ENGINEERING ACCREDITATION COMMISSION

Summary of Accreditation Actions

2021–2022 Accreditation Cycle

Universidad Politecnica de Madrid
Madrid, Spain

Civil Engineering (MS)
Civil Engineering (B. Eng.)
Communications Electronics Engineering (B. Eng.)
Computer Engineering (B. Eng.)
Energy Engineering (B. Eng.)
Energy Resources, Fuels and Explosives Engineering (B. Eng.)
Geological Engineering (B. Eng.)
Industrial Engineering (MS)
Industrial Engineering (B. Eng.)
Sound and Image Engineering (B. Eng.)
Telecommunication Engineering (MS)
Telecommunication Technologies and Services Engineering (B. Eng.)
Telecommunications Systems Engineering (B. Eng.)
Telematics Engineering (B. Eng.)

Accredit to September 30, 2028. A request to ABET by January 31, 2027 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, 2027. The reaccreditation evaluation will be a comprehensive general review.

ABET

ENGINEERING ACCREDITATION COMMISSION

UNIVERSIDAD POLITECNICA DE MADRID

MADRID, SPAIN

FINAL STATEMENT OF ACCREDITATION

2021-22 ACCREDITATION CYCLE

UNIVERSIDAD POLITECNICA DE MADRID

Madrid, Spain

ABET ENGINEERING ACCREDITATION COMMISSION

FINAL STATEMENT

VISIT DATES: NOVEMBER 29 - DECEMBER 3, 2021
ACCREDITATION CYCLE CRITERIA: 2021-2022

INTRODUCTION & DISCUSSION OF STATEMENT CONSTRUCT

The Engineering Accreditation Commission (EAC) of ABET has evaluated the Biomedical Engineering (B. Sc.), Civil Engineering (MS), Civil Engineering (B. Eng.), Communications Electronics Engineering (B. Eng.), Computer Engineering (B. Eng.), Energy Engineering (B. Eng.), Energy Resources, Fuels and Explosives Engineering (B. Eng.), Food Engineering (B. Eng.), Geological Engineering (B. Eng.), Industrial Engineering (MS), Industrial Engineering (B. Eng.), Mining Engineering (MS), Mining Technology Engineering (B. Eng.), Sound and Image Engineering (B. Eng.), Telecommunication Engineering (MS), Telecommunication Technologies and Services Engineering (B. Eng.), Telecommunications Systems Engineering (B. Eng.), and Telematics Engineering (B. Eng.) programs at Universidad Politecnica de Madrid.

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 Institutional Summary and Geological Engineering (B. Eng.) program.

- **30-Day Due-Process Response** Information was received in the 30-day due-process response period relative to the Biomedical Engineering (B. Sc.), Food Engineering (B. Eng.), Mining Engineering (MS), and Mining Technology Engineering (B. Eng.) programs.

- **Post-30-Day Due-Process Response** Information was received in the post-30-day due-process response period relative to the Biomedical Engineering (B. Sc.), Food Engineering (B. Eng.), Mining Engineering (MS), and Mining Technology Engineering (B. Eng.) programs.

INSTITUTIONAL SUMMARY

Universidad Politécnica de Madrid is the oldest and largest technical university in Spain. The institution has 18 schools and 21 research centers located in four campuses in metropolitan Madrid. The university has approximately 2,850 faculty members, 1,750 administrative staff and 800 research staff. The total enrollment is approximately 39,000 students with approximately 30,000 undergraduate students in 42 bachelor's degree programs, 5,500 students in 92 master's degree programs and 2,300 students in 42 Ph.D. programs.

Seven-Day Response

The seven-day response noted some inconsistencies in the way the results of previous reviews were described in the Program Audit Forms.

INSTITUTIONAL STRENGTHS

1. The university has very strong ties with industry and actively involves its industrial partners in determining the educational content of the programs. In addition, these connections provide opportunities for students through internships and full-time positions.

2. The university is a leader in developing technologies and partnerships to support sustainable development. In 2021, it was ranked in four of the 17 United Nations Sustainable Development Goals in the Times Higher Education Impact Ranking. These activities motivate students by helping them to see how their work can have positive impact on society and provide fulfilling career opportunities.

Communications Electronics Engineering

B. Eng. Program

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

INTRODUCTION

The Communications Electronics Engineering (B. Eng.) program is administered by the Escuela Técnica Superior de Ingeniería y Sistemas de Telecomunicación (ETSIST) (The School of Telecommunications Systems and Engineering). The program was launched in 2009 and at the time of the visit, the program had 525 students enrolled (of whom 106 are double-diploma students). There are 10 full-time faculty members dedicated to the program and 96 additional faculty members shared across the academic programs at the ETSIST. The program produced 56 graduates in the 2020-21 academic year.

PROGRAM CONCERN

Criterion 5. Curriculum

This criterion requires that the curriculum include a minimum of 30 semester credit hours (or equivalent) of a combination of college-level mathematics and basic sciences. The evaluation of the curriculum employed a conversion factor of 1.5 European Credit Transfer and Accumulation System (ECTS) credits per semester credit hour. A detailed examination of syllabi and student assignments in a number of engineering courses was used to identify components of courses for possible credit towards the criterion requirement. This analysis indicated that the curriculum contains 30 semester credit hours of college-level mathematics and basic science and thus the curriculum satisfies the requirement. However, small changes to the syllabus or student assignments could lead to a decrease in the coverage of college-level mathematics and basic sciences, to the extent that the minimum requirement would not be met and future compliance with this criterion could be jeopardized.

Sound and Image Engineering

B. Eng. Program

There were no applicable EAC program criteria.

INTRODUCTION

The Sound and Image Engineering (B. Eng.) program is administered by the Escuela Técnica Superior de Ingeniería y Sistemas de Telecomunicación (ETSIST) (School of Telecommunications and Systems Engineering). At the time of the visit, the program had 376 students enrolled and 105 full-time faculty members serving the program to various degrees. Of these, four faculty members devote 100 percent of their time to the program. There are 18 part-time faculty members, 19 technical staff members, two clerical staff members, and 15 other employees who support the program. The program produced 54 graduates in the 2020-21 academic year.

PROGRAM CONCERN

Criterion 5. Curriculum

This criterion requires that the curriculum include a minimum of 30 semester credit hours (or equivalent) of a combination of college-level mathematics and basic sciences. The evaluation of the curriculum employed a conversion factor of 1.5 European Credit Transfer and Accumulation System (ECTS) credits per semester credit hour. A detailed examination of syllabi and student assignments in a number of engineering courses was used to identify components of courses for possible credit towards the criterion requirement. This analysis indicated that the curriculum contains 30 semester credit hours of college-level mathematics and basic science and thus the curriculum satisfies the requirement. However, small changes to the syllabi or student assignments could lead to a decrease in the coverage of college-level mathematics and basic sciences, to the extent that the minimum requirement would not be met and future compliance with this criterion could be jeopardized.

Telecommunications Systems Engineering

B. Eng. Program

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

INTRODUCTION

The Telecommunications Systems Engineering (B. Eng.) program is administered by Escuela Técnica Superior de Ingeniería y Sistemas de Telecomunicación (ETSIST) (School of Telecommunications and Systems Engineering). At the time of the review, the program enrolled 330 students and 47 students graduated during the 2020-21 academic year. There are three full-time faculty members dedicated to the program. Additionally, 98 full-time and 18 part-time faculty members serve common courses across multiple programs.

PROGRAM CONCERN

Criterion 5. Curriculum

This criterion requires that the curriculum include a minimum of 30 semester credit hours (or equivalent) of a combination of college-level mathematics and basic sciences. The evaluation of the curriculum employed a conversion factor of 1.5 European Credit Transfer and Accumulation System (ECTS) credits per semester credit hour. A detailed examination of syllabi and student assignments in a number of engineering courses was used to identify components of courses for possible credit towards the criterion requirement. This analysis indicated that the curriculum contains 30 semester credit hours of college-level mathematics and basic science and thus the curriculum satisfies the requirement. However, small changes to the syllabi or student assignments could lead to a decrease in the coverage of college-level mathematics and basic sciences, to the extent that the minimum requirement would not be met and future compliance with this criterion could be jeopardized.

Telematics Engineering

B. Eng. Program

There were no applicable EAC program criteria.

INTRODUCTION

The Telematics Engineering (B. Eng.) program is administered by the Escuela Técnica Superior de Ingeniería y Sistemas de Telecomunicación (ETSIST) (School of Telecommunication Systems and Engineering). At the time of the visit, the program had 560 students enrolled (of whom 106 are double- diploma students), and 101 full- time faculty members serving the program to various degrees. Of these, three faculty members devote 100 percent of their time to the program. There are 19 part- time faculty members, 19 technical staff members, two clerical staff members, and 15 other employees who support the program. The program produced 53 graduates in the 2020-21 academic year.

PROGRAM STRENGTH

The program has very modern and spacious laboratories with a highly-dedicated staff to support the equipment and all student learning. The level of equipment in university teaching laboratories is exceptional. The state-of-the-art facilities and equipment enable students to learn technologies relevant to industry today and in the future including 5G and future 6G communication technologies.

PROGRAM CONCERN

Criterion 5. Curriculum

This criterion requires that the curriculum include a minimum of 30 semester credit hours (or equivalent) of a combination of college-level mathematics and basic sciences. The evaluation of the curriculum employed a conversion factor of 1.5 European Credit Transfer and Accumulation System (ECTS) credits per semester credit hour. A detailed examination of syllabi and student assignments in a number of engineering courses was used to identify components of courses for possible credit towards the criterion requirement. This analysis indicated that the curriculum contains 30 semester credit hours of college- level mathematics and basic science and thus curriculum satisfies the requirement. However, small changes to the syllabi or student assignments could lead to a decrease in the coverage of college- level mathematics and basic sciences, to the extent that the minimum requirement would not be met and future compliance with this criterion could be jeopardized.