

Alabama Commission on Higher Education

**NOTIFICATION OF INTENT TO SUBMIT A PROPOSAL (NISP)
FOR A NEW PROGRAM OF INSTRUCTION**

1. Institution: University of North Alabama

2. Date of NISP Submission:

3. Contact Person and Title: Dr. Ross C. Alexander, Provost and Executive VPAA

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4. Program Identification:

Award Level: Bachelor of Engineering

Title: Engineering

Degree nomenclature (e.g., MBA, BS): B. Eng.

6-digit CIP: 14.0101

5. Program Administration and Implementation:

Name of College/ School: College of Arts, Sciences, and Engineering

Name of Dean: Dr. Sara Lynn Baird

Name of Department: Department of Engineering and Industrial Professions

Name of Chairperson: Dr. Jonathan Sullivan

Proposed program implementation date: Fall 2024

Anticipated ACHE meeting to vote on proposal: September 8, 2023

Anticipated date of approval from institutional governing board: June 9, 2023

Other considerations for timing and approval (e.g., upcoming SACSCOC review):

SACSCOC notification required (25-49% new content) prior to implementation.

6. Program Design:

Brief Description of Program and Objectives:

As *Alabama's Workforce Development University*, the preparation of career-ready graduates to meet the economic needs of Alabama and the surrounding region is central to the mission of the University of North Alabama (UNA). The proposed Bachelor of Engineering degree (B. Eng.) will prepare students to step directly into front-line engineering roles in a wide variety of growing manufacturing sectors in and surrounding the north Alabama region.

Many entry-level engineering positions in industrial/manufacturing environments have a strong preference for an undergraduate engineering degree, but not a strong preference for a particular specialization. The companies hiring for these positions need graduates with a strong and well-rounded foundation in engineering skills so they can build upon that foundation the specific knowledge and skills particular to that company's position. Although extensive coursework within a single, narrow, traditional engineering major (e.g., metallurgical engineering, wireless engineering, etc.) might better prepare a graduate for a very niche career field, it does not add extra benefit to most entry-level engineering roles in Alabama's diverse and expanding manufacturing base.

The proposed B. Eng. degree is designed to provide graduates with a strong, broad foundation important to these engineering roles while allowing students to choose at least two (2) different engineering specialty areas in which to develop competence. With an emphasis on acquiring industry standard skills and preparing students to become licensed Professional Engineers in the state, graduates will be well prepared to enter the workforce or continue their education in a related graduate degree program.

The proposed 120-credit hour Bachelor of Engineering degree is designed to meet all ABET-EAC accreditation requirements. The degree is composed of a general education requirement, a set of core engineering coursework, and would require completion of two (2) out of four (4) available engineering certificates (Biological Engineering, Chemical Engineering, Manufacturing Engineering, and Engineering Management).

The ABET-EAC Student Outcomes that will be satisfied are listed below.

By completion of this program, students will be able to demonstrate:

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.

Proposed delivery format (100% in-person, 100% online, hybrid, multiple formats):

100% in-person

If hybrid, what % of program will be delivered online? N/A

If multiple formats, which ones? N/A

Total Credit Hours required to complete the program (if range, enter minimum):

120 total credit hours

Please identify any specialized accreditation agency that may apply to this program and explain why your institution does or does not intend to seek specialized accreditation.

The institution intends to seek accreditation through the Engineering Accreditation Commission of ABET.org.

Will the curriculum require work-based or experiential learning (internship, practicum, etc.)? If yes, please explain. Definitions and examples of different types of work-based learning are available at <https://www.alapprentice.org/>.

Although no work-based or experiential learning components (excluding required laboratory classes) are required to complete the program, a variety of industry-oriented opportunities will be available to students including annual career fairs, the required Engineering Industry Seminar (featuring invited speakers from regional industries), and the Senior Capstone course sequence (where student teams manage and execute an industry-related project).

Will the program be designed to meet educational requirements licensure and/or certification required for entry-level employment? If yes, please list license and/or certification(s).

The curriculum is designed to prepare students to pass the Fundamentals of Engineering exam (the first of two exams required for licensure as a Professional Engineer in Alabama). Accreditation by EAC-ABET will qualify the program to satisfy the educational requirements for licensure as a Professional Engineer in Alabama.

7. Employment Occupational Alignment

Using the federal Standard Occupational Code (SOC) System, please indicate the top three occupational codes related to post-graduation employment from the program. A full list of SOC codes can be found at <https://www.onetcodeconnector.org/find/family/title#17>. A list of Alabama's "In-Demand Occupations" is available at <https://ache.edu/Instruction.aspx>

Bioengineers and Biomedical Engineers: 17-2031.00 (Faster than average 10-year job outlook)

Chemical Engineers: 17-2041.00 (Much faster than average 10-year job outlook)

Industrial Engineers: 17-2112.00 (Faster than average 10-year job outlook)

Manufacturing Engineers: 17-2112.03 (Same job outlook as Industrial Engineers)

Project Management Specialists: 13-1082 (As fast as average 10-year job outlook)

8. Relationship to other programs within the institution:

Is the proposed program associated with any existing offerings, including options within current degree programs? If yes, please explain. If this is a graduate program, please list any existing undergraduate programs which are directly or indirectly related. If this is a doctoral program, also list related master's programs.

The proposed Bachelor of Engineering will be supported, in-part, by the faculty and resources that are associated with UNA's current B.S. in Engineering Technology program.

Will this program replace any existing programs or specializations, options, or concentrations within existing programs? If yes, please explain.

To prevent unnecessary duplication, the Chemical Engineering Technology and Bioengineering Technology options in the current B.S. in Engineering Technology (BSET) program will be taught out and their resources allocated to the B. Eng. program. The remaining two options in the BSET, Electro-mechanical and Power Generation (scheduled for review by ACHE in June 2023) will continue to be offered.

9. Relationship to programs at other Alabama public institutions:

List programs at the same degree level that use the same or similar CIP codes. If no similar programs exist within Alabama, please list similar programs offered within the 16 SREB states.

At the time of submission, only one other institution (UAB) offers a baccalaureate degree (BSE in Engineering Design) with the CIP code 14.0101. No other state institutions offer undergraduate certificates in the areas proposed (Biological Engineering, Chemical Engineering, Manufacturing Engineering, and Engineering Management).

If the proposed program duplicates, closely resembles, or is similar to any other offerings in the state, please provide justification for any potential duplication.

As highlighted in the 2022-2023 list of in-demand occupations developed by the Alabama Commission on College and Career Pathways (ACCCP), more than 1500 qualified workers in the engineering and manufacturing industry addressed by the proposed program are needed throughout the state on an annual basis. A recent article in AL.com discussed the growing technology industry in Huntsville (<https://www.al.com/news/huntsville/2023/02/auburn-is-making-a-big-move-in-high-tech-huntsville.html>). In the article, the Interim Dean of the Samuel Ginn College of Engineering at Auburn University, Steve Taylor, states “The market is very strong for engineers. It’s going to take all of us – UAH, UA, UAB, Auburn, (University of) South Alabama – all of us producing young engineers to fill the demand that’s out there.” This program will further strengthen UNA as an institution known in the region for producing high-quality engineering graduates and will assist in filling the workforce needs not only in northern Alabama, but across the state.

As UNA has worked to develop other workforce development-oriented programs (e.g., Associate of Science in Mechatronics, Power Generation option in Engineering Technology) we have met with numerous business and industry partners in the region and they have expressed their support of these programs and recognize that they will assist them in fulfilling employment needs that are not currently being met despite the existing programs in the state. This program promises to contribute to the sustained economic growth in northern Alabama.

If you plan to explore program collaboration with other institutions, please explain.

UNA plans to work with our local high schools, as well as community colleges throughout the region. UNA is also open to exploring collaborations with other post-secondary institutions in the future.

10. Projected program demand

What is the primary methodology you will use to determine the level of student demand for this program? (Survey of current or former students, enrollments in existing programs or courses)

Enrollment projections will be gathered from a survey of students enrolled in career and math/science programs at area high schools and regional employers.

What is the primary methodology you will use to determine state need for this program? (Labor market information, expert market analysis, state or regional economic development strategy)

Data associated with the need for a Bachelor of Engineering program (as well as the 4 initial certification programs) will be collected from the U.S. Bureau of Labor Statistics related to positions including, but not limited to: process engineers, manufacturing engineers, project engineers, chemical engineers, biological engineers, quality engineers, and reliability engineers. The list of in-demand occupations developed by the Alabama Commission on College and Career Pathways (ACCCP) will also be referenced.