



Bangladesh Accreditation Council

Discipline/Subject Specific Requirements for Accreditation of Academic Program

Discipline/Subject: Bachelor of Science in Agricultural Engineering

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): 40/Section

Class size (number of students in a practical class): 20/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.

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:

1. Engineering knowledge
2. Problem analysis and solving
3. Investigation and Research
4. Modern tool usage
5. The engineer and society
6. Environment and sustainability
7. Ethics

8. Teamwork and collaboration
9. Communication skills
10. Project formulation and management
11. Lifelong learning
12. Global Awareness
13. Practical skills
14. Time management skills
15. Critical thinking, creativity and innovation

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.

List of general education courses but not limited to:

01	Communicative English	11	Agri Business and Entrepreneurship
02	Physical Sciences (Soil Science, Physics, Chemistry, Statistics)	12	Ethics and Professionalism
03	Economics for Engineers	13	Environmental Literacy
04	Fundamentals of Field Crop Production	14	Stress Management and Counseling
05	Fundamentals of Horticulture	15	Political Science or Government Studies
06	Bengali Language and Literature	16	Human Resource Management
07	History of the emergence of independent Bangladesh	17	Sustainable Development
08	Leadership and Management	18	Agri Marketing
09	Rural Sociology and Development	19	Technology Management and Society
10	Agricultural Extension Education	20	Climate and Disaster Management

(Note: Program offering entity (POE) will select appropriate courses considering program learning outcomes and graduate attributes.)

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

Internship/project/dissertation/field work:

The Capstone Project is mandatory for all students and lasts for one year, starting after the 3rd year.

Internship/Fieldwork/Industrial attachment is also required during the study, with a maximum duration of about three months.

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 supports for better attainment of learning outcomes, exploring potentials, 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 potentials and are able to afford the academic load to complete the program successfully.

Requisite qualifications for admission in the B.Sc. in Agricultural Engineering program:

- a) Higher Secondary Certificate (HSC) or equivalent examinations (12 Years Schooling) with Mathematics, Physics, Chemistry and Biology from a recognized Board/Institution.
- b) An acceptable GPA decided by the Admission Committee in both SSC and HSC examinations.
- c) Admission test based on HSC/Equivalent curricula.

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.

List of co-curricular activities to support the defined Graduate Profile/ Attributes:

1. Smart Farming Innovation Challenges
2. Agricultural Machinery Design Contests
3. Coding & IoT Hackathons (focusing on precision agriculture)
4. Soil and Water Conservation Competitions

5. Hands-on training in agricultural machinery companies
6. Participating in agricultural technology expos
7. On-farm training with commercial farms or agribusinesses
8. CAD & Simulation Software Training (AutoCAD, SolidWorks)
9. IoT and Sensor-Based Farming Workshops
10. Renewable Energy Applications in Agriculture
11. Post-Harvest Technology & Food Processing Seminars
12. Conducting farmer awareness programs
13. Participating in agricultural fairs
14. Volunteering in rural development and sustainability projects
15. Promoting smart irrigation and mechanization in local communities
16. Debate & Public Speaking Competitions
17. Leadership Training & Entrepreneurship Development
18. Technical Writing & Presentation Competitions
19. Student Leadership in Engineering Societies (IEB, BSAE, AES, ASABE, etc.)
20. Robotics & Automation Club (for smart farming innovations)
21. Environmental & Sustainability Club

(Note: POE will select appropriate co-curricular activities encourage students to participate)

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 an ideal combination of faculty with 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 ration: 1:12

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 Laboratories:

Sl. No.	Essential Laboratories	Sl. No.	Appreciating Laboratories
01	Thermodynamics and Heat Engine Lab	01	Heat and Mass Transfer Lab
02	Fluid Mechanics and Hydraulic Lab	02	Design and Simulation Lab
03	Computer Lab	03	Soil Mechanics Lab
04	Engineering Shop	04	Irrigation and Drainage Lab
05	Agricultural Machinery Workshop/Lab	05	Bioprocessing Lab
06	Engineering Drawing and Design Lab	06	Environmental Engineering Lab
07	Concrete and Material Testing Lab	07	Hydrology and Water Resources Lab
08	Post-Harvest Technology Lab	08	GIS and Remote Sensing Lab
		09	Precision Agricultural Lab

List of instructional technology and software (IT facilities):

1. Interactive Smart Boards: For interactive teaching sessions.
2. Learning Management Systems (LMS) such as Moodle, Canvas, Google Classroom
3. Virtual Classrooms and Conferencing Tools such as Zoom, Microsoft Teams, Google Meet
4. Digital Projectors and Document Cameras for presentations and demonstrations.
5. Multimedia Production Tools such as Camtasia, Adobe Captivate

6. 3D Modeling and Simulation Tools such as Unity (for creating virtual farm simulations), SketchUp
7. Data Analysis and Statistical Software such as SPSS, R, MATLAB
8. Geographic Information Systems (GIS) such as ArcGIS, QGIS
9. Agricultural Simulation Models
 - a. DSSAT (Decision Support System for Agrotechnology Transfer)
 - b. APSIM (Agricultural Production Systems Simulator)
10. Computer-Aided Design (CAD) Software such as AutoCAD, SolidWorks
11. Programming and Development Tools such as Python, MATLAB, Arduino IDE (for IoT-based projects)
12. Remote Sensing Software such as ERDAS IMAGINE, ENVI
13. IoT and Automation Platforms such as Thing Speak, Blynk
14. Drone and UAV Software such as DJI Terra, Pix4D
15. Bibliographic and Reference Management Tools such as EndNote, Mendeley
16. Lab Management Software such as Lab Archives, ELabFTW
17. Cloud Storage and Collaboration such as Google Drive, OneDrive
18. Academic Publishing and Networking such as ResearchGate, Google Scholar

List of supporting facilities:

1. Soil Science Lab
2. Crop Science Lab
3. Horticulture Lab
4. Physics Lab
5. Chemistry Lab
6. English Language Lab
7. Seminar Room with modern facilities