



University Council

April 12, 2024

UNIVERSITY CURRICULUM COMMITTEE – 2023-2024

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Ex-Officio – Provost S. Jack Hu

Undergraduate Student Representative – Gabriella Lewis

Graduate Student Representative – Kelsey Wohlford

Dear Colleagues:

The attached proposal from the College of Engineering to revise the Entrance Requirements and High-Demand Selection Criteria of the majors in Agricultural Engineering (B.S.A.E.), Biochemical Engineering (B.S.Bch.E.), Biological Engineering (B.S.B.E.), Civil Engineering (B.S.C.E.), Computer Systems Engineering (B.S.C.S.E.), Electrical and Electronics Engineering (B.S.E.E.), Environmental Engineering (B.S.Env.E.), and Mechanical Engineering (B.S.M.E.) will be an agenda item for the April 19, 2024, Full University Curriculum Committee meeting.

Sincerely,

Susan Sanchez, Chair

cc: Provost S. Jack Hu

Dr. Marisa Pagnattaro

PROPOSAL TO ESTABLISH OR CHANGE THE ENTRANCE STATUS AND REQUIREMENTS OF AN UNDERGRADUATE MAJOR

Date: March 14, 2024

School/College: College of Engineering

Departments/Divisions: School of Chemical, Materials, and Biomedical Engineering
School of Electrical and Computer Engineering
School of Environmental, Civil, Agricultural and Mechanical
Engineering

Program (Major and Degree): Agricultural Engineering (B.S.A.E.)
Biochemical Engineering (B.S.Bch.E.)
Biological Engineering (B.S.B.E.)
Civil Engineering (B.S.C.E.)
Computer Systems Engineering (B.S.C.S.E.)
Electrical and Electronics Engineering (B.S.E.E.)
Environmental Engineering (B.S.Env.E.)
Mechanical Engineering (B.S.M.E.)

Proposed Effective Date: Fall 2024

1. Justification

The College of Engineering is requesting to remove the high-demand major (HDM) status and revise the entrance requirements for the eight undergraduate majors in the college. These proposed changes are being requested due to a recent evaluation of the current HDM process and the identification of improvement opportunities that better supports students' progression in their degree program.

The College of Engineering instituted a HDM selection process for each of its eight undergraduate engineering degree programs beginning in the fall of 2016. This process was implemented after a rapid student enrollment increase in the college and its degree programs after the formation of the College of Engineering in 2012. The HDM process was initiated to manage enrollment and ensure quality instruction to an increasing number of students. The implementation of such measures predates the significant financial investments made in renovating Driftmier Engineering Center to provide improved and increased instructional space for students. Beginning in the fall of 2023, the College of Engineering began a comprehensive review of the current HDM process which remained largely unchanged since the Fall 2016. This review encompassed a longitudinal examination of the prevailing HDM procedure, entailing an analysis of historical data encompassing admissions, denials, and scores. Additionally, it involved a quantitative assessment of the flow of students into and out of engineering. Furthermore, the review incorporated focus group sessions with pertinent

stakeholders, alongside a comprehensive survey administered to various constituents within the college community, including current engineering students, individuals who transitioned out of engineering while remaining at UGA, faculty, staff, and alumni. Key findings from this comprehensive review comprise:

- While there were challenges raised about the HDM process, the coursework requirements were viewed as appropriate and should be retained in an updated secondary admissions process.
- Students, faculty, and staff all felt the HDM process should be reformed.
- Students, faculty, and staff all believed there should not be a fee associated with the writing of the personal statement of purpose and more flexibility should be given (i.e., writing the statement of purpose from a personal computer and without a time limit).
- Students valued the opportunity to write a statement about their career goals.
- Some students considered the current process to be stressful with a desire for more transparency.
- Students conveyed feelings of disconnection or a lack of affinity with the College, as they were required to travel to an entirely unrelated location, specifically the writing center, to craft their personal statement of purpose.
- There are challenges with the current HDM process for transfer students.
- The current HDM process requires significant time and resources from college staff.

Upon completing this comprehensive review, the College of Engineering wishes to remove the HDM status and modify the entrance requirements of its eight undergraduate engineering degree programs. As such, the proposed process requires students to:

- 1) Successfully complete select general education and major specific courses with a minimum grade of “C” (2.0) or better;
- 2) Obtain a minimum grade point average (G.P.A.) of 2.75 in major specific courses to be admitted;
- 3) Submit a resume and documentation of their career goals.

These documents offer students an opportunity to reflect on their intent to study engineering and pursue their major as a career as well as serve as an important reference for the academic advisor to guide the students toward their career goal, allowing the college to better serve students. Benefits of the updated process include:

- Streamlined process that is based solely on minimum grades in key courses and a minimum G.P.A. in major specific courses.
- Minimum grade and G.P.A. requirements ensure students meet minimum qualifications in order to be successful in their engineering major.
- Removes uncertainty of dealing with AP credits vs. grades for general education coursework.
- Removes barriers for transfer students as they could be admitted into their major upon satisfying both general education and major specific courses from the institution they are transferring from.
- Allows academic advisors to provide personalized advising to students based on their career goals and allows the College to better serve students.

2. Requirements

Once admitted to UGA, students must meet certain standards and qualifications to enter into their desired engineering major within the UGA College of Engineering. Students will need to have earned a minimum grade of “C” (2.0) or better in select general education and major specific coursework, or have satisfied the requirements via AP credit, as well as earned a minimum G.P.A. of 2.75 in select major specific courses. Students are required to submit documentation of career goals and their resume via an online form located on the College of Engineering website. The form, along with the required documentation, will be submitted by the student during the semester in which they plan to successfully complete all entrance requirements. Following a typical four-year plan for College of Engineering undergraduate majors, this will usually occur in the third semester of a student’s academic career, but may fluctuate depending on each student’s situation.

General Education Coursework

All students entering an undergraduate major in the College of Engineering must either (i) complete the following courses with a grade of “C” (2.0) or better, or (ii) have received AP credits for the following courses.

- ENGL 1101, English Composition I
- MATH 2250, Calculus I for Science and Engineering
- MATH 2260, Calculus II for Science and Engineering
- PHYS 1211-1211L, Principles of Physics for Scientists and Engineers – Mechanics, Waves, Thermodynamics, or PHYS 1251, Introductory Studio Physics for Engineers I

Major Specific Coursework

To be accepted into the Agricultural Engineering (B.S.A.E.), Civil Engineering (B.S.C.E.), Environmental Engineering (B.S.Env.E.), or Mechanical Engineering (M.S.M.E.) majors, students must complete the following courses with a grade of “C” (2.0) or better:

- ENGR 1120, Engineering Graphics and Design
- ENGR 1140, Computational Engineering Methods
- ENGR 2120, Engineering Statics

To be accepted into the Biochemical Engineering (B.S.Bch.E.) or Biological Engineering (B.S.B.E.) majors, students must complete the following courses with a grade of “C” (2.0) or better:

- BIOL 1107 and BIOL 1107L, Principles of Biology I
- CHEM 1212-1212D and CHEM 1212L, General Chemistry II
- ENGR 2120, Engineering Statics

To be accepted into the Computer Systems Engineering (B.S.C.S.E.) and Electrical and Electronics Engineering (B.S.E.E.) majors, students must complete the following courses with a grade of “C” (2.0) or better:

- CSEE 2220, Fundamentals of Logic Design
- ECSE 1100, Introduction to Electrical and Computer Systems Engineering
- ECSE 2170-2170L, Fundamentals of Circuit Analysis

Major Specific Minimum GPA Entrance Requirements

In addition to earning grades of “C” (2.0) or better in the selected general education and major specific coursework, students entering into their desired major must have a minimum GPA of

2.75 or greater in the major specific coursework listed above.

Documentation of Career Goal and Resume

Students are required to submit two documents:

- (1) resume, and
- (2) documentation of career goals using an online survey form to address the following aspects using less than 50 words each:
 - (i) Student's career goals
 - (ii) Student's strength that helps them to achieve the career goals
 - (iii) Challenges that the student is/will be facing that hinder them from achieving their career goals
 - (iv) How the student plans to overcome the challenges to achieve their career goals?
 - (v) How can the College assist the student to overcome the challenge?
 - (vi) The student's plan in participating in experiential learning outside of the classroom by time of graduation (internship, co-op, research, study away) for their career goals.

This documentation of career goals will serve as an important document for academic advisors to guide students throughout their program.

Entrance Procedure

1. Student completes general education and major specific coursework.
2. Student submits documentation of career goals and resume.
3. Student changes from "Intended" to "Major" within Athena.
4. Notification of a student's change of major received by the College of Engineering Academic Affairs Office.
5. Before being accepted into a major, the student's minimum grades, GPA requirements, and submission of resume and documentation of career goals are verified by the College of Engineering Academic Affairs Office.
6. Resume and documentation of career goals will be distributed to the corresponding academic advisors and incorporated into the student's file.

3. Results

The College of Engineering used the above entrance requirements criteria to evaluate the impact for those students admitted through the current HDM process from previous semesters. The college determined that using the entrance requirements outlined in this proposal, there would be a negligible impact on the number of students admitted into the program when compared with using the current HDM process. The analysis revealed that about the same number of students being admitted through the current HDM process would be admitted through the proposed entrance requirements. Further, a student's admission using the proposed entrance requirements was determined to be unaffected by engineering major, gender, or race/ethnicity.

The more meaningful difference in the proposed entrance requirements is that the college could move towards a process which enhances the quality of education of its programs and assures a greater likelihood of student success in completing their engineering degree. The metrics established in the entrance requirements (minimum grade of "C" or better in general

education and major-specific coursework, minimum GPA in major specific coursework, and resume/career goals statement) will ensure students transitioning from their intended engineering major to their engineering major are qualified to do so based on performance of prior coursework and career intent outlined in their statement. Further, these changes offer a more streamlined and transparent process for students (i.e., clear expectations to be admitted), remove barriers for transfer students, and reduce the necessary time and resources for staff who support the secondary admissions process.

Ultimately, the new entrance requirements will maintain the quality of engineering programs and better support students.

4. Consequences of the Requirement

An analysis by the College of Engineering has determined there would be a negligible impact using the proposed entrance requirements on the admission of students for all eight engineering majors when compared to the college's current HDM admissions process. The College does not anticipate any impact on other majors nor any enrollment patterns within the University.

Updated requirements for each of the College of Engineering's eight-degree programs are provided below.

Agricultural Engineering (B.S.A.E.)

Entrance Requirements for the Agricultural Engineering (B.S.A.E.) Major

Applicants are initially admitted as "Intended Agricultural Engineering" majors. To be admitted into the major, students must satisfy the following criteria:

- Completion of the following courses with a grade of "C" (2.0) or better:

ENGL 1101, English Composition I
ENGR 1120, Engineering Graphics and Design
ENGR 1140, Computational Engineering Methods
ENGR 2120, Engineering Statics
MATH 2250, Calculus I for Science and Engineering
MATH 2260, Calculus II for Science and Engineering
PHYS 1211-1211L, Principles of Physics for Scientists and Engineers – Mechanics, Waves, Thermodynamics or PHYS 1251, Introductory Studio Physics for Engineers I

-Minimum grade point average (GPA) of 2.75 in the following

courses: ENGR 1120, Engineering Graphics and Design
ENGR 1140, Computational Engineering Methods
ENGR 2120, Engineering Statics

-Current Resume

-Career Goals Statement describing the student's career goals, strengths that help the student achieve their career goals, challenges that the student is/will be facing that hinder them from achieving their career goals, how the student plans to overcome the challenges to achieve their career goals, how College may assist the student to overcome the challenges, and the student's plan for participating in

experiential learning outside of the classroom by time of graduation (internship, co-op, research, study away, other).

Biochemical Engineering (B.S.Bch.E.)

Entrance Requirements for the Biochemical Engineering (B.S.Bch.E.) Major

Applicants are initially admitted as "Intended Biochemical Engineering" majors. To be admitted into the major, students must satisfy the following criteria:

-Completion of the following courses with a grade of "C" (2.0) or better:

ENGL 1101, English Composition I
BIOL 1107 and BIOL 1107L, Principles of Biology I
CHEM 1212-1212D and CHEM 1212L, General Chemistry II
ENGR 2120, Engineering Statics
MATH 2250, Calculus I for Science and Engineering
MATH 2260, Calculus II for Science and Engineering
PHYS 1211-1211L, Principles of Physics for Scientists and Engineers – Mechanics, Waves, Thermodynamics or PHYS 1251, Introductory Studio Physics for Engineers I

-Minimum grade point average (GPA) of 2.75 in the following courses:

BIOL 1107 and BIOL 1107L, Principles of Biology I
CHEM 1212-1212D and CHEM 1212L, General Chemistry II
ENGR 2120, Engineering Statics

-Current Resume

-Career Goals Statement describing the student's career goals, strengths that help the student achieve their career goals, challenges that the student is/will be facing that hinder them from achieving their career goals, how the student plans to overcome the challenges to achieve their career goals, how the College may assist the student to overcome the challenges, and the student's plan for participating in experiential learning outside of the classroom by time of graduation (internship, co-op, research, study away, other).

Biological Engineering (B.S.B.E.)

Entrance Requirements for the Biological Engineering (B.S.B.E.) Major

Applicants are initially admitted as "Intended Biological Engineering" majors. To be admitted into the major, students must satisfy the following criteria:

- Completion of the following courses with a grade of "C" (2.0) or better:

ENGL 1101, English Composition I
BIOL 1107 and BIOL 1107L, Principles of Biology I
CHEM 1212 and CHEM 1212L, General Chemistry II
ENGR 2120, Engineering Statics
MATH 2250, Calculus I for Science and Engineering

MATH 2260, Calculus II for Science and Engineering
PHYS 1211-1211L, Principles of Physics for Scientists and Engineers – Mechanics, Waves,
Thermodynamics or PHYS 1251, Introductory Studio Physics for Engineers I

- Minimum grade point average (GPA) of 2.75 in the following courses:

BIOL 1107 and BIOL 1107L, Principles of Biology I
CHEM 1212 and CHEM 1212L, General Chemistry II
ENGR 2120, Engineering Statics

- Current Resume
- Career Goals Statement describing the student's career goals, strengths that help the student achieve their career goals, challenges that the student is/will be facing that hinder them from achieving their career goals, how the student plans to overcome the challenges to achieve their career goal, how the College may assist the student to overcome the challenges, and the student's plan for participating in experiential learning outside of the classroom by time of graduation (internship, co-op, research, study away, other).

Civil Engineering (B.S.C.E.)

Entrance Requirements for the Civil Engineering (B.S.C.E.) Major

Applicants are initially admitted as "Intended Civil Engineering" majors. To be admitted into the major, students must satisfy the following criteria:

- Completion of the following courses with a grade of "C" (2.0) or better:

ENGL 1101, English Composition I
ENGR 1120, Engineering Graphics and Design
ENGR 1140, Computational Engineering Methods
ENGR 2120, Engineering Statics
MATH 2250, Calculus I for Science and Engineering
MATH 2260, Calculus II for Science and Engineering
PHYS 1211-1211L, Principles of Physics for Scientists and Engineers – Mechanics, Waves,
Thermodynamics or PHYS 1251, Introductory Studio Physics for Engineers I

- Minimum grade point average (GPA) of 2.75 in the following courses:

ENGR 1120, Engineering Graphics and Design
ENGR 1140, Computational Engineering Methods
ENGR 2120, Engineering Statics

- Current Resume
- Career Goals Statement describing the student's career goals, strengths that help the student achieve their career goals, challenges that the student is/will be facing that hinder them from achieving their career goals, how the student plans to overcome the challenges to achieve their career goals, how the College may assist the student to overcome the challenges, and the student's plan for participating in experiential learning outside of the classroom by time of graduation (internship, co-op, research, study away, other).

Computer Systems Engineering (B.S.C.S.E.)

Entrance Requirements for the Computer Systems Engineering (B.S.C.S.E.) Major

Applicants are initially admitted as "Intended Computer Systems Engineering" majors. To be admitted into the major, students must satisfy the following criteria:

- Completion of the following courses with a grade of "C" (2.0) or better:

CSEE 2220, Fundamentals of Logic Design
ENGL 1101, English Composition I
ECSE 1100, Introduction to Electrical and Computer Systems Engineering
ECSE 2170-2170L, Fundamentals of Circuit Analysis
MATH 2250, Calculus I for Science and Engineering
MATH 2260, Calculus II for Science and Engineering
PHYS 1211, Principles of Physics for Scientists and Engineers – Mechanics, Waves, Thermodynamics or PHYS 1251, Introductory Studio Physics for Engineers I

- Minimum grade point average (GPA) of 2.75 in the following courses:

CSEE 2220, Fundamentals of Logic Design
ECSE 1100, Introduction to Electrical and Computer Systems Engineering
ECSE 2170-2170L, Fundamentals of Circuit Analysis

- Current Resume

- Career Goals Statement describing the student's career goals, strengths that help the student achieve their career goals, challenges that the student is/will be facing that hinder them from achieving their career goals, how the student plans to overcome the challenges to achieve their career goals, how the College may assist the student to overcome the challenges, and the student's plan for participating in experiential learning outside of the classroom by time of graduation (internship, co-op, research, study away, other).

Electrical and Electronics Engineering (B.S.E.E.)

Entrance Requirements for the Electrical and Electronics Engineering (B.S.E.E.) Major

Applicants are initially admitted as "Intended Electrical and Electronics Engineering" majors. To be admitted into the major, students must satisfy the following criteria:

- Completion of the following courses with a grade of "C" (2.0) or better:

CSEE 2220, Fundamentals of Logic Design
ENGL 1101, English Composition I
ECSE 1100, Introduction to Electrical and Computer Systems Engineering
ECSE 2170-2170L, Fundamentals of Circuit Analysis
MATH 2250, Calculus I for Science and Engineering
MATH 2260, Calculus II for Science and Engineering
PHYS 1211-1211L, Principles of Physics for Scientists and Engineers – Mechanics, Waves, Thermodynamics or PHYS 1251, Introductory Studio Physics for Engineers I

- Minimum grade point average (GPA) of 2.75 in the following courses:
 - CSEE 2220, Fundamentals of Logic Design
 - ECSE 1100, Introduction to Electrical and Computer Systems Engineering
 - ECSE 2170-2170L, Fundamentals of Circuit Analysis
- Current Resume
- Career Goals Statement describing the student's career goals, strengths that help the student achieve their career goals, challenges that the student is/will be facing that hinder them from achieving their career goals, how the student plans to overcome the challenges to achieve their career goals, how the College may assist the student to overcome the challenges, and the student's plan for participating in experiential learning outside of the classroom by time of graduation (internship, co-op, research, study away, other).

Environmental Engineering (B.S.Env.E.)

Entrance Requirements for the Environmental Engineering (B.S.Env.E.) Major

Applicants are initially admitted as "Intended Environmental Engineering" majors. To be admitted into the major, students must satisfy the following criteria:

- Completion of the following courses with a grade of "C" (2.0) or better:
 - ENGL 1101, English Composition I
 - ENGR 1120, Engineering Graphics and Design
 - ENGR 1140, Computational Engineering Methods
 - ENGR 2120, Engineering Statics
 - MATH 2250, Calculus I for Science and Engineering
 - MATH 2260, Calculus II for Science and Engineering
 - PHYS 1211-1211L, Principles of Physics for Scientists and Engineers – Mechanics, Waves, Thermodynamics or PHYS 1251: Introductory Studio Physics for Engineers I
- Minimum grade point average (GPA) of 2.75 in the following courses:
 - ENGR 1120, Engineering Graphics and Design
 - ENGR 1140, Computational Engineering Methods
 - ENGR 2120, Engineering Statics
- Current Resume
- Career Goals Statement describing the student's career goals, strengths that help the student achieve their career goals, challenges that the student is/will be facing that hinder them from achieving their career goals, how the student plans to overcome the challenges to achieve their career goals, how the College may assist the student to overcome the challenges, and the student's plan for participating in experiential learning outside of the classroom by time of graduation (internship, co-op, research, study away, other).

Mechanical Engineering (B.S.M.E.)

Entrance Requirements for the Mechanical Engineering (B.S.M.E.) Major

Applicants are initially admitted as "Intended Mechanical Engineering" majors. To be admitted into the major, students must satisfy the following criteria:

- Completion of the following courses with a grade of “C” (2.0) or better:

ENGL 1101, English Composition I

ENGR 1120, Engineering Graphics and Design

ENGR 1140, Computational Engineering Methods

ENGR 2120, Engineering Statics

MATH 2250, Calculus I for Science and Engineering

MATH 2260, Calculus II for Science and Engineering

PHYS 1211-1211L, Principles of Physics for Scientists and Engineers – Mechanics, Waves, Thermodynamics or PHYS 1251, Introductory Studio Physics for Engineers I

- Minimum grade point average (GPA) of 2.75 in the following courses:

ENGR 1120, Engineering Graphics and Design

ENGR 1140, Computational Engineering Methods

ENGR 2120, Engineering Statics

- Current Resume

- Career Goals Statement describing the student’s career goals, strengths that help the student achieve their career goals, challenges that the student is/will be facing that hinder them from achieving their career goals, how the student plans to overcome the challenges to achieve their career goals, how the College may assist the student to overcome the challenges, and the student’s plan for participating in experiential learning outside of the classroom by time of graduation (internship, co-op, research, study away, other).

Documentation of Approval and Notification

Proposal: Proposal to revise the High Demand Selection Criteria and Entrance Requirements of the majors in Agricultural Engineering (B.S.A.E.), Biochemical Engineering (B.S.Bch.E.), Biological Engineering (B.S.B.E.), Civil Engineering (B.S.C.E.), Computer Systems Engineering (B.S.C.S.E.), Electrical and Electronics Engineering (B.S.E.E.), Environmental Engineering (B.S.Env.E.), and Mechanical Engineering (B.S.M.E.)

College: College of Engineering

Departments: School of Chemical, Materials, and Biomedical Engineering; School of Electrical and Computer Engineering; School of Environmental, Civil, Agricultural and Mechanical Engineering

Proposed Effective Term: Fall 2024

School/College:

- College of Engineering Dean, Dr. Donald Leo, 3/14/24
- College of Engineering Assistant Dean of Academic and Faculty Affairs, Dr. Mable Fok, 3/14/24
- School of Environmental, Civil, Agricultural, and Mechanical Engineering Chair, Dr. Bjorn Birgisson, 3/14/24
- School of Electrical and Computer Engineering Chair, Dr. Fred Beyette, 3/14/24
- School of Materials and Biomedical Engineering Chair, Dr. James Warnock, 3/14/24