programs aim to promote the attainment of advanced degrees and to retain talented undergraduate students at the Ohio State University (OSU) for graduate study. Through such programs, well-qualified undergraduate students at OSU can start graduate study before completing their undergraduate degree and are eligible to double-count up to 9 semester credit-hours of courses towards both their BS and MS degrees. Consistent with the goals outlined by the College to retain outstanding students at OSU and in order to fulfill a desire voiced by both students and faculty within the Department, CEGE is proposing to implement a BS/STRENG-MSE program in Professional Master of Structural Engineering as early as Autumn 2023.

The target audience for the STRENG-MSE degree is engineers in the early stages of their professional career who have just begun or whom have been working in the field for fewer than five years. Prospective students may be employed in either the public or private sector (for profit or non-profit). Students are expected to aspire to benefit their organizations through both technical and managerial skills so as to be leaders and innovators in their organizations. Their personal goals include gaining technical leadership skills, enhancing their flexibility, practicing life-long learning and improving their competitiveness in the marketplace. This cohort of students will consist of both full-time and part-time students, and as such the program is crafted to be accommodating for short duration fulfillment of program requirements for full time students (9-months) and an opportunity to extend the program over multiple years for part-time students who prefer to refrain from a sabbatical from the workforce. No new courses will be created in the development of this program.

The BS/STRENG-MSE offers a particular opportunity for students who are looking to perform this extended/part time program, and to reduce the time to degree after completing the degree requirements of a BS. Further, by having the BS/STRENG-MSE, students who previously may have considered graduate education at other institutions will have the opportunity for a reduced load beyond the traditional BS to time of degree here at OSU, leading to a gain in engineers staying in Ohio.

Eligibility/Admission Criteria

Eligible students are defined according to the eligibility requirements set forth by the College of Engineering; namely, the student must be an OSU undergraduate student (not necessarily in Engineering) with at least a 3.5 CPHR in all previous undergraduate work and have completed at least 90 undergraduate semester credit-hours toward their BS degree. All eligible students will be invited to a BS/STRENG-MSE program information session organized and run by the Department's undergraduate advisors, the graduate coordinator, and the professional programs graduate studies chair. Standard admission criteria in the Department for the STRENG-MSE degree program include a bachelor's degree in civil engineering (or closely related area) from an accredited institution and

a 3.0 GPA, so students eligible to apply to the BS/STRENG-MSE program would meet the standard admission criteria. The admission process for the BS/STRENG-MSE program includes submitting a standard MS application through the University, which is reviewed by Departmental faculty in the relevant area of interest and by the Professional Master of Structural Engineering Graduate Studies Committee (PMSE-GSC) according to the standard review process.

Credit Hours

The BS in Civil Engineering has a minimum of 131required credit hours. The STRENG-MSE program has a minimum of 30 required credit hours. The proposed combined degree will allow for 9 credits to be counted toward both the undergraduate degree and graduate degree.

Fee Structure Acknowledgement

Students in the BS/STRENG-MSE program will be charged undergraduate tuition until all undergraduate requirements are met, and then will be charged graduate tuition once they solely enrolled in graduate credits.

Appendix A: BS/MS advising sheets

Study Plan for Professional Master of Structural Engineering

(Please type or print clearly)

Student Name_____

COURSEWORK (Place ^ next to "credit hours" for any course that was double-counted for BS/MS program. Place * beside any course not taken at OSU; must be approved by advising committee)

Core Technical Courses (must total at least 9 hours)		FINAL	
Course Number	Course Title	GRADE	Credit hours

TOTAL of Core Technical Course Credits: _____

Studio Design Courses (must total at least 6 hours)		FINAL	
Course Number	Course Title	GRADE	Credit hours

TOTAL of Studio Design Course Credits: _____

Engineering Technical Elective Courses (must total at least 9 hours)		FINAL	
Course Number	Course Title	GRADE	Credit hours

TOTAL of Engineering Technical Elective Course Credits: _____

Professional Development Courses (must total at least 6 credit hours)			
Course Number	Course Title	FINAL GRADE	Credit hours

TOTAL of Professional Development Courses Credits: _____

TOTAL MS HOURS: _____

- Have you met the residency requirement? _____(*see Graduate School Handbook: Section VI.1 > 6.1 General Information > Credit Hours and Residency Requirement*)
- BS/MS students: Total combined credit hours between BS and MS degree? _____(must be at least 150)

Master's Advisory Committee Approval Signatures: (Composed of at least 3 members, including Advisor. Two members, including the Advisor must hold membership at Category M or P level in the Department of Civil, Environmental and Geodetic Engineering. Non-Graduate Faculty members must be approved by petition to the Graduate School on GradForms.)

Advisor Name_____Signature_____Date_____

Committee Member Name_____Signature _____Date_____

Committee Member Name_____Signature_____Date_____

Professional Graduate Studies Committee Chair

Name:_____Signature_____Date _____

Please send to the Graduate Program Coordinator once the entire form is complete.

Master of Structural Engineering Curriculum				
Core Technical Courses (min. 9 cr-hrs)				
	Dept	Course#	Course Name	Cr Hrs
	CIVILEN	5320	Intermediate Steel Design	3
	CIVILEN	5350	Intermediate Concrete Design	3
	CIVILEN	6300	Structural Dynamics	3
Studio Design Courses (0 to 6 cr-hrs)[1]				
	CIVILEN	6001	Structural Engineering Studio 1[1]	3
	CIVILEN	6002	Structural Engineering Studio 2[1]	3
Engineering Technical Electives (min. 9 cr-hrs)				
	CIVILEN	5168	Introduction to the Finite Element Method	3
	CIVILEN	5360	Bridge Engineering	3
	CIVILEN	5370	Prestressed Concrete Design	3
	CIVILEN	5510	Durability and Condition Assessment of RC Structures	3
	CIVILEN	5571	Principles of Foundation Analysis and Design	3
	CIVILEN	6510	Advanced Concrete Materials	3
	CIVILEN	7320	Structural Reliability	3
	CIVILEN	7332	Advanced Behavior and Design of Metal Structures	3
	CIVILEN	7350	Advanced Reinforced Concrete	3
	CIVILEN	7330	Earthquake Engineering	3
	MECHENG	5139	Applied Finite Element Method	3
	MECHENG	5162	Introduction to Laminated Composite Materials	3
	MECHENG	7100	Introduction to Continuum Mechanics	3
	MECHENG	7163	Advanced Strength of Materials and Elasticity Theory	3
Professional Development (min. 6 cr-hrs)				
	MBA[2]	6201	Organizational Behavior	1.5
	MBA[2]	6202	Leadership	1.5
	MBA[2]	6211	Accounting and Decision Making	3
	MBA[2]	6253	Marketing	3
	MBA[2]	6281	Professional Development and Business Communication	1.5
	MBA[2]	6293	Strategy	3
	ENGR	6210	Leadership and Team Effectiveness (DL)	3
	ENGR	6220	Accounting/Finance for Engineers (DL)	3
	ENGR	6230	Technology Strategy & Innovation Management (DL)	3

Total Hours to complete the degree program = 30

Notes

[1] *Civil engineering has a state mandated licensing process that is attainable for design professional with 4 or more years of work experience in their field of practice. For students possessing the distinction of Professional Engineer in Civil Engineering, the Studio sequence will be optional, allowing for more seasoned professionals to instead take more technical courses which broaden their skill set. Students who are eligible and opt out of the studio course will be required to take an exit exam on the core of the program.*

[2] *All MBA courses provided by the Fisher College of Business (FCB) are subject to restricted enrollment by FCB after priority is given to FCB students*

B.S. Civil Engineering 2022-2023 Academic Year

Student Information

First Name:_____ Last Name.#_____

Suggested Curriculum

This should be used as a **guide** only. Semester offerings are subject to change.

Year	Autumn	Spring
1	___ MATH 1151 (Calculus 1)_____5 hr ___ ENGR 1181 *(Fundamentals of Engr 1)*_____2 hr ___ PHYSICS 1250 (Mechanics, Thermal, Waves) _5hr ___ ENGR 1100 *(Engineering Survey)*_____1 hr ___ GEN Writing and Information Literacy____3 hr ___ GEN Launch Seminar_____ 1 hr	___ MATH 1172 *(Engineering Math A)*_____5 hr ___ MECHENG 2010 *(Statics)*_____2 hr ___ ENGR 1182 *(Fundamentals of Engr 2)*_____2 hr ___ CIVILEN 2405 *(Graphics for CE)*_____1 hr ___ ENGR 1221[1] *(Programming)*_____2 hr ___ GEN Citizenship for a Just, Diverse World_4 hr
2	___ MATH 2177[2] *(Math Topics for Engineers)*_____4 hr ___ MECHENG 2020 *(Mech of Materials)*_____3 hr ___ CIVILEN 2050[3] *(Prob & Data Interpretation)*__ 3 hr ___ CIVILEN 2810 *(Constr Engr & Mgmt)*_____3 hr ___ CHEM 1250[4] *(Gen Chemistry for Engineers)*____4 hr ___ CIVILEN 2090 *(Professional Aspects)*_____1 hr	___ CIVILEN 2060 *(Numerical Analysis Methods)*__ 4 hr ___ CIVILEN 3510 *(Civil Engineering. Materials)*____3 hr ___ CIVILEN 3310 *(Struct Engr. Principles)*_____3 hr ___ CIVILEN 3540 *(Geotech. Engineering)* ***AND*** ___ CIVILEN 3541 *(Geotechnical Engineering Lab)* 3 hr ___ MECHENG 2030 *(Dynamics)*_____3 hr
3	___ CIVILEN 3700 *(Transp Engr & Analysis)*_____3 hr ___ CIVILEN 3130 *(Fluid Mechanics)*_____3 hr CIVILEN 2410 *(Intro to Geomatics/Surveying)*__ 3hr ___ CIVILEN 4320 *(Structural Steel Design)* ***OR*** CIVILEN 4350 *(Reinforced Concrete Design)*___3 hr ___ ENVEN 3200 *(Fundamentals of Envir Engr)*____3 hr	___ CIVILEN 3160 *(Water Resources Engr.)*_____3 hr ___ CIVILEN 3080 *(Economics & Optimization)*____3 hr ___ Additional Science Elective 1_____4 hr ___Technical Elective 1_____3 hr ___ Technical Elective 2_____3 hr
4	___ **CIVILEN 4001** ***(CE Capstone 1)***_____2 hr ___ Additional Science Elective 2_____4 hr ___Technical Elective 3_____3 hr ___ GEN Race, Ethnicity, Gender Diversity____3 hr ___ GEN Social and Behavioral Sciences_____3 hr ___ GEN Historical and Cultural Studies_____3 hr	___ **CIVILEN 4002** ***(CE Capstone 2)***_____2 hr ___ Technical Elective 4_____3 hr ___ Technical Elective 5_____3 hr ___ GEN Literary, Visual, Performing Arts ___3 hr ___ GEN Thematic Pathway_____4 hr

Total Hours to complete the degree program = 131. Please note, course schedules may not follow this plan exactly. This is a reference guide for students. Students should contact their advisor for academic guidance. **Courses in BOLD are only offered once per year.**

[1] CSE 1222, 1223, or 1224 are acceptable substitutes for ENGR 1221.
[2] MATH 2173+2174 or MATH 2568+2415 are acceptable substitutions for MATH 2177.
[3] STATISTICS 3460 or 3470 are acceptable substitutions for CIVILEN 2050.
[4] CHEM 1210 is an acceptable substitution for CHEM 1250.

Please contact a CEGE advisor if you have questions or concerns about any of the listed substitutions.

Please note that students who need preparatory work before beginning Math 1151 will need additional time to complete this curriculum. The outlined curriculum is not a prescribed plan and is intended to be used as a guide to assist students in progressing through the curriculum with respect to prerequisite courses. Course offerings are subject to change. Please check the course catalog for prerequisite requirements and course availability.

Acceptance Criteria

Acceptance into the Civil Engineering major is based on a holistic review of a written application and academic performance. Applications are accepted during Autumn and Spring terms. Only CPHR (cumulative GPA) will be reviewed. Applications can be submitted upon completion of or enrollment in Engineering 1181 and 1182, Math 1151 and 1172, and either Physics 1250, Chemistry 1210 or Chemistry 1250.

Technical and Science Electives

Technical Electives: Students are required to complete 15 hours of technical electives from the approved Technical Elective List. Students must complete one course from each *Area*, with the remaining coursework coming from any combination of Areas. (Area 1: Infrastructure, Area 2: Transportation & Geodetic Engineering, Area 3: Water Resources & Environmental Engineering)

Area 1 Technical Elective: _____ Cr. Hrs. _____

Area 2 Technical Elective: _____ Cr. Hrs. _____

Area 3 Technical Elective: _____ Cr. Hrs. _____

Technical Elective: _____ Cr. Hrs. _____

Technical Elective: _____ Cr. Hrs. _____

Additional Science Electives: Civil Engineering students are required to complete a minimum of 8 semester credit hours of science elective credit hours from the approved Science Elective List. At least one course must be taken from Group A. Science Elective course options can be found at https://ceg.osu.edu/undergraduate-degrees/curriculum-and-bingo-sheets

Additional Science Elective 1: _____ Cr. Hrs. _____

Additional Science Elective 2: _____ Cr. Hrs. _____

General Education Requirement

Launch Seminar

GENED 1201 1hr

Foundations

Complete all of the following:

Writing and Information Literacy 3 hr

Historical and Cultural Studies 3 hr

Social and Behavioral Sciences 3 hr

Race, Ethic, and Gender Diversity 3 hr

Literary, Visual, and Performing Arts 3 hr

Thematic Pathways (8-12 hours)

Citizenship for a Just and Diverse World 4-6 hr

Additional Theme(s) 4-6 hr

Appendix B: BS and MS learning goals/outcomes and assessment plans

B.S. CIVIL ENGINEERING STUDENT OUTCOMES AND ASSESSMENT PROCESS

John J. Lenhart, Associate Chair and Chair, Undergraduate Studies Committee

The Department of Civil, Environmental and Geodetic Engineering maintains an ABET-accredited B.S. Civil Engineering degree that requires a continual process of evaluation and improvement. The cornerstone of this process is the assessment conducted to ensure at graduation that undergraduate students seeking a B.S. degree in Civil Engineering from the Department of Civil, Environmental and Geodetic Engineering have attained the following Student Outcomes:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Assessment is conducted on a continuous basis by the ABET Assessment Subcommittee, which is a subcommittee within the Undergraduate Studies Committee, and it utilizes the instruments listed in Table 1. As depicted in Figure 1, results of the assessment are compiled by the ABET Assessment Subcommittee and presented for discussion at a dedicated meeting of the Undergraduate Studies Committee. This meeting is conducted on an annual basis each spring semester and it involves members of the Undergraduate Studies Committee as well as faculty that conduct the in-class assessment. Based on the results of this meeting, recommendations are determined and presented for discussion to the Departmental Faculty and Chair. From discussion with the full Faculty come motions to implement changes, if needed. The overall process is continuously evaluated and improved based upon input from Departmental Faculty, the Department's External Advisory Board, and the College of Engineering's Outcome Assessment Committee.

Table 1. Summary of metrics and instruments used to assess Student Outcomes

Instruments Used	Outcomes Addressed	Metrics	Frequency of Assessment
Alumni Survey	All	Average rating of preparation for components of outcomes at time of graduation	Every two years
Graduating Student Exit Survey	All	Average rating of student attainment of outcomes at time of graduation	Twice per year
Combined FE[1] results and program graduation numbers		Percent of students participating in the examination	Yearly
FE[1] results		Ratio of OSU pass rate to comparison group pass rate	Twice per year
FE[1] results		Average ratio of OSU % questions answered correctly to comparison group % questions answered correctly	Twice per year
Course-based rubrics, assignment grades, and exam question performance	All	Percent of students with "acceptable" performance	Every two years, staggered

[1]*FE: Fundamentals of Engineering*

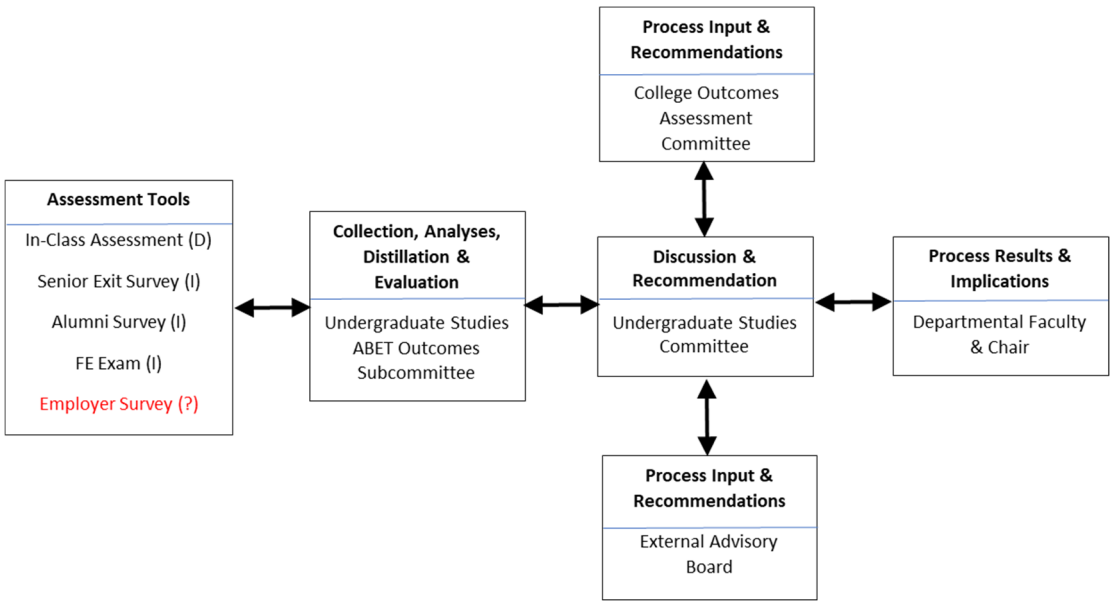

Figure 1. Process flow used to assess student outcomes. Text in red refers to a proposed change in the process that is still being discussed.

Learning Goals/Outcomes for the Professional Master of Structural Engineering Program

Engineers who complete this curriculum are expected to attain the following outcomes:

- be current in the latest engineering knowledge and related advances in their selected technical fields;
- be able to apply knowledge more effectively in innovative directions;
- know how to communicate with both business and technical specialists;
- be able to apply the fundamentals of managerial accounting to manage projects to success;
- be trained to successfully lead technical teams

Appendix C: BS and MS Course List

Course Number	Course Title
2050	Probabilistic Applications and Data Interpretation in Civil and Environmental Engineering
2060	Numerical Analysis Methods for Civil and Environmental Engineering Applications
2090	Professional Aspects of Civil and Environmental Engineering
2193	Individual Studies in Civil Engineering
2194	Group Studies in Civil Engineering
2405	Computer Graphics for Civil Engineers
2410	Introduction to Surveying
2810	Construction Engineering and Management: An Introduction
3080	Economic Evaluation and Optimization in Civil and Environmental Engineering
3130	Fluid Mechanics
3160	Water Resources Engineering
3310	Structural Engineering Principles
3510	Civil Engineering Materials
3540	Geotechnical Engineering
3541	Geotechnical Engineering Laboratory
3700	Transportation Engineering and Analysis
4001	Civil Engineering Capstone I
4002	Civil Engineering Capstone II
4011	Civil Engineering Global Capstone I
4012	Civil Engineering Global Capstone II
4191.01	Civil Engineering Internship I
4191.02	Civil Engineering Internship II
4193	Individual Studies in Civil Engineering
4194	Group Studies in Civil Engineering
4210	The Physics of Sustainable Buildings
4310	Structural Analysis
4320	Structural Steel Design
4340	Behavior of Structural Element
4350	Reinforced Concrete Design
4552	Design and Construction of Flexible Pavements
4800	Project Management in Civil Engineering
4998	Undergraduate Research in Civil Engineering
4998H	Undergraduate Research in Civil Engineering
4999	Civil Engineering Research for Thesis
4999H	Civil Engineering Research for Thesis
5001	Introduction to Geographic Information Systems

Undergraduate
Combined
Graduate

	*** view multiple offerings
5130	Applied Hydrology *** view multiple offerings
5162	Introduction to Laminated Composite Materials *** view multiple offerings
5168	Introduction to the Finite Element Method *** view multiple offerings
5194	Group Studies in Civil Engineering *** view multiple offerings
5220	Open Channel Hydraulics *** view multiple offerings
5230	Transport Phenomena in Water Resources Engineering *** view multiple offerings
5240	Groundwater Engineering *** view multiple offerings
5300	Airport Planning, Design, and Development *** view multiple offerings
5310	Matrix Structural Analysis *** view multiple offerings
5320	Intermediate Structural Steel Design *** view multiple offerings
5350	Intermediate Reinforced Concrete Design *** view multiple offerings
5360	Bridge Engineering *** view multiple offerings
	Prestressed Concrete Design

5370	*** view multiple offerings
5410	Engineering Surveying *** view multiple offerings
5411	Legal Aspects of Surveying *** view multiple offerings
5412	Land Boundary & Development Principles *** view multiple offerings
5420	Remote Sensing of Environment *** view multiple offerings
5422	Terrain Analysis *** view multiple offerings
5441	Introduction to GPS: Theory and Applications *** view multiple offerings
5461	Geospatial Numerical Analysis *** view multiple offerings
5510	Durability and Condition Assessment of Reinforced Concrete Structures *** view multiple offerings
5561	Rock Mechanics, Slope Stability and Retaining Structures *** view multiple offerings
5571	Principles of Foundation Analysis and Design *** view multiple offerings
5581	Numerical Methods in Geotechnical Engineering *** view multiple offerings
5610.01	Sustainable WaSH Infrastructure for Developing Rural Communities *** view multiple offerings

5700	Urban Transportation Demand Forecasting *** view multiple offerings
5720	Transportation Engineering Data Collection Studies *** view multiple offerings
5730	Highway Location and Design *** view multiple offerings
5740	Design and Operation of Road Traffic Facilities *** view multiple offerings
5750	Instrumentation, Signals, and Control in Transportation Applications *** view multiple offerings
5760	Network Metrics and Control in Transportation Systems *** view multiple offerings
5770	Urban Public Transportation *** view multiple offerings
5780	Seminar in Transportation Engineering and Planning *** view multiple offerings
5810	Construction Safety and Forensics *** view multiple offerings
5820	Construction Estimating *** view multiple offerings
5830	Construction Scheduling *** view multiple offerings
5840	Construction Contracts and Claims *** view multiple offerings
6193	Individual Studies in Civil Engineering
6194	Group Studies in Civil Engineering

6210	The Physics of Sustainable Buildings
6211	Simulation of Building Energy Performance
6230	Numerical Models in Water Resources Engineering
6300	Dynamics of Structures
6435	Global Navigation Satellite Systems (GNSS) Data Processing
6451	Introduction to Photogrammetry
6510	Advanced Concrete Materials
6880	Civil Engineering Graduate Seminar
6999	Civil Engineering Research for Thesis
7320	Structural Reliability
7330	Earthquake Engineering
7350	Advanced Reinforced Concrete
7421	Advanced Machine Learning for Remote Sensing Image Interpretation
7453	Photogrammetric Computer Vision
7730	Transportation Demand Modeling
7740	Urban Transportation Network Analysis
7760	Transportation Management Systems
7770	Infrastructure Systems Analysis
7780	Graduate Student Seminar in Transportation Engineering and Planning
7790	Transportation Practicum
8193	Individual Studies in Civil Engineering
8194	Group Studies in Civil Engineering
8443	Advanced Topics in GPS
8454	Videogrammetry
8810	Construction Intelligent System and Simulation I
8820	Construction Intelligent System and Simulation II
8998	Graduate Research in Civil Engineering
8999	Civil Engineering Research for Dissertation