



Bangladesh Accreditation Council

Discipline Specific Requirements **Discipline/Subject: Civil Engineering**

Major programs in this discipline include Civil Engineering, Civil and Environmental Engineering, Water Resources Engineering, Civil and Infrastructure, Civil Structure, Civil and Construction, Civil and Transportation, Civil and Geotechnical or similar programs

Standard 1: Governance

Governance system must work in a manner that ensures better management of the program towards the achievement of mission and objectives of the HEI/PoE in a way that effectively benefits the stakeholders.

Criterion 1.5: The HEI/PoE has a documented class size policy and maintains class size that is appropriate for effective management of the teaching-learning-assessment to ensure better attainment of learning outcomes.

Class size (number of students in a theoretical class): maximum **40/section**

Class size (number of students in a practical class): Maximum **25/group**

Standard 4: Curriculum

Curriculum must be outcome-based and consistent with the qualifications framework (QF) of Bangladesh for higher education. It should be comprehensive enough to guide the faculty and students towards systematic attainment of learning outcomes and fulfilment of mission and objectives of the PoE.

The curriculum must prepare graduates to apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of basic science; apply probability and statistics to address uncertainty; analyze and solve problems in at least four technical areas appropriate to civil engineering; conduct experiments in at least two technical areas of civil engineering and analyze and interpret the resulting data; design a system, component, or process in at least two civil engineering contexts; include principles of sustainability in design; explain basic concepts in project management, business, public policy,

and leadership; analyze issues in professional ethics; and explain the importance of professional license.

Criterion 4.2: Curriculum aims at producing graduates focusing on graduate attributes, that are defined following the identified needs of the stakeholders and learning domains in the QF of Bangladesh for higher education.

Graduate Attributes for Bachelor Degree Program:

PO1 Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization respectively to develop solutions of complex engineering problems.

PO2 Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development.

PO3 Design creative solutions for complex engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required.

PO4 Conduct investigations of complex engineering problems using research methods including research-based knowledge, design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5 Create, select and apply and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering problems.

PO6 When solving complex engineering problems, analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment.

PO7 Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion.

PO8 Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings.

PO9 Communicate effectively and inclusively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.

PO10 Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team and to manage projects and in multidisciplinary environments.

PO11 Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change.

PO12 Demonstrate knowledge and understanding of the competences necessary to transform opportunities and ideas into a new business.

Graduate Attributes for Master's Degree Program*:

Civil engineering programs, at master's levels, demonstrate that their graduates can achieve the following seven graduate attributes:

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
3. needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
4. An ability to communicate effectively with a range of audiences.
5. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions.
6. 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.
7. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
8. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
9. An ability to demonstrate a mastery of a specific field of study or area of professional practice consistent with the master's program name and at a level beyond the minimum requirements of baccalaureate-level programs.
10. An ability to acquire knowledge from the advanced coursework that provides sufficient depth in a civil engineering area.

*https://www.abet.org/wp-content/uploads/2025/12/2026-2027_EAC_Criteria.pdf

Criterion 4.7: In case of Bachelor degree program curriculum of the program includes minimum 25% of total credits for general education courses with clearly defined course learning outcomes and mapped with PLOs and learning domains of QF. In case of Master's degree program curriculum of the program includes minimum 10% of total credits for general education courses with clearly defined course learning outcomes and mapped with PLOs and learning domains of QF.

General education courses may be included in the curriculum from the non-engineering subjects/disciplines like Natural Sciences, Humanities Social Sciences.

A list of general education courses may include but not limited to:

1) English Literature	11) Industrial Management
2) Communication	12) Human rights
3) Economics	13) Constitution
4) Accounting	14) Human Resource Management
5) Bengali Language and Literature	15) Entrepreneurship Development
6) History of the emergence of independent Bangladesh	16) Governance
7) Sociology	17) Environmental Science
8) Industrial Psychology	18) Disaster Management
9) Industrial Law	19) Sustainability
10) Ethics	20) Life Science

(Note: POE will select appropriate courses considering GA and PLO)

Criterion 4.9: Provisions of internship/project/dissertation/field work/work integrated learning opportunities are included in the curriculum.

The curriculum should contain final year design project or capstone design project extending over a period of one year that will demonstrate the culmination of program outcomes. Curriculum should also provide opportunity to students to gain practical experience through dissertation, industry visits and field works.

Standard 6: Student Admission & Support Services

The HEI/PoE must set appropriate entry requirements and select the right candidates for a particular program under a fair and transparent admission policy. Students must have adequate and appropriate support for better attainment of learning outcomes, exploring potential, molding personality and preparing them for the real-life situation with sense of responsibility and integrity.

Criterion 6.1: The HEI/PoE maintains a clearly defined and well-communicated admission policy with transfer and withdrawal provisions, entry requirements that reflect the level of qualifications required to match with the nature of the discipline and mission of the PoE. Admission policy is effective to select students who have potential and are able to afford the academic load to complete the program successfully.

Requisite qualifications for admission in the Bachelor Degree (Undergraduate) program: SSC and HSC English (or Equivalent O and A Level) with Mathematics, Physics and Chemistry

Requisite qualifications for admission in the Master Degree (Graduate) program: Completion of a bachelor program in CE or a related discipline. Competence in relevant undergraduate level courses of the discipline.

Criterion 6.7: PoE ensures and facilitates the participation of students in co-curricular activities and community services under the management of the HEI on a regular basis to promote creativity, social responsiveness, leadership qualities, values, and molding personality towards holistic development.

Co-curricular activities include i) creating opportunities for effective interaction with national and international professional bodies such that students and faculty members can harness knowledge and develop leadership roles and communication skills for achieving the program outcomes, ii) organizing and participating in professional conferences, symposium, and innovation competitions, and iii) mandatory internships for all graduates to get exposure to on job training with opportunities for student placements upon graduation.

List of co-curricular activities (not limited to) to support the defined Graduate Attributes and CLO/PLO. PoE will select the appropriate co-curricular activities and encourage and confirm the participation of the program students:

1. Programming
2. Project competitions
3. Debating
4. Technical seminars, workshops and conferences
5. Outreach activities to address societal needs
6. Activities towards achieving UN SDGs
7. Activities towards entrepreneurship and leadership development
8. Job fair and career counseling activities
9. Activities towards developing awareness on contemporary local and global issues

Standard 7: Faculty and Professional Staff

The HEI/PoE must have a policy to ensure the availability of adequate qualified faculty and professional staff with reasonable teacher student ratio.

Criterion 7.8: The PoE maintains combination of faculty with a minimum of 10% Professor, 20% Associate Professor, 40% Assistant Professor and 30% Lecturer with reasonable teacher student's ratio, depending on the nature of discipline, as necessary for effective teaching learning in the academic program/discipline.

Teacher-Student ratio: 1:15

Class Load in a Semester/Year (No. of credit/Course): 12 Credit Hrs/Semester;

The PoE should have sufficient number of full-time faculty members with appropriate proportion of senior and junior faculty members. It needs to be carefully ensured that the faculty members are not overloaded with courses and the PoE is not overly dependent on part-time faculty members. The teacher-student ratio must not compromise the opportunities for student-teacher interaction.

Standard 8: Facilities & Resources

The HEI/PoE must ensure availability and access to the appropriate and adequate facilities & resources necessary for effective teaching learning and research depending on the nature of discipline and program.

Criterion 8.4: Laboratory facilities, instructional technology & software, IT learning facilities that are identified through curriculum mapping as necessary to attain the defined learning outcomes of program and course(s) and to conduct research are in good condition with appropriate safety measures, appropriate, adequate and accessible when needed by the students and faculty members under a policy that ensures timely repair/replacement, supply and continuous improvement.

List of Essential Laboratories:

1. Chemistry laboratory*
2. Physics laboratory*
3. Basic Electrical laboratory*
4. Drawing laboratory (CAD)*
5. Surveying and GIS laboratory

6. Environmental Engineering laboratory
7. Soil Mechanics laboratory
8. Transportation Engineering laboratory
9. Water resource Engineering laboratory
10. Structural Mechanics laboratory
11. Concrete and Materials laboratory

**These laboratories may be shared among different disciplines of the same university.*

List of other facilities for the discipline:

1. Capstone Design Studio
2. Air quality laboratory
3. Hydrology laboratory
4. Solid Waste laboratory with research Hub
5. Particle sizing laboratory
6. Model laboratory

List of instructional technology and software (IT facilities):

1. Computational Laboratory Facility

These laboratories shall be equipped with facilities (hardware and software) and trained personnels to support the undergraduate sessional curriculum, Capstone project, Undergraduate research project, and post-graduate course demonstration and research if applicable. These facilities shall have integration options for multidisciplinary activities.

Engineering programs shall provide structured opportunities for students to participate in nationally or internationally recognized engineering design and innovation competitions and shall use evidence from such activities as part of the assessment - through external validation that students' solution capabilities meet or exceed international benchmarks under fixed rules and constraints - and for the continuous improvement of Washington Accord - aligned graduate attributes.