



ENGINEERING ACCREDITATION COMMISSION

Summary of Accreditation Actions

2020–2021 Accreditation Cycle

Florida Atlantic University
Boca Raton, FL, United States

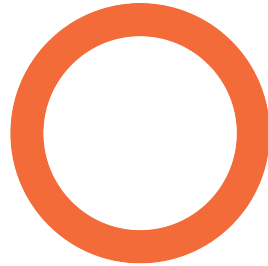
Civil Engineering (B.S.C.V.)
Computer Engineering (B.S.C.E.)
Electrical Engineering (B.S.E.E.)
Geomatics Engineering (B.S.G.E.)
Mechanical Engineering (B.S.M.E.)
Ocean Engineering (B.S.O.E.)

Accredit to September 30, 2027. A request to ABET by January 31, 2026 will be required to initiate a reaccreditation evaluation visit. In preparation for the visit, a Self-Study Report must be submitted to ABET by July 1, 2026. The reaccreditation evaluation will be a comprehensive general review.

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

Accredit to September 30, 2027. A request to ABET by January 31, 2026 will be required to initiate a reaccreditation evaluation visit. In preparation for the visit, a Self-Study Report must be submitted to ABET by July 1, 2026. The reaccreditation evaluation will be a comprehensive general review.

This is a newly accredited program. Please note that this accreditation action extends retroactively from October 1, 2018.



ABET

ENGINEERING ACCREDITATION COMMISSION

FLORIDA ATLANTIC UNIVERSITY

BOCA RATON, FL, UNITED STATES

FINAL STATEMENT OF ACCREDITATION

2020-21 ACCREDITATION CYCLE

FLORIDA ATLANTIC UNIVERSITY

Boca Raton, FL, United States

ABET ENGINEERING ACCREDITATION COMMISSION

FINAL STATEMENT

VISIT DATES: NOVEMBER 16-18, 2020

ACCREDITATION CYCLE CRITERIA: 2020-2021

INTRODUCTION & DISCUSSION OF STATEMENT CONSTRUCT

The Engineering Accreditation Commission (EAC) of ABET has evaluated the Civil Engineering (BSCV), Computer Engineering (BSCE), Electrical Engineering (BSEE), Environmental Engineering (BSEV), Geomatics Engineering (BSGE), Mechanical Engineering (BSME), and Ocean Engineering (BSOE) programs at Florida Atlantic University.

The statement that follows consists of two parts: the first addresses the institution and its overall educational unit, and the second addresses the individual programs.

A program's accreditation action is based upon the findings summarized in this statement. Actions depend on the program's range of compliance or non-compliance with the criteria. This range can be construed from the following terminology:

- **Deficiency** A deficiency indicates that a criterion, policy, or procedure is not satisfied. Therefore, the program is not in compliance with the criterion, policy, or procedure.
- **Weakness** A weakness indicates that a program lacks the strength of compliance with a criterion, policy, or procedure to ensure that the quality of the program will not be compromised. Therefore, remedial action is required to strengthen compliance with the criterion, policy, or procedure prior to the next review.
- **Concern** A concern indicates that a program currently satisfies a criterion, policy, or procedure; however, the potential exists for the situation to change such that the criterion, policy, or procedure may not be satisfied.
- **Observation** An observation is a comment or suggestion that does not relate directly to the current accreditation action but is offered to assist the institution in its continuing efforts to improve its programs.

INFORMATION RECEIVED AFTER THE REVIEW

- **Seven-Day Response** Information was received in the seven-day response period relative to the Civil Engineering and Mechanical Engineering programs.
- **30-Day Due-Process Response** Information was received in the 30-day due-process response

period relative to the Computer Engineering, Electrical Engineering, Mechanical Engineering, and Ocean Engineering programs.

- **Post-30-Day Due-Process Response** Information was received in the post-30-day due-process response period relative to the Computer Engineering, Electrical Engineering, Mechanical Engineering, and Ocean Engineering programs.

INSTITUTIONAL SUMMARY

Florida Atlantic University (FAU) is a comprehensive state university comprised of 10 colleges with a total enrollment of approximately 38,000 students. The College of Engineering and Computer Science (COECS) offers seven undergraduate engineering programs and a computer science program, all of which were evaluated during this visit. The college has 2,694 undergraduate students, 504 graduate students, 86 full-time faculty members, and four adjunct faculty members. The college produced 450 baccalaureate-level graduates in 2019-20.

The following units were reviewed and found to provide adequate support to the programs: registrar, information technology, student counseling, safety, Undergraduate Research and Inquiry, university advising, Admissions, college advising, mathematics and statistics, physics, chemistry, biology, communications, the writing center, university tutoring, and the library.

INSTITUTIONAL STRENGTH

FAU and COECS are proactive in recruiting students from underrepresented groups. FAU's undergraduate population consists of 45 percent ethnic minorities, 41 percent Pell Grant eligible, and 20 percent first-generation attending college. Exceptional support is provided to ensure their success, including Bridge programs for entering students and a six-prong Success Network which includes advising regarding academics, financial aid, and housing, along with access to an academic coach, career consultant, and personal librarian. The level of outreach and attention to student success has resulted in FAU being rated as the most diverse public university in Florida by US News and World Report. Achieving this level of diversity benefits the institution as well as the community.

Civil Engineering

B.S.C.V. Program

Evaluated under EAC Program Criteria for
Civil and Similarly Named Engineering Programs

INTRODUCTION

The Civil Engineering (BSCV) program is administered by the Department of Civil, Environmental, and Geomatics Engineering. The program has 192 declared majors and 93 pre-professional undergraduate students, for a total enrollment of 285 students; 14 tenure-track faculty members, one full-time non-tenure track faculty member, one full-time instructor, and two adjunct professors. The program produced 50 graduates in the 2019-20 academic year.

Seven-Day Response

The EAC acknowledges receipt of documentation that the Civil Engineering program had no shortcomings from the previous review. A weakness referencing Criterion 5 was incorrectly indicated on the Program Audit Form left with the program. The Program Audit Form is not re-issued, but this change is noted and does not impact the statement.

PROGRAM STRENGTH

The program has established a strong collaboration with its industrial advisory board. The dedication of members of the advisory board has enriched the educational experience of students and faculty scholarship. This collaboration is most apparent in the contribution and support of industry to the capstone course through mentoring and real-world projects, enhancing student preparation for engineering practice.

PROGRAM CONCERN

Criterion 8. Institutional Support

This criterion requires that institutional support and leadership be adequate to ensure the quality and continuity of the program. Resources including institutional services, financial support, and staff (both administrative and technical) provided to the program must be adequate to meet program needs. The resources available to the program must be sufficient to provide an environment in which student outcomes can be attained. One full-time technician is responsible for the laboratories in two departments, the Department of Civil, Environmental and Geomatics Engineering and the Department of Ocean and Mechanical Engineering. The technician provides adequate support in the laboratories of the two departments. While the criterion is currently met, due to the large number of laboratory classes, potential future enrollment growth, and the number of students that are largely dependent on only one technician for laboratory support, there is a potential for future noncompliance with the criterion.

Computer Engineering

B.S.C.E. Program

Evaluated under EAC Program Criteria for Electrical, Computer, Communications, Telecommunication(s) and Similarly Named Engineering Programs

INTRODUCTION

The Computer Engineering (BSCE) program is located in the Department of Computer and Electrical Engineering and Computer Science (CEECS). The program has 203 registered students and 111 students in the Pre-Computer Engineering program, for a total undergraduate enrollment of 314 students. The program graduated 48 students in academic year 2019-20. The CEECS department has 44 faculty members to support the Computer Science, Computer Engineering, and Electrical Engineering Programs.

PROGRAM STRENGTH

The program has a strong major design experience with students working in interdisciplinary teams (electrical engineering, computer engineering, and computer science students) completing high quality design projects. The faculty is involved with the students while maintaining a high level of scholarly achievement. This level of scholarship and interdisciplinary involvement enhances the educational experience of the students.

PROGRAM WEAKNESS

Criterion 4. Continuous Improvement

This criterion requires that the program regularly use appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained. While assessment data are extensive the evaluation of this data are minimally effective. Student performance indicators used to evaluate a given outcome often do not correlate well to the degree to which a student has achieved a particular outcome. The assessment process, including appropriate metrics, is not consistently understood and applied by the faculty. Assessment methods include the use of averages to evaluate specific outcomes, the combination of events within a course, and the combination of results of multiple courses. The use of inappropriate data and ineffective evaluation techniques results in outcome evaluations that lack reliability with respect to attainment of outcomes and provides only minimal insights into opportunities for improvement. Thus, strength of compliance with this criterion is lacking.

30-Day Due-Process Response

The EAC acknowledges receipt of documentation of an assessment and evaluation plan with performance indicators mapped to the outcomes and designated student work products to be used

for evaluation of student performance. A target score of 70 percent or better has been established for each work product with 80 percent of students meeting the target as an acceptable level of attainment. However, the plan has not been fully implemented and no results were provided.

Status

The program weakness is unresolved.

Post-30-Day Due-Process Response

The EAC acknowledges receipt of further documentation of the revised assessment and evaluation plan which demonstrates that specific measures of student performance are applied to each outcome and includes rubrics detailing how student performance is to be scored. Targets are set and the data are evaluated against the targets, enabling a valid conclusion regarding the degree of attainment of each outcome. The plan was applied in fall 2020 and spring 2021 semesters, results are reported, and specific recommendations for improvement based on the data are presented.

Status

The program weakness has been resolved.

Electrical Engineering

B.S.E.E. Program

Evaluated under EAC Program Criteria for Electrical, Computer, Communications, Telecommunication(s) and Similarly Named Engineering Programs

INTRODUCTION

The Electrical Engineering (BSEE) program is located in the CEECS department and has 44 faculty members to support the Computer Science, Computer Engineering and Electrical Engineering programs. The program has 195 students and awarded 49 degrees in the 2019-20 academic year.

PROGRAM WEAKNESS

Criterion 4. Continuous Improvement

This criterion requires that the program regularly use appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained. While assessment data are extensive the evaluation of this data are minimally effective. Student performance indicators used to evaluate a given outcome often do not correlate well to the degree to which a student has achieved a particular outcome. The assessment process, including appropriate metrics, is not consistently understood and applied by the faculty. Assessment methods include the use of averages to evaluate specific outcomes, the combination of events within a course, and the combination of results of multiple courses. The use of inappropriate data and ineffective evaluation techniques results in outcome evaluations that lack reliability with respect to attainment of outcomes and provides only minimal insights into opportunities for improvement. Thus, strength of compliance with this criterion is lacking.

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Status

The program weakness is unresolved.

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Status

The program weakness has been resolved.

Environmental Engineering

B.S.E.V. Program

Evaluated under EAC Program Criteria for
Environmental and Similarly Named Engineering Programs

INTRODUCTION

The Environmental Engineering (BSEV) program is the newest engineering program in the college. The program is administered by the Department of Civil, Environmental & Geomatics Engineering. The program has 43 students, 10 faculty members, and three adjunct faculty members. The College provides professional staff members who advise students from their freshman year through graduation. The program was launched in fall 2016 and graduated its first students in fall 2018. The program produced nine graduates in the 2019-20 academic year. This is the initial accreditation review of the program by the EAC.

PROGRAM STRENGTH

Student-faculty engagement is high. Faculty members are engaged with students in professional societies that enhance the growth and development of student professionalism. Students also have the option to conduct an internship as part of their technical electives which provides them with valuable experience. This is especially important to the program since many of the students are first-generation college attendees and from underrepresented backgrounds. Students and alumni praise the faculty for the caring nature of the teaching and learning environment and the impact on their career goals.

PROGRAM CONCERN

Criterion 8. Institutional Support

This criterion requires that institutional support and leadership be adequate to ensure the quality and continuity of the program. Resources including institutional services, financial support, and staff (both administrative and technical) provided to the program must be adequate to meet program needs. The resources available to the program must be sufficient to provide an environment in which student outcomes can be attained. One full-time technician is responsible for the laboratories in two departments, the Department of Civil, Environmental and Geomatics Engineering and the Department of Ocean and Mechanical Engineering. The technician provides adequate support in the laboratories of the two departments. While the criterion is currently met, due to the large number of laboratory classes, potential future enrollment growth, and the number of students that are largely dependent on only one technician for laboratory support, there is a potential for future noncompliance with the criterion.

Geomatics Engineering

B.S.G.E. Program

Evaluated under EAC Program Criteria for
Surveying and Similarly Named Engineering Programs

INTRODUCTION

The Geomatics Engineering (BSGE) program is administered by the Department of Civil, Environmental and Geomatics Engineering. As of August 2020, the program had 62 declared majors and five pre-professional undergraduate students, for a total enrollment of 69 students; seven tenure-track faculty members, one full-time non-tenure-track faculty member, one full-time instructor, and three adjunct professors. The program produced five graduates in the 2019-20 academic year.

PROGRAM CONCERNS

1. Criterion 6. Faculty

This criterion requires the program to demonstrate that the faculty members are of sufficient number and they have the competencies to cover all of the curricular areas of the program. The program faculty must have appropriate qualifications and must have and demonstrate sufficient authority to ensure the proper guidance of the program and to develop and implement processes for the evaluation, assessment, and continuing improvement of the program. Surveying courses dealing with legal issues require the expertise of a licensed surveyor or equivalent. Presently, the program depends on an adjunct faculty member for that core competency. Permanent faculty members are in the process of obtaining the needed credentials. However, the process has not been completed due to the COVID pandemic. The potential exists that the adjunct professor could leave the program before the tenured faculty members complete the process of getting credentialed, so future compliance with the criterion may be jeopardized.

2. Criterion 7. Facilities

This criterion requires that modern tools, equipment, computing resources, and laboratories appropriate to the program be available, accessible, and systematically maintained and upgraded to enable students to attain the student outcomes and to support program needs. The program's existing three Leica GPS1230 Global Navigation Satellite System (GNSS) are P(Y)-Code receivers that were released in 2008 and lack the ability to track full navigation constellations. The program's existing three Leica Viva GS14 are P(Y)-Code receivers that were released in 2016 and lack the ability to track GPS L5 frequency, connect only to old 3G cellular, and operate on discontinued Windows CE devices. Section 3.2.8 of the 2019 Federal Radionavigation Plan states that these P(Y)-Code GPS users must transition to L2C L5 receivers by 2023. While the VIVA GS-14 receivers currently provide students the hands-on experience needed to enter surveying practice, that will not be the case once they become obsolete. Faculty members have submitted

an FAU Tech Fee Proposal to upgrade to modern equipment, but this request has not been confirmed nor guaranteed. Although the program is currently in compliance with this criterion, future compliance may be jeopardized once the existing equipment becomes obsolete.

Mechanical Engineering

B.S.M.E. Program

Evaluated under EAC Program Criteria for
Mechanical and Similarly Named Engineering Programs

INTRODUCTION

The Mechanical Engineering (BSME) program in the Department of Ocean and Mechanical Engineering has 577 students and produced 50 graduates in the 2019-20 academic year. The program is supported by 19 full-time faculty members, five office staff members, and five student teaching assistants.

PROGRAM STRENGTH

Students are encouraged to pursue undergraduate research starting with the freshman Fundamentals of Engineering course, during laboratory classes, and in multiple other courses. Students are encouraged to apply for an undergraduate research grant offered by the university, with the faculty supporting students in editing and being successful in receiving the grant. Staff members in the department actively support the students in processing the grants and faculty members provide mentoring and laboratory access. Involving undergraduate students in research has led to a positive impact on graduate enrollment with 11 students enrolled in the BS/MS option and seven students scheduled to graduate in fall 2020 from this program option.

PROGRAM WEAKNESSES

1. Criterion 4. Continuous Improvement

This criterion requires that the program regularly use appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained. The results of these evaluations must be systematically utilized as input for the program's continuous improvement actions. Other available information may also be used to assist in the continuous improvement of the program. The program's assessment approach is to incorporate student and faculty assessment of course learning outcomes, which are then mapped to multiple student outcomes. For the two senior design courses, the course grade is assessed and attributed to multiple student outcomes which results in an inability to discern the separate contributions to each outcome, and consequently areas in need of improvement. Further, some assessments are acquired from courses which include students in multiple programs without being disaggregated.

In addition, issues were identified in evaluating student outcomes (2) and (4). The components of student outcome (2): consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors and the components of student outcome (4): consideration of the impact of engineering solutions in global, economic, environmental, and

societal contexts were not considered. Thus, the program lacks strength of compliance with this criterion.

30-Day Due-Process Response

The EAC acknowledges receipt of documentation of an assessment and evaluation plan with performance indicators mapped to the outcomes and designated student work products to be used for evaluation of student performance. A target score of 70 percent or better has been established for each work product with 80 percent of students meeting the target as an acceptable level of attainment. However, the plan has not been fully implemented and no results provided.

Status

The program weakness is unresolved.

Post-30-Day Due-Process Response

The EAC acknowledges receipt of further documentation that the program created a new assessment process, trained the faculty on it, and completed an assessment and evaluation of all student outcomes using the process with data collected only from students enrolled in the program during the 2020-21 academic year. Documentation describing the process, the data gathered, the evaluation of each outcome, opportunities identified for improvement, and a timeline for future assessments was included. The program demonstrated that it is now using appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained.

Status

The program weakness has been resolved.

2. Criterion 5. Curriculum

This criterion requires that the curriculum include a culminating major engineering design experience that 1) incorporates appropriate engineering standards and multiple constraints, and 2) is based on the knowledge and skills acquired in earlier course work. Many senior design courses and culminating design projects did not demonstrate student application of engineering standards or multiple constraints. Absence of these design elements leaves the student inadequately prepared to complete successful engineering design. Thus, the program lacks strength of compliance with this criterion.

Seven-Day Response

The EAC acknowledges receipt of documentation regarding the inclusion of standards in the Mechanical Engineering program major design experience. This information will be considered in due process.

30-Day Due-Process Response

The EAC acknowledges receipt of documentation that application of standards and incorporation of constraints is included in the lecture materials for the major design experience and explicitly required to be covered in the student projects and reports. However, no student work documenting implementation of these requirements was submitted.

Status

The program weakness is unresolved.

Post-30-Day Due-Process Response

The EAC acknowledges receipt of further documentation that the program has changed the catalog description and course syllabus, requiring coverage of standards in EML 4521C, Engineering Design. Students are given instruction in standards as per the syllabus and as of spring 2021, students are required to incorporate engineering standards in their designs and discuss it in their final project reports. The program submitted student projects demonstrating that the culminating major engineering design experience incorporates appropriate engineering standards and multiple constraints and is based on knowledge and skills acquired in earlier course work.

Status

The program weakness has been resolved.

PROGRAM CONCERN

Criterion 8. Institutional Support

This criterion requires that institutional support and leadership be adequate to ensure the quality and continuity of the program. Resources including institutional services, financial support, and staff (both administrative and technical) provided to the program must be adequate to meet program needs. The resources available to the program must be sufficient to provide an environment in which student outcomes can be attained. One full-time technician is responsible for the laboratories in two departments, the Department of Civil, Environmental and Geomatics

Engineering and the Department of Ocean and Mechanical Engineering. The technician provides adequate support in the laboratories of the two departments. While the criterion is currently met, due to the large number of laboratory classes, potential future enrollment growth, and the number of students that are largely dependent on only one technician for laboratory support, there is a potential for future noncompliance with the criterion.

30-Day Due-Process Response

The program did not provide a response to this shortcoming.

Status

The program concern is unresolved.

Post-30-Day Due-Process Response

The program did not provide a response to this shortcoming.

Status

The program concern is unresolved.

Ocean Engineering

B.S.O.E. Program

Evaluated under EAC Program Criteria for
Ocean and Similarly Named Engineering Programs

INTRODUCTION

The Ocean Engineering (BSOE) program is administered by the Department of Ocean and Mechanical Engineering and currently has 125 students and 10 full-time faculty members. The program produced 24 graduates in the 2019-20 academic year. The program operates on two campuses: the main campus in Boca Raton and the dedicated SeaTech campus at Dania Beach.

PROGRAM STRENGTH

The program's Seatech campus location in Dania Beach allows students a unique opportunity to combine their studies with hands on experiences in co-located laboratories and on the shorelines and waters surrounding the Seatech campus. Access to the department's research vessel as well as the neighboring Naval Surface Warfare Center (Carderock Division) facility expand the students access to unique hands-on learning experiences.

PROGRAM WEAKNESS

Criterion 4. Continuous Improvement

This criterion requires that the program regularly use appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained. While assessment data are extensive the evaluation of this data are minimally effective. Student performance indicators used to evaluate a given outcome often do not correlate well to the degree to which a student has achieved a particular outcome. Assessment methods include the use of averages to evaluate specific outcomes, the combination of events within a course, and the combination of results of multiple courses. The use of inappropriate data and ineffective evaluation techniques results in outcome evaluations that lack reliability with respect to attainment of outcomes and provides only minimal insights into opportunities for improvement. Thus, strength of compliance with this criterion is lacking.

30-Day Due-Process Response

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Status

The program weakness is unresolved.

Post-30-Day Due-Process Response

The EAC acknowledges receipt of further documentation of the revised assessment and evaluation plan which demonstrates that specific measures of student performance are applied to each outcome and includes rubrics detailing how student performance is to be scored. Targets are set and the data are evaluated against the targets, enabling a valid conclusion regarding the degree of attainment of each outcome. The plan was applied in fall 2020 and spring 2021 semesters, results are reported, and specific recommendations for improvement based on the data are presented.

Status

The program weakness has been resolved.