



American International University - Bangladesh (AIUB)

Faculty of Science and Technology

Undergraduate
Student Handbook



WHERE LEADERS ARE CREATED



1994

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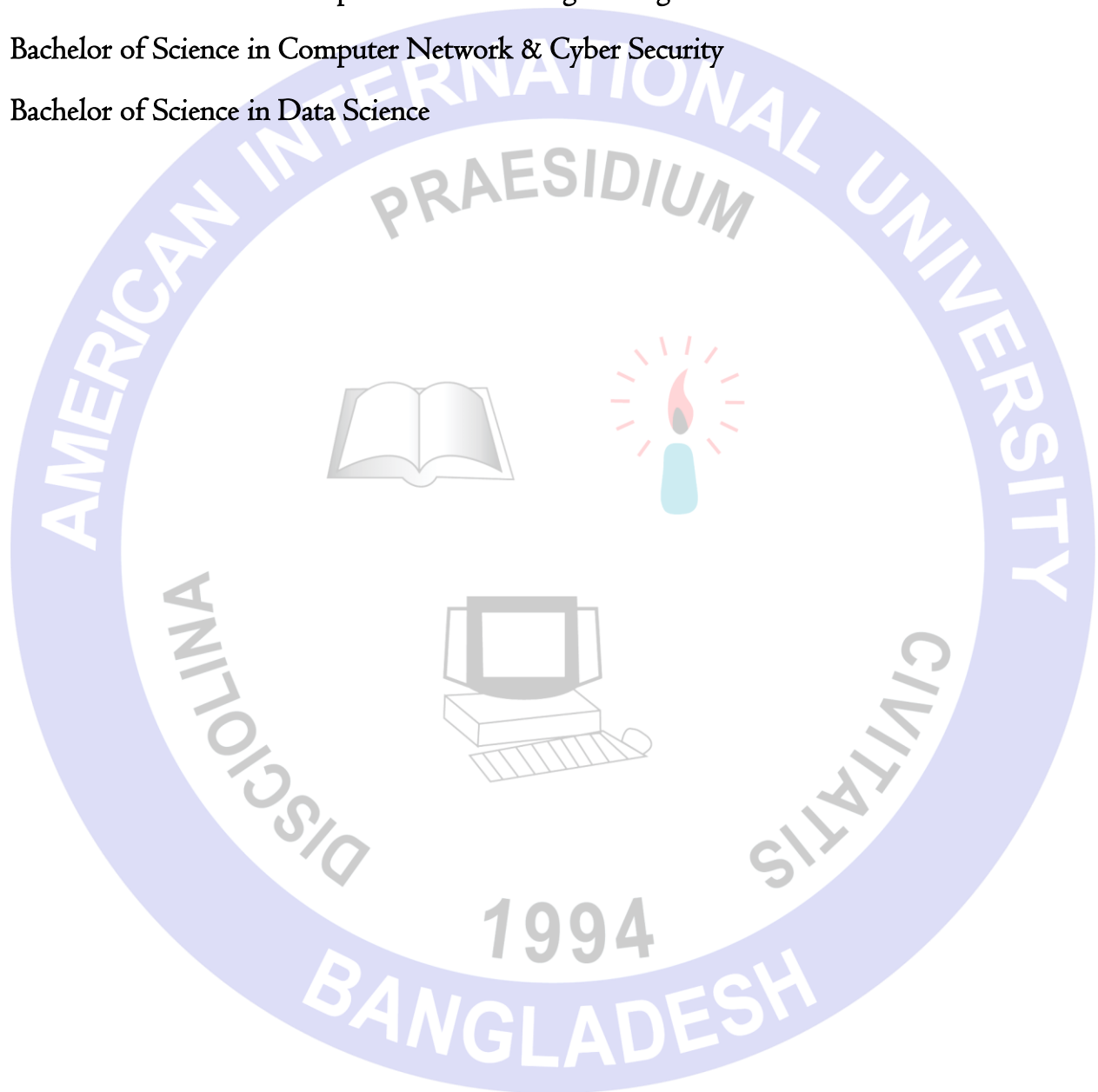
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FACULTY OF SCIENCE AND TECHNOLOGY

Bachelor of Science in Computer Science & Engineering

Bachelor of Science in Computer Network & Cyber Security

Bachelor of Science in Data Science



THINK OF IT

Since its inception, AIUB has been committed to provide, maintain, and enhance an educational environment that is conducive to learning, not only for those who come to learn but also for those who impart it. For over a decade, we have been committed to providing students with enriching undergraduate and graduate experience, with the right combination of all the essential components required for attaining excellence in learning. All our infrastructural and research facilities, along with the support of competent and compassionate faculty, make AIUB a truly dynamic learning environment, where tomorrow's leaders are created. If you are looking for a state-of-the-art academic program and a faculty that is second to none, aiming to acquire an educational experience that will propel you towards the future, then AIUB is where you want to be. Over 13,000 students are currently pursuing their dreams, following the footsteps of nearly 40,000 graduates before them, who experienced AIUB's high standard and excellence in education. Over the years, graduates have successfully placed themselves in every imaginable sphere of the career spectrum, both nationally and internationally, making their mark in the world, making us and the nation proud. So, what are you waiting for? Come, join AIUB, and be a force to be reckoned with!



MISSION & VISION

Mission and Vision of AIUB

AIUB has long been a cornerstone of higher education in the country, consistently striving to provide a high standard of academic programs and services. The university's vision and mission statements reflect a strong commitment to pursue quality and excellence in all aspects of its operations. To ensure that it remains competitive in the rapidly evolving educational landscape, AIUB has its vision and mission statements to address contemporary challenges and opportunities. These underscore the university's dedication to adapting to global trends while maintaining its foundational values and goals. By aligning with international standards and fostering a culture of innovation, AIUB aims to empower students and contribute to the growth of the educational sector.

AIUB Vision Statement

American International University-Bangladesh continuously transforms the students to become innovative and globally competitive with excellent, state-of-the-art and academic knowledge and skills nurturing their full potentials not only as future leaders in their respective fields of endeavor, but also as unique contributors to the society.

AIUB Mission Statement

American International University-Bangladesh is committed to provide quality and excellent academic programs responsive to the emerging global challenges. The university is dedicated to produce and foster competent world class graduates imbued with strong sense of ethical values ready to face the competitive world of business, science, technology, engineering and social sciences.

AIUB Quality Policy

American International University-Bangladesh adheres to quality in conformity with the prescribed national, international, professional and academic standards of quality and excellence. The university is committed to translate its academic programs and projects into actions propagating the best practices and assuring the quality of learning opportunities. The students being the most valued stakeholders are the central focus of the university and are provided with utmost care and attention to meet their primordial needs and future career success. In view of this commitment, the university shall exert best efforts to harmonize its actions through collaboration, cooperation and consultation with every unit and components of the university.

AIUB Goals

1. Sustain academic development and progress of the university
2. Upgrade educational services and facilities in response to the demands for change and needs of the society.
3. Enhance research consciousness in discovering new dimensions for curriculum development and enrichment
4. Implement meaningful and relevant community outreach programs reflective of the available resources and expertise of the university
5. Establish strong networking of programs, sharing resources and expertise with local and international educational institutions and organizations
6. Accelerate the participation of alumni, students and professionals in the implementation of educational programs and development of projects designed to expand and improve academic standards
7. Inculcate professional culture among management, faculty and personnel in the attainment of the institution's vision, mission and goals

AIUB Objectives

1. Foster Academic Excellence: To provide a transformative educational experience that equips students with innovative academic knowledge, skills, and competencies, preparing them to be future leaders in their respective fields and valuable contributors to society.
2. Prepare Globally Competitive Graduates: To nurture students into world-class professionals who are capable of facing global challenges with a strong ethical foundation and the necessary skills in business, science, technology, engineering, and social sciences.
3. Enhance Institutional Quality: To continuously upgrade the university's educational services, facilities, and academic programs, ensuring they meet both national and international standards of quality, and align with the emerging needs of society and global trends.
4. Encourage Research and Innovation: To cultivate a research-oriented culture that supports the discovery of new knowledge and the enrichment of curricula. thereby contributing to academic progress and the development of relevant programs.
5. Promote Community Engagement: To implement meaningful and impactful community outreach programs that reflect the expertise and resources of the university, fostering a strong sense of social responsibility among students and faculty.
6. Strengthen Partnerships and Networks: To establish robust local and international networks with educational institutions and organizations, enabling resource sharing and collaborative development of academic programs and initiatives.

7. **Involve Stakeholders in Continuous Improvement:** To accelerate the active participation of students, alumni, faculty, and professionals in the development and enhancement of educational programs, ensuring a dynamic and responsive academic environment.
8. **Cultivate a Professional Culture:** To instil a professional and ethical culture among management, faculty, and personnel, ensuring that all stakeholders work collaboratively toward achieving the university's vision, mission, and goals.

Mission and Vision of Faculty of Science and Technology (FST)

FST Vision Statement

“The Faculty of Science and Technology is committed to equip students with world class scientific research and industry-oriented knowledge and skills”.

FST Mission Statement

“To create highly skilled and globally competitive professionals with advanced theoretical and applied knowledge responsive to the needs of the society in the discipline of science and technology”.

Mission and Vision of Department of Computer Science

The vision and mission of Computer Science and Engineering (CSE) program at American International University - Bangladesh (AIUB) is stated as follows.

CSE Vision Statement

“Our vision is to be the preeminent Department of Computer Science through creating recognized professionals who will provide innovative solutions by leveraging contemporary research methods and development techniques of computing that are in line with the national and global context.”

CSE Mission Statement

“The mission of the Department of Computer Science of AIUB is to educate students in a student-centric dynamic learning environment; to provide advanced facilities for conducting innovative research and development to meet the challenges of the modern era of computing, and to motivate them towards a life-long learning process. To create highly skilled and globally competitive professionals with advanced theoretical and applied knowledge responsive to the needs of society in the discipline of science and technology.”

FST Program Educational Objective (PEO)

Objective-1: Excel the career of graduates within Computer Science, and related disciplines by applying knowledge in mathematics, computing, software engineering, and IT principles.

Objective-2: Demonstrate professionalism, ethics, and ability to work in inter and multidisciplinary teams and to adapt to the latest trends and technology.

Objective-3: Engage the graduates toward lifelong learning and to pursuit of research-intensive postgraduate or other professional education.



FOUNDERS & BOARD

Late Dr. Anwarul Abedin

Founder Chairman
Board of Trustees
American International University - Bangladesh

Late Hasna Abedin

Founder Member and Former Chairperson
Board of Trustees
American International University - Bangladesh

Dr. Hasanul A. Hasan

Founder Member
Board of Trustees
American International University - Bangladesh

Mr. Ishtiaque Abedin

Founder Member
Board of Trustees
American International University - Bangladesh

Ms. Nadia Anwar

Founder Member and Chairman
Board of Trustees
American International University - Bangladesh

BOARD OF TRUSTEES' NOMINEES

Mr. Ishtiaque Abedin

Founder Member, Board of Trustees
American International University - Bangladesh

Ms. Nadia Anwar

Chairman and Founder Member, Board of Trustees
American International University - Bangladesh

Dr. Carmen Z Lamagna

Member, Board of Trustees
American International University - Bangladesh



SYNDICATE MEMBERS

Prof. Dr. Saiful Islam, Chairperson

Prof. Dr. Md. Abdur Rahman, Member

Prof. Dr. Nisar Ahmed, Member

Mrs. Nadia Anwar, Member

Dr. Hasanul A. Hasan, Member

Dr. Carmen Z. Lamagna, Member

Prof. Dr. Tazul Islam, Member

Sr. Associate Prof. Mr. Mashiour Rahman, Member

Prof. Dr. S. A. M. Manzur H. Khan, Member

Prof. Dr. Mohammad Abu Eusuf, Member

Gp Capt (Retd) Dr. Mohammad Zahidul Islam Khan, Member-Secretary

ACADEMIC COUNCIL

Chairperson:

- **Prof. Dr. Saiful Islam**, Vice Chancellor

Members:

- **Prof. Dr. Md. Abdur Rahman**, Pro Vice Chancellor
- **Prof. Dr. Tazul Islam**, Dean, Faculty of Arts and Social Sciences
- **Prof. Dr. A B M Siddique Hossain**, Dean, Faculty of Engineering
- **Mr. Mashiour Rahman**, Dean (in charge), Faculty of Science and Technology
- **Prof. Dr. A. B. M. Rahmatullah**, Associate Dean, Faculty of Arts and Social Sciences
- **Prof. Dr. Farheen Hassan**, Associate Dean, Faculty of Business Administration
- **Prof. Dr. M. A. Mannan**, Associate Dean, Faculty of Engineering
- **Prof. Dr. Dip Nandi**, Associate Dean, Faculty of Science and Technology
- **Dr. Muhammad Wasiful Alam**, Head, Department of Public Health, Faculty of Arts and Social Sciences
- **Mr. M Hamidul Haque**, Head, Department of English, Faculty of Arts and Social Sciences
- **Dr. Mohammad Faridul Alam**, Director, MBA Program, Faculty of Business Administration
- **Dr. Rezbin Nahar**, Director, BBA Program, Faculty of Business Administration
- **Mr. M. Arefeen Ibrahim**, Head, Department of Architecture, Faculty of Engineering
- **Prof. Dr. Tabin Hasan**, Graduate Programs, Faculty of Science and Technology
- **Prof. Dr. Taslima Monsoor**, Advisor, Department of Law, Faculty of Arts and Social Sciences
- **Prof. Neaz Ahmad**, Faculty of Business Administration
- **Prof. M. A. Quaiyum**, Faculty of Engineering
- **Prof. Dr. Mohammed Jashim Uddin**, Faculty of Science and Technology
- **Mr. Manirul Islam**, Director, Institute of Continuing Education

ADMISSION AND SCHOLARSHIPS

Academic Requirements for BSc in CSE/Computer Network & Cyber Security/Data Science

- ❖ A total GPA of 5.00 with a minimum GPA of 2.75 in science background. Math must be included at HSC level.
- ❖ Minimum GPA 2.5 (in both O and A Levels separately) with no grade lower than 'D' among best 5 subjects in O' level and best 2 subjects in A' level. Math must be included at A' level (optional for CIS). (Scale: A=5, B=4, C=3, D=2 & E=1)
- ❖ High School Diploma/International Baccalaureate with minimum grade B in Math.
- ❖ GED results will not be accepted.

Required Documents for Form Submission

- ❖ Attested Photocopy of all Board Mark Sheets and Certificates/ Testimonials.
- ❖ Three copies of Recent Colored & Clear Passport Sized Photographs.
- ❖ Recent A' Level Appeared candidates are required to submit attested photocopy of A2 Statement of Entry and Mark Sheets of their A'S LEVEL Exam (with cash in code).
- ❖ Recent HSC Appeared candidates are required to submit Appeared Certificate, attested photocopies of HSC Admit Card & Registration Card.
- ❖ Applicants in Freedom Fighter category are requested to submit attested photocopy of
 - ✓ "Provisional Certificate" from Ministry of Liberation war affairs.
 - ✓ Mukti Barta
 - ✓ Gazette
 - ✓ "National ID" of the freedom fighter/Birth Certificate/ Any official paper with date of birth / Death Certificate of the Freedom Fighter
 - ✓ Freedom Fighter Number [for Online Verification at <https://molwa.gov.bd/>]

****Selected applicants in FF quota are requested to bring all these original papers during their admission.*

Written Exam Waiver Conditions (will be called for viva interview):

- ❖ Minimum score of 1650 in SAT for undergraduate program out of 2400.
- ❖ Minimum score of 1106 in SAT for undergraduate program out of 1600.

Non-Discriminatory Admission Policy

AIUB admits qualified and selected students of any age, gender, sexual orientation, race, disability, color, religion, and national or ethnic origin to all the rights, underrepresented groups, privileges, programs, and activities generally accorded or made available to students.

AIUB does not discriminate on the basis of:

- Age
- Gender or gender identity
- Sexual orientation
- Race
- Disability
- Color
- Religion
- National or ethnic groups
- Under represented groups
- Under privileged groups
- Non-traditional Students*

*Non-Traditional Students (Definition): An applicant who has completed a degree that is equivalent to the requirement but not specifically mentioned in the University Grants Commission (UGC)'s list of requirements. [But the degree that is exclusively barred in the UGC list of requirements will not be acceptable]. The equivalency of the degree must be recommended by the admission interview committee/ faculty dean/ administration based on verification of relevant documents. The final decision of the admission is at the discretion of AIUB Management.

Admission Policy for Students with Disability

The American International University–Bangladesh (AIUB) is committed to provide equal opportunity to the qualified and deserving candidates regardless of age, gender, sexual orientation, race, disability, color, religion, underrepresented groups, and national or ethnic origin.

AIUB promotes academic freedom among applicants with disability as a commitment towards inclusive society.

Admission application of candidates with disability will be assessed based on the following criteria:

AIUB does not discriminate on the basis of:

- Admission applicants under this category must meet the disability criteria as defined by the 'Bangladesh persons with disabilities rights and protection act 2013' and must provide documentation to verify this.

- Applicants must meet the minimum standards for admission
 - a. for undergraduate: SSC/HSC/O'level/A'Level results
 - b. for graduate: see (a), undergraduate results
- Recommendation from the admission interview committee/ faculty dean/ administration based on the availability of adequate campus facilities to overcome the type of disability.
- The final decision of the admission is at the discretion of the AIUB Management.

Admission Policy for Underrepresented Group

The American International University–Bangladesh (AIUB) is committed to provide equal opportunity to the qualified and deserving candidates regardless of age, gender, sexual orientation, race, disability, color, religion, underrepresented groups, and national or ethnic origin.

AIUB promotes academic freedom among applicants coming from the underrepresented group (i.e., ethnic minorities, low-income, non-traditional*, 3rd Gender, newly settled refugee) as a commitment towards inclusive society.

Admission application of applicants coming from the underrepresented group will be assessed based on the following criteria:

- Admission applicants under this category must submit relevant documents that can be verified to identify their status of the underrepresented group.
- Applicants must meet the minimum standards for admission
 - a. for undergraduate: SSC/HSC/O'level/A'Level results
 - b. for graduate: see (a), undergraduate results
- Recommendation from the admission interview committee/ faculty dean/ administration in support of the application.
- The final decision of the admission is at the discretion of the AIUB Management.

*Non-Traditional Students (Definition): An applicant who has completed a degree that is equivalent to the requirement but not specifically mentioned in the University Grants Commission (UGC)'s list of requirements. [But the degree that is exclusively barred in the UGC list of requirements will not be acceptable]. The equivalency of the degree must be recommended by the admission interview committee/ faculty dean/ administration based on verification of relevant documents. The final decision of the admission is at the discretion of AIUB Management.

Admission Procedure for International Students

In order to apply to American International University-Bangladesh as an International student, applicants are required to provide the following items:

1. **Admission Form:** Submit the Completed Admission Form ([Download PDF Format](#)) .
2. **Academic Records:**
 - (a) All certified scanned copies of the original educational records must be submitted. If the original copy of this record is written in a foreign language, a certified English translation is required.
 - (b) TOEFL/IELTS/GRE/GMAT/SAT scores are required (as applicable) of all applicants, except those from countries where English is the only official language, as evidence of adequate proficiency in English. The minimum acceptable score for TOEFL and GMAT/GRE is 550, and for SAT it is 1650.
 - (c) Submit two letters of recommendation/testimonials with your application.
3. **Financial Records:** All international students are required to submit Certification of Financial Records or Bank Statement guaranteeing that they have sufficient funds available to cover the necessary educational and living expenses for completing their studies here at AIUB. The Record or Statement of Accounts can be either in the student's name or the Guardian/Parent(s) name. It should be noted here that Scholarships, financial aid and loans are NOT available to International Students.
4. **Medical Records:** A student must submit an authentic document proving that he / she has completed the hepatitis A and B series and must include a tuberculin test.
5. **Deadline:** In order to apply to American International University-Bangladesh for any of our Fall or Spring Semester as an International student, all applicants are required to apply at least 2 Months prior to the commencement of classes. (Please check the web page for the Commencement Date of each Semester).
6. **Application Process:** Upon receipt of all the above items, the applicant's file will be presented to the Admissions Department of the American International University-Bangladesh for the admission decision. The applicant will be duly informed of the decision by the Admission Department.
7. **Special Note:**
 - (a) All International Students are expected to make their own arrangements for housing, however necessary assistance will be provided where applicable or whenever needed.

- (b) After acceptance by the University students are required to fulfill the relevant documentation processing for their Student Visa purposes. The University will not be responsible for arranging Visas for any Foreign Students.
- (c) Please be informed that the inclusion of any false information constitutes grounds for dismissal from the University.

Scholarship (tuition fee waiver only) and Financial Aid Policy

The purpose of this policy is to help the deserving students at the American International University-Bangladesh (AIUB) to bridge the gap between the education cost and their financial resources. At AIUB, the categories of Scholarship (tuition fee waiver only) and Financial Aid are as follows:

1. Scholarship

A. Academic

- I. Merit Based Scholarships (For Freshman students)
- II. Academic Scholarship for Regular Students
- III. Dr. Anwarul Abedin Scholarship for female Undergraduate Students
- IV. Mrs. Hasna Abedin Scholarship (Proposed)

B. Extra-Curricular

- I. National Talents Scholarships
- II. Sports Scholarships
- III. Club Scholarships

2. Financial Aid

- I. General Need Based Tuition Fee Waiver
- II. Freedom Fighter Waiver
- III. Alumni Tuition Fee Waiver
- IV. Corporate Tuition Fee Waiver
- V. Sibling Waiver
- VI. AIUB Employee Waiver
- VII. AIUB Employee Dependent Waiver
- VIII. On-campus jobs
- IX. Volunteer Scheme

Note: One student is entitled to receive scholarship in only one category. If in any case, a student qualifies for scholarship in more than one category; s/he would be entitled to the one of higher percentage (as and if applicable).

Details of the Scholarship (tuition fee waiver only) and Financial Aid Policy:

1. Merit Based (For Freshman students) Scholarships:

The Applicant must have:

- I. GPA 5.00 (Golden) OR GPA 5.00 in SSC and HSC
- II. 5 (Five) 'A' in O-Level (at a time) and 2 (two) 'A' in A-Level (at a time); no grade lower than 'B'

Application Procedure: An applicant fulfilling all the above criteria must sit for a Scholarship Exam and must pass with Satisfactory Grade (the Acceptable Passing Grade may vary from time to time and will be decided by the Scholarship Committee) to be a Recipient of Academic Scholarship/Grant. The number of recipients may vary from time to time, and the Award of Scholarship depends on the availability of slots.

2. Academic Scholarship for Regular Student:

The Applicant must have:

- I. Complete two (2) regular semesters (Spring & Fall)
- II. Can apply only in a regular semester.
- III. Academic load for regular full-time students:

Table 1: Minimum Number of Academic Load (Program and Semester wise)

Effective Fall 2023-2024			
	Minimum Number of credits (academic load)		
Program	FALL	SPRING	SUMMER
Undergraduate	≥ 15	≥ 15	≥ 15
Graduate (except EMBA)	12	12	12
EMBA	4 courses	4 courses	4 courses

- IV. CGPA of 3.75 or above.
- V. Must not have grade lower than 'B' [undergraduate program] / 'B+' [graduate program] in any academic period
- VI. No 'Fail (F)', no 'Incomplete (I)', no 'Withdrawn (W)', no 'Unofficial Withdrawn (UW)', no dropping course(s) or no Retake Course(s)
- VII. No Disciplinary Action Taken

Note: The number of recipients may vary from time to time and the Award of Scholarship depends on the availability of slots.

- 3. Anwarul Abedin Scholarship for female Undergraduate Students:** This scholarship grant is established in honor of the late Founder and Chairman of the Board of Trustees of the American International University-Bangladesh (AIUB), Dr. Anwarul Abedin. His vision in providing opportunities for female students to have greater access to university education augurs well to the national and international concern of narrowing the gender gap in the university. The grant covers only the tuition fee (100%) given to qualified female student every regular semester, Fall and Spring, based on the number of slots to be declared by the Scholarship Committee. (One per faculty)

Criteria for the Selection of Recipients (For Undergraduate Female Students Only)

- I. CGPA OF 3.8 and above
- II. No grade below B+
- III. Regular Full Time/Full Credit, 12-15 credits with no semester gap
- IV. Certification of No Disciplinary Action (to be issued by OSA)
- V. Certification of Good Moral Character (to be issued by OSA)
- VI. Membership in any AIUB Club
- VII. Certification of Active Participation in Department/Course Extra Curricular Activities (e.g., volunteer, organizer of seminars, workshops, competitions, etc.)
- VIII. Not a recipient of any kind of scholarship/financial assistance provided by the university or any other organization.

The renewal of the Grant every regular semester is subject to maintaining the CGPA and other criteria prescribed above.

- 4. Hasna Abedin Scholarship (Proposed):** This scholarship grant is established in honor of the late Founder and Chairman of the Board of Trustees of the American International University-Bangladesh (AIUB), Mrs. Hasna Abedin. Her vision is strengthening higher education and concentration in specialization and research. The grant covers only the tuition fee (100%) given to qualified post graduate students every regular semester, Fall and Spring, based on the number of slots to be declared by the Scholarship Committee. (One per faculty)

Criteria for the Selection of Recipients (For Postgraduate Students Only)

- I. CGPA OF 3.8 and above
- II. No grade below B+
- III. Regular Full Time/Full Credit, 12 credits with no semester gap
- IV. Certification of No Disciplinary Action (to be issued by OSA)
- V. Certification of Active Participation in Department/Course Extra Curricular/ Social Welfare/ Research Activities.
- VI. Not a recipient of any kind of scholarship/financial assistance provided by the university or any other organization.

The renewal of the Grant every regular semester is subject to maintaining the CGPA and other criteria prescribed above.

5. **National Talent Scholarships:** Awarded to students based on their achievements in the national level recognized by the relevant national authority. Based on the application and supporting documents, Scholarship Committee will recommend the eligibility and percentage of tuition fee waiver. Scholarship for National talents under the MOU between AIUB and National Level Organizations will be awarded as per the clause mentioned in the MOU.

Scholarship Grant for National Talent recipients are selected by the Scholarship Committee. However, the decision to extend scholarships to any individual student remains at the complete Discretion of the Scholarship Committee.

6. **Sports Scholarships:** The sports scholarship is awarded to a selected number of students who participate in sports activities for the university. Percentage of waiver will be decided by the Scholarship Committee based on the contribution of the applicant in the sports category. The student must also demonstrate financial need.
7. **Club Scholarships:** The club scholarship is awarded to a selected number of students who are members of the AIUB student clubs. The student must have been a regular member of the club for at least one year and contributed in the achievements of the club. Percentage of waiver will be decided by the Scholarship Committee based on the contribution of the applicant in the club activities. The student must also demonstrate financial need.
8. **Scholarship for Students with disability:** The American International University–Bangladesh (AIUB) is committed to provide equal opportunity to the qualified and deserving candidates regardless of age, gender, sexual orientation, race, disability, color, religion, underrepresented groups, and national or ethnic origin. AIUB promotes academic freedom among students with disability as a commitment towards inclusive society. Scholarship is awarded to students with disabilities based on the following criteria:

- I. Must be a full-time student of AIUB
- II. Must have a disability as defined by the ‘Bangladesh persons with disabilities rights and protection act 2013’ and must provide documentation to verify this.
- III. Applicants must meet the minimum standards to qualify (number of credits/semesters, GPA, CGPA, continuity of studies)
- IV. Must submit application at the Registrar’s Office within the given deadline of every semester.
- V. Percentage of scholarship will depend on the recommendation made by the scholarship committee based on their assessment of the application and/or an interview process.
- VI. The final decision of the scholarship is at the discretion of AIUB Management.

9. Scholarship for Students from Underrepresented Group: The American International University–Bangladesh (AIUB) is committed to provide equal opportunity to the qualified and deserving candidates regardless of age, gender, sexual orientation, race, disability, color, religion, underrepresented groups, and national or ethnic origin. AIUB promotes academic freedom among students coming from the underrepresented group (i.e., ethnic minorities, low-income, non-traditional*, 3rd Gender, newly settled refugees) as a commitment towards inclusive society. Scholarship is awarded to students coming from the underrepresented group based on the following criteria:

- I. Must be a full-time student of AIUB
- II. Must have proper documentation to verify underrepresented group status as applicable.
- III. Applicants must meet the minimum standards to qualify (number of credits/semester, GPA, CGPA, continuity of studies)
- IV. Must submit applications at Registrar’s Office within given deadline of every semester.
- V. Percentage of scholarship will depend on the recommendation made by the scholarship committee based on their assessment of the application and/or an interview process.

The final decision of the scholarship is at the discretion of AIUB Management.

***Non-Traditional Students (Definition):** An applicant who has completed a degree that is equivalent to the requirement but not specifically mentioned in the University Grants Commission (UGC)’s list of requirements. [But the degree that is exclusively barred in the UGC list of requirements will not be acceptable]. The equivalency of the degree must be recommended by the admission interview committee/ faculty dean/ administration based on verification of relevant documents. The final decision of the admission is at the discretion of AIUB Management.

10. General Need Based Tuition Fee Waiver

The Applicant must have:

- I. Complete two (2) regular semesters (Spring & Fall)
- II. Can apply only in a regular semester.
- III. Fresh application is not allowed for summer semester.
- IV. After submission of application concern department will arrange VIVA for the deserving candidates.
- V. The number of recipients may vary from time to time depending on the availability of slots.
- VI. The grant shall be for one (1) semester and shall include waiver of tuition fees only.

- VII. Regular academic load of at least 14-15 credits (Undergraduate Degree Program), 12 credits (Graduates Degree Program), 4 Courses (EMBA Degree Program) per regular semester.
- VIII. CGPA of 3.50 or above.
- IX. No 'Fail (F)', no 'Incomplete(I), no 'Withdrawn (W)', no 'Unofficial Withdrawn (UW)', no dropping course(s) or no Retake Course(s)
- X. No Disciplinary Action Taken
- XI. Scholarship Committee has full authority to take any decision on this matter.

11. Freedom Fighter Waiver:

- I. After successfully passing the admission test exam, applicant must sit for Freedom Fighter test exam. Scholarship Committee select them on the basis of appropriate Freedom Fighter papers (as per the guideline of ministry), Freedom Fighter exam result and University Quota policy (as per the guideline of UGC).
- II. The grant shall be for one (1) semester and shall include waiver of tuition fees only.
- III. Regular academic load of at least 14-15 credits (Undergraduate Degree Program), 12 credits (Graduates Degree Program), 4 Courses (EMBA Degree Program) per regular semester.
- IV. CGPA of 3.50 or above.
- V. No 'Fail (F)', no 'Incomplete (I), no 'Withdrawn (W)', no 'Unofficial Withdrawn (UW)', no dropping course(s) or no Retake Course(s)
- VI. No Disciplinary Action Taken

12. Alumni Tuition Fee Waiver:

The Applicant must have:

- I. The grant shall be for one (1) semester and shall include waiver of tuition fees only.
- II. Regular academic load of at least 14-15 credits (Undergraduate Degree Program), 12 credits (Graduates Degree Program), 4 Courses (EMBA Degree Program) per regular semester.
- III. CGPA of 3.50 or above.
- IV. No 'Fail (F)', no 'Incomplete (I), no 'Withdrawn (W)', no 'Unofficial Withdrawn (UW)', no dropping course(s) or no Retake Course(s)
- V. No Disciplinary Action Taken
- VI. Scholarship Committee has full authority to take any decision on this matter.

13. Corporate Tuition Fee Waiver: The corporate tuition fee waiver is only applicable to postgraduate students who are working in public / reputed private organizations (original employment document must be submitted every semester at the time of registration). Students will be entitled to corporate tuition fee waiver in the following categories:

- I. Public Organization:
 - A. Civil Organization
 - B. Defense Organization
- II. Private Organization:
 - A. Individual
 - B. Group
- III. Based on MOU with AIUB

Percentage of waiver will be decided by the Scholarship Committee or, as mentioned in the valid MOU between the organization and AIUB. AIUB Management reserves the right to update/ cancel the MOU at any time if necessary. To be eligible for the corporate waiver student must register for minimum 12 credits (4 courses for EMBA) every semester.

- 14. Special Tuition Fees Waiver for Female students for MPH program:** AIUB offers special benefits to encourage female students to apply for higher education. To encourage and improve female participation in Public Health sector, AIUB offers 35% tuition fees waiver to all the female students of the MPH program.
- 15. Sibling Waiver:** Sibling of a current student will be entitled to a percentage of tuition fee waiver as decided by the Scholarship Committee. Siblings must be registered in the same semester to be eligible for the waiver. The scholarship will only continue as long as siblings are registered students.
- 16. AIUB Employee Waiver:** AIUB Employees are entitled to tuition fee waivers after 1 year of full-time services. Percentage of Employee Waiver depends on the number of years the employee has served AIUB as decided by the Scholarship Committee.
- 17. AIUB Employee Dependent Waiver:** First (1st) degree affinity of AIUB Employees is entitled to tuition fee waiver after 1 year of full-time services. Percentage of the waiver depends on the number of years the employee has served AIUB as decided by the Scholarship Committee.
- 18. On-Campus Jobs:** Students may avail themselves of the opportunity of earning through part-time on campus jobs. Based on the requirements of various departments of the university, temporary part-time jobs are circulated in the university notice boards.
- 19. Volunteer Scheme:** Office of Student Affairs (OSA) maintains a pool of student volunteers after they are selected through a selection process. Volunteers are engaged in various university events for a specific period. Most of these engagements are completely voluntary. For some specific events, if required a nominal compensation can be given to the volunteering student as a daily allowance.

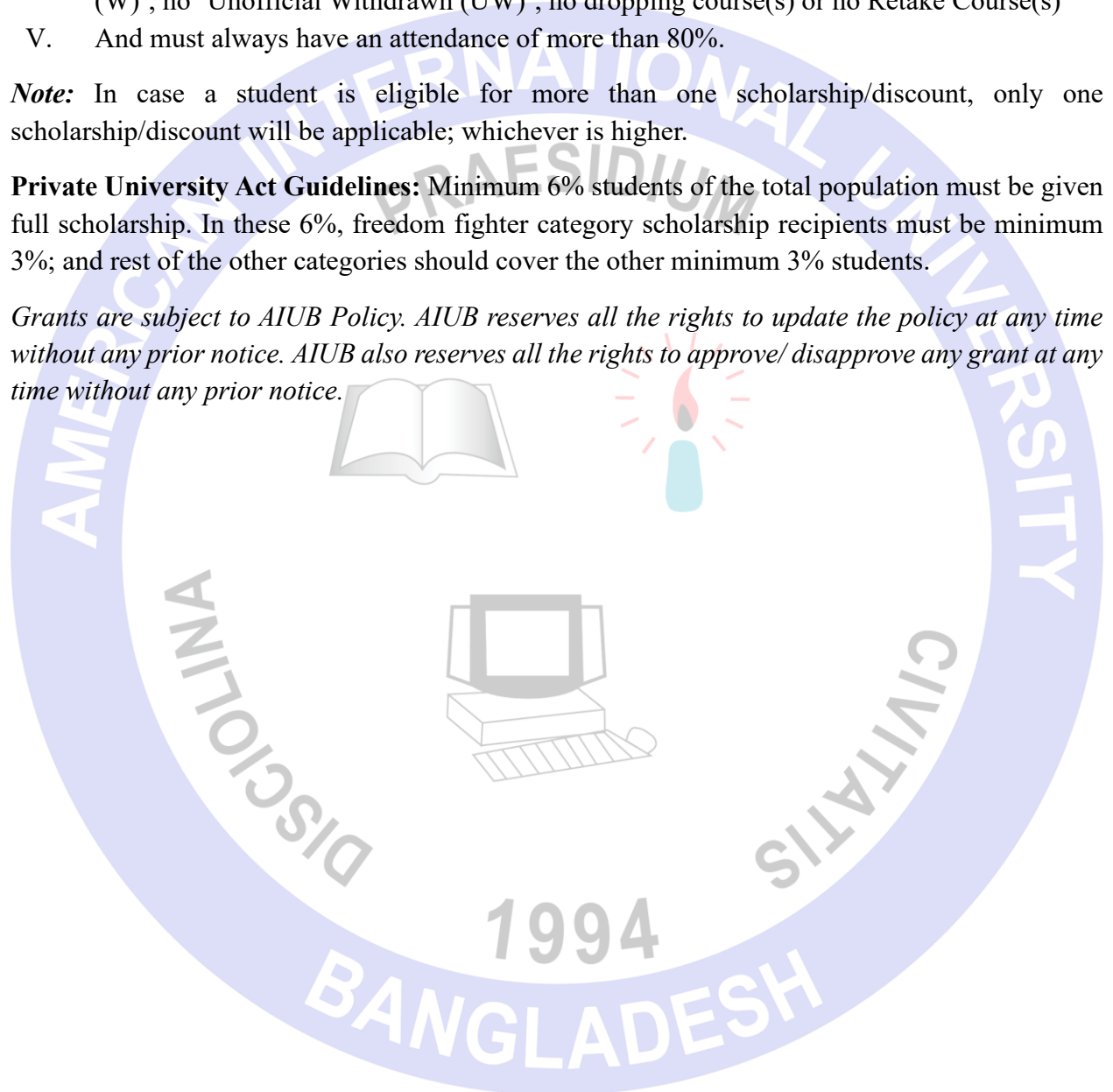
Renewal of Grant: Recipient of any of the Academic Scholarship/Grant or Tuition Fee Waiver mentioned above must comply with the underlying rules consistently. The student:

- I. Must be enrolled with regular academic load of at least 14-15 credits (Undergraduate Degree Program) OR 12 credits (Graduate Degree Program) per regular semester.
- II. Must be enrolled in all academic courses during the preceding and subsequent semesters.
- III. Must not have any disciplinary record.
- IV. Must have a CGPA of 3.75 or above with No 'Fail (F)', no 'Incomplete (I)', no 'Withdrawn (W)', no 'Unofficial Withdrawn (UW)', no dropping course(s) or no Retake Course(s)
- V. And must always have an attendance of more than 80%.

Note: In case a student is eligible for more than one scholarship/discount, only one scholarship/discount will be applicable; whichever is higher.

Private University Act Guidelines: Minimum 6% students of the total population must be given full scholarship. In these 6%, freedom fighter category scholarship recipients must be minimum 3%; and rest of the other categories should cover the other minimum 3% students.

Grants are subject to AIUB Policy. AIUB reserves all the rights to update the policy at any time without any prior notice. AIUB also reserves all the rights to approve/ disapprove any grant at any time without any prior notice.



ACADEMIC REGULATIONS

Semester System

The academic year of the university incorporates two regular semesters and one optional semester. The duration of all semesters is 14 weeks.

- ❖ Spring Semester: January – April
- ❖ Summer Semester: May – August
- ❖ Fall Semester: September – December

Teaching Method

The medium of instruction for all academic programs at AIUB is English. Each course focuses on the intellectual development of the students and incorporates a variety of teaching methods in order to make the students proficient in the course. This ranges from case analysis, project work, presentations, research, group assignments, as well as various forms of competitions and simulations, etc. This holistic approach enables students to build their analytical abilities, develop professionalism and teamwork, as well as practically apply theoretical knowledge to derive innovative solutions for challenges and uncertainties, all of which are essential to thrive and survive in the real-life opportunities of the job market, in Bangladesh and around the world today.

Sequence of Subjects

Every undergraduate and graduate program of all 4 faculties are structured to follow a pre-denoted flow of courses over its time period. Students must successfully complete the 'prerequisites' of every course in order to proceed to the advance courses and undertake major electives. Hence, it is crucial that students follow the proper sequence of the subjects of their degree requirements.

Academic Load

Academic load for regular full-time students: Minimum Number of Academic Load (Program and Semester wise) [For Scholarship/ Waiver/ Award]

Program	Spring / Fall / Summer
Undergraduate	15-16 Credit Hours
Graduate (Except EMBA)	12 Credit Hours
EMBA	9 Credit Hours

* Effective from Summer 2022-23

Grading System

Academic performance in a given course is based on continuous assessment. There are two major examinations, which are written: the mid-term and final examination. In between, there are multiple sets of other assessments taken throughout the semester, including but not limited to quizzes, in-class evaluations, assignments, case studies, etc. Laboratory classes also follow the same evaluation but have practical examinations instead of the written. Each course has a certain number of credit hours. A letter grade with a specified number of grade points are awarded to students, that takes all the assessment scores into consideration. The grade points and their equivalent letter grades are stated below.

Grading System V3 (Applicable for students of both Undergraduate & Graduate Programs, enrolled from Spring 2016-2017 Semester).

Numerical %	Letter Grade	Grade Point
90-100	A+	4.00
85 - < 90	A	3.75
80 - < 85	B+	3.50
75 - < 80	B	3.25
70 - < 75	C+	3.00
65 - < 70	C	2.75
60 - < 65	D+	2.50
50 - < 60	D	2.25
< 50	F	0.00
Incomplete	I	
Withdrawal	W	
Unofficially Withdrawal	UW	

Grading Policy: Incomplete, Withdrawal, Fail Grades and Eligibility of Dropping

1. Incomplete ('I') Grade

An 'I' (Incomplete) grade is assigned when a student fails to complete course requirements (e.g., quizzes, assignments, term exams) despite maintaining passing academic performance and required attendance. To convert the 'I' Grade into a valid grade, the student must fulfill the remaining course requirements by consulting with the course teacher, department head, program director, or faculty dean.

- **Deadline:** The maximum deadline for completion is four weeks after the semester ends, or as specified in the Academic Calendar.
- **Failure to Complete:** If requirements are not met within the deadline, the 'I' Grade will automatically convert to an 'F'.

- **Drop Option:** A student may opt to drop the course within the deadline, which is maximum four weeks after the semester ends (or as stated in the Academic Calendar) [For students under academic probation, dropping a course is restricted and subject to approval as per probation guidelines]
- **Failure to Drop:** If no drop application is submitted within the deadline, the 'I' will convert to an 'F'.
- **Restrictions:**
 - Courses with an assigned 'F' grade are not eligible for drop.
 - Students cannot complete final registration for the next semester if they have an unresolved 'I' Grade in any course from the previous semester.

2. Unofficial Withdrawal ('UW') Grade

A 'UW' grade is assigned when a student is unable to meet course requirements, like inadequate attendance (at least 80% of the classes for each of their courses for the semester), not appearing in quizzes and/or term exams, not submitting assignments, and consequently cannot pass the course.

- **Drop Option:** Students may apply to drop the course within the deadline, which is maximum four weeks of the semester ending (or as stated in the Academic Calendar) [For students under academic probation, dropping a course is restricted and subject to approval as per probation guidelines]
- **Failure to Drop:** If no drop application is submitted within the deadline, the 'UW' will be converted to an 'F'.
- **Restrictions:** A course with an 'F' grade is not eligible for a drop application.

3. Official Withdrawal ('W') Grade

A 'W' grade is given when a student's course drop request is successfully processed and approved by the course teacher, department head/director/dean, and the registrar.

4. Fail ('F') Grade

An 'F' grade is assigned when a student completes all required course components but fails to achieve the minimum passing marks, either individually or cumulatively.

- **Retake Requirement:** The student must retake the course in a future semester, preferably in the next semester.

- **Grade Replacement Policy:**

- For the first **four (UG) and two (PG) courses**, the ‘F’ grade will be non-credited after the course is retaken.
- From the **fifth (UG) and third (PG) retaken courses and onward**, the CGPA will be computed considering **both the ‘F’ and the new grades**.

- **Restrictions:** Drop application is not permitted for courses with an ‘F’ grade.

Course Drop Policy and process:

- **Timing:** Drop applications must be submitted **online via the AIUB portal** during the semester (excluding the grade submission weeks after the midterm and final exams). The final deadline is **four weeks after the semester ends** (or per the Academic Calendar).
- **Grade Eligibility:** Courses with an ‘F’ grade are **not eligible** for a drop.
- **Refunds:** Refer to the tuition refund policy for applicable refunds after dropping a course.
- For students under academic probation, dropping a course is restricted and subject to approval as per probation guidelines.

- **Process:**

- Submit the drop request online via the AIUB portal.
- During the semester, approval must come from the course teacher.
- After the semester (and before the deadline), approval must come from the department head/ director/ dean.
- Upon approval, the Registrar’s Office will finalize the drop request.

Computation of CGPA

The computation of a student’s CGPA (Cumulative Grade Point Average) is dependent on his/her semester GPAs (Grade Point Average) and credit loads. For example, a freshmen student may have the following result in the first semester –

Courses	Grade	Credit	Points
Introduction to Business	A+	3	4.00 x 3 = 12.00
English Reading Skills & Public Speaking	A-	3	3.50 x 3 = 10.50
Business Mathematics - 1	A	3	3.75 x 3 = 11.25
Financial Accounting	A+	3	4.00 x 3 = 12.00
Computer Fundamentals	A	3	3.75 x 3 = 11.25
Total		15	57.00

Therefore, the GPA in the first semester of the student $(57.00/15) = 3.80$

Now in the following semester, if the student earns the result below –

Courses	Grade	Credit	Points
Principles of Management	A	3	$3.75 \times 3 = 11.25$
Microeconomics	B+	3	$3.25 \times 3 = 9.75$
English Writing Skills & Communication	A+	3	$4.00 \times 3 = 12.00$
Business Mathematics - 2	A-	3	$3.50 \times 3 = 10.50$
Basics in Social Science	C	3	$2.25 \times 3 = 6.75$
Total		15	50.25

Therefore, the GPA in the second semester of the student $(50.25/15) = 3.35$

So, now, the student will have earned a calculated CGPA of $(57 + 50.25) / (15 + 15) = 3.58$ (Rounding 3.575 to two decimal places results are 3.58. Since the third digit after the decimal (5) is greater than or equal to 5, the second digit (7) is increased by one) at the end of the second semester. For the consecutive semesters, the CGPA will be calculated accordingly, following the same system.

Class Attendance

Students must attend at least 80% of the classes for each of their courses for the semester. It is a mandatory component for all courses and their respective grades. Absence exceeding 20% of the required number of classes held per semester in each subject may result in unofficial withdrawal (UW) from the course or even lead to actions being taken as per the university policy.

Graduation Requirements

To earn an Undergraduate/ Graduate Degree from AIUB students must complete their degree requirements with a minimum CGPA of 2.50. The respective degree must be completed within an equivalent period of maximum 1.5 times the normal length that is prescribed for each degree program. Extension of this time restriction may be granted for valid reasons at the discretion of the Vice Chancellor. Students must acquire the minimum Cumulative Grade Point Average (CGPA), after completion of all the requirements of their respective degree programs, effective for their respective Convocation period as stated below –

- 1st – 11th Convocation: 2.50 on a scale of 4.00
- 12th – 16th Convocation (as of February 2012-16): 2.75 on a scale of 4.00
*Exception: Students bearing the IDs up to 10-*****-3 (Undergraduate Degree Programs) and up to 09-9****-1 (Graduate Degree Programs) were granted graduation based on previous CGPA requirement of 2.50 on a scale of 4.00 within this period of 12th - 16th Convocation.*
- 17th Convocation onwards (February 2017 onwards): 2.50 on a scale of 4.00

Academic Probation

If the CGPA of any student (undergraduate and graduate) falls below 2.50 on a scale of 4.00, he or she will be placed under academic probation. During academic probation, students are provided with regular counseling and guidance to enable them to improve their academic standing. Once placed under academic probation, students are provided with a warning and a deadline, to recover their CGPA within the following semester. Failure to do so may eventually result in cancellation of admission and termination from the university. Once terminated, students cannot apply for readmission into the university.

Retaking Courses

- A student can retake a course if s/he receives a passing grade equivalent to a GPA below 2.50 (on a scale of 4.00).
- If a student receives 'F', 'I', 'W' or 'UW' grades in a particular course, s/he must retake the course in the immediate semester the course is offered.

Rules for retaking courses with 'F' grade:

- A student is allowed to retake any course only once.
- The new earned grade will be displayed alongside the 'F' grade and in most cases will not replace the 'F'. However, the newly earned grade will be taken into account while calculating the CGPA.
- A student is allowed to have a maximum of 4 (four) 'F' grades in the undergraduate program and 2 (two) 'F' grades in the graduate program.
- From the 5th 'F' grade (undergraduate)/ 3rd 'F' grade (graduate) onwards, the grade 'F' will be taken into account while calculating the CGPA. (Excessive 'F' grades in the transcript may result in the CGPA falling below 2.50 and lead to termination from the university.)
- If the 'FD' grade is awarded by any disciplinary committee for any disciplinary violation, it cannot be replaced or removed by a new grade under any circumstances.

Transfer of Credits

The request for transfer of credentials must be filed with the Registrar's Office through the proper documentation and approval process. Students must secure clearance from the Registrar's Office, and have the form signed by the respective departments, prior to the issuance of the transfer of

credentials. In order to be eligible for a credit transfer/ course waiver, the transferring student must fulfill the following requirements:

- Minimum CGPA of 3.50 (or equivalent) from a government-recognized university.
- Complete at least 60% of their program at AIUB (requirement for convocation/ graduation).
- Credits/ Courses to be waived must be recommended by the concerned Faculty/ Course Equivalency Assessment Committee and approved by the Waiver Committee

Discontinuation of Studies

A discontinuation of studies may occur either upon the issuance of a transfer of credits (honorable dismissal) by the Office of the Registrar, for a justified cause or upon petition from the student, or upon an order of dismissal by the university on grounds of a major offense, specified in the code of conduct for students. If a student wishes to temporarily leave the university, they must acquire permission from the office, using the Leave of Absence Form, stating the definite period and reason for the leave. Failure to do so may result in the period of absence to be considered to exceed the time limit of maximum residency.

- Prior permission has to be obtained from the Registrar's Office in case of Discontinuance of studies for any reason or purpose. Such discontinuation of studies will be termed as "Leave of Absence". The Leave of Absence Form must be filled out stating the specific reason. Otherwise, the period of absence shall be counted against the student and an absence of 2 (two) consecutive semesters without prior approval will lead to cancellation of his/her studentship from the University.
- At the time of rejoining, the student will be subjected to the new/updated policies (if any) regarding the academic curriculum, tuition fees, graduation requirements, etc.
- Students once terminated due to probation, disciplinary or any other reason cannot apply for new admission or readmission.
- Degree/certificate obtained by the student prior to the admission at AIUB, must be from an institution approved by the government authorities (as applicable).

Examination Guidelines

- Students must wear their IDs properly, ensuring its visibility during the examinations.
- Students must have their examination permit with them in order to sit for the exams – 'no permit, no exam' policy is strictly maintained.

- Students must ensure that the invigilator signs the exam permit during the examination period.
- Students must place all belongings (backpacks and handbags) besides the permitted materials (stationeries) in front of the examination room.
- Students must enter the examination room 15 minutes prior to the examination. Students arriving late (by more than 1 hour of the allotted time duration of the exam) may not be allowed to take the examination.

Latecomers may be allowed to take the examination provided they will not extend the examination time limit and will not be provided any additional time for the exam.

- Cheating of any kind is strictly prohibited during the examinations, punishable with a cancellation of the examination, F grade, with the warranted action of the disciplinary violation.
- Students are not allowed to leave the room while the exam is ongoing. Students must tend to their personal needs before entering the room and beginning the examination.
- Students must sign the attendance sheet for every examination.
- Students must switch off all their cellphones during the examination.
- Students are only allowed to use scientific calculators in the examinations. The use of any other digital/programmable device is strictly prohibited.
- Examination rooms are assigned by the Exam Control Office.

Appeal of Course Grade

Any student who wishes to appeal the final grade of a course must first contact the respective course instructor, to resolve the issue amicably. If the student then still believes that s/he has been inappropriately evaluated in the course by the instructor, s/he may submit a written request to the Controller of Examinations, to review the process by which the grade was determined and facilitate a mutual settlement between the student and course instructor. If the matter still remains unresolved, the student may then submit a written application addressed to the Vice Chancellor, requesting a review of the matter. The Vice Chancellor may then assess the situation and provide a written decision, which will be considered as the final verdict of the case. The procedure must take place within a week of the grades being issued.

Students' Code of Conduct

Students' Code of Conduct Students are expected to abide by the rules and regulations of the university. Any violations of the code of conduct may be considered as a major or minor offense. A minor offense may result in a reprimand, verbal or written warning, while a major offense may result in a suspension or termination from the university. The assigned disciplinary committee shall determine the severity of the offense and ascertain the appropriate action to be taken against the student for misconduct and/or disciplinary violation. The AIUB administration reserves the right to take any action deemed appropriate, ranging from show cause, suspend, put on probation to even terminate enrollment, for any disciplinary violation or misconduct, in relation to the university, its code of conduct, and goodwill, under but not limited to the following circumstances:

- Involvement in any political groups/ activities inside the university or groups banned by the Government of Bangladesh or activities subversive to the nation/government/society/ university.
- Forming student organization without prior approval from the Office of Student Affairs.
- Failure to meet the financial obligations on schedule.
- Any subversive act against the State or the University.
- Having any previous criminal records.
- Involvement in any kind of verbal or physical act of violence towards any fellow student, employee or authority inside the campus.
- Involvement in any kind of direct, offensive or derogatory textual or graphical comment made regarding the university or any one from the AIUB managements, faculty members, officials, students in social media, web blogs, web groups, etc.
- Adopting any unfair means in any examination.
- Hiding information at the time of admission/verification.

Please note – This is not an exhaustive list of disciplinary violations or misconduct; it is just meant to serve as a guideline for the various kinds of issues that may warrant necessary action against the student committing the offence.

- Any student who has any disciplinary record will not be eligible for any kind of Scholarship, Academic Honor, or Award.
- Explanation of the Disciplinary Decisions

Drop - Student found guilty of the relevant disciplinary violation or misconduct may be dropped from the particular examination or course for the semester

Suspension - Student found guilty of the relevant disciplinary violation or misconduct may be suspended from the university. The timeframe for the suspension will be decided by the Disciplinary Committee, during which the student is not allowed to enter the campus premises or participate in any academic or co-curricular activities.

Termination - Student found guilty of the relevant disciplinary violation or misconduct may be terminated from the university, cancelling their enrollment, in which case the student is not permitted to seek re-admission.

Appeal - Students found guilty of the relevant disciplinary violation or misconduct, where a decision has been made by the Disciplinary Committee, may submit an application in order to appeal their case for reconsideration, provided there are legitimate grounds and valid reasons for doing so. The student may only appeal their disciplinary case once in a semester, with a limitation not exceeding 2 appeals, which if denied, nullifies the option for any further appeals.

Dressing & Grooming

All students at AIUB are expected to be well-groomed, in order to be presentable as representatives of the institution at all times. Students should be dressed properly, maintaining decency whenever they are representing the university, on or off campus. Inappropriate or informal attire like tattered jeans, short pants, skirts, slippers, etc. that may be considered as suggestive/provocative are strictly prohibited. The AIUB administration reserves the right to show cause, suspend, put on probation or even terminate enrollment of any student if the student fails to comply with the following:

- Male and Female students must be decently attired inside the campus premise. Any indecent dressing that leads to controversy or discomfort to the faculty members/ officials/ other students may be considered as disciplinary violation.
- Male students must wear closed shoes inside the campus.
- Students must wear their valid student ID at all times inside the campus attached to the correct colored ribbon as per their faculty hanging from their neck. Student ID must be visible at all times inside the campus.

Academic Scholarship/Discount [General and Alumni] Policy

In order to receive Academic Scholarship/Grant from the university, a student must fulfill the following requirements.

- Merit Based Scholarship for Freshman Student

The applicant must have:

- GPA 5.00 (Golden) or GPA 5.00 in SSC and HSC
- (Five) ‘A’ in O-Level (at a time) and 2 (two) ‘A’ in A-Level (at a time) ; no grade lower than ‘B’

An applicant fulfilling all the above criterion must sit for a Scholarship Exam and has to pass with Satisfactory Grade (the Acceptable Passing Grade may vary from time to time and will be decided by the authority) in order to be a recipient of academic Scholarship/Grant. The number of recipients may vary from time to time and the Award of Scholarship depends on the availability of slots.

- Academic Scholarship for Regular Student

The applicant:

- must have completed two (2) regular semesters (Spring or Fall)
- must have applied only in a regular semester
- must be a Regular Full Time Student
- must have a CGPA of 3.75 or above with no ‘Fail’ (F), no ‘Incomplete’ (I), no ‘Withdrawn’ (W), no ‘Unofficial Withdrawn’ (UW) grade, or no Retake of course(s)
- must not have grade lower than ‘B’ [undergraduate program] / ‘B+’ [graduate program] in any academic period
- must have an attendance of more than 80% at all times.
- The number of recipients may vary from time to time, and the Award of Scholarship depends on the availability of slots.

- Scholarship Grant for National Talent recipients of this Grant are selected by the AIUB Administration.

Note: However, the decision to extend scholarships to any individual student remains at the Complete Discretion of the university authority.

- Renewal of Grant

Recipient of any of the Academic Scholarship/Grant or Tuition Fee Waiver mentioned above has to comply with the underlying rules consistently. The student:

- Must be enrolled in all academic courses during the preceding and subsequent semesters
- Must not have any disciplinary record
- Must have a CGPA of 3.75 or above with no 'Fail' (F), no 'Incomplete' (I), no 'Withdrawn' (W), no 'Unofficial Withdrawn' (UW) grade, or no Retake of course(s)
- Must not have grade lower than 'B' [undergraduate program] / 'B+' [graduate program] in any academic period
- Must have an attendance of more than 80% at all times.
- **Note:** In case a student is eligible of more than one scholarship/ discount, only one scholarship/ discount will be applicable; whichever is higher.

Dean's List

Dean's List Criteria (Undergraduate Program)

1. Minimum Grade Point Average (GPA) 3.75 during any Regular Academic Semester.
2. Eligibility: Minimum Credit Hours completed 24.
3. Minimum Credit Load during that Semester 14/15 Credit Hours.
4. No Grade Point (GP) less than 3.25 in any course in previous record.
5. No F, no W, no UW or no I grade in any course in previous record.
6. No disciplinary action has been taken for not complying with AIUB policy.

Dean's Honorable Mention Criteria (Graduate Program)

1. Minimum Grade Point Average (GPA) 3.85 during any Regular Academic Semester.
2. Minimum total load completed 18 Credit Hours.
3. Minimum Credit Load during that Semester 12 Credit Hours.
4. No Grade Point (GP) less than 3.25 in any course in previous record.
5. No F, no W, no UW or no I grade in any course in previous record.
6. No disciplinary action has been taken for not complying with AIUB policy.

Graduation (Academic Honors and Awards)

UNDERGRADUATE (Minimum CGPA for Graduation: 2.50 on a scale of 4.00)

Academic Honors	CGPA	Qualifications
Cum Laude (Bronze Medal)	3.65 - 3.79	1. Must be a *regular full-time student 2. No grade lower than B, No I, W, UW, F, No Retake
Magna Cum Laude (Silver Medal)	3.80 - 3.94	3. No Dropping 4. Any kind of withdrawal will not be considered.
Summa Cum laude (Gold Medal)	3.95 - 4.00	5. Minimum Credit earned at AIUB must be > 60% 6. SSC/HSC GPA must be > or = to 4.00. O/A level grades must not be lower than B. GED must be more than 70% 7. No break in the period of study at AIUB 8. Applicants must be free from any kind of Disciplinary Action.

GRADUATE (Minimum CGPA for Graduation: 2.50 on a scale of 4.00)

Academic Honors	CGPA	Qualifications
Cum Laude (Bronze Medal)	3.75 - 3.84	1. Must be a *regular full-time student 2. No grade lower than B+, No I, W, UW, F, No Retake
Magna Cum Laude (Silver Medal)	3.85 - 3.94	3. No Dropping
Summa Cum laude (Gold Medal)	3.95 - 4.00	4. Any kind of withdrawal will not be considered. 5. No third division in all previous academic records. 6. Minimum Credits earned at AIUB must be \geq 70% 7. No break in the period of study at AIUB 8. Applicants must be free from any kind of Disciplinary Action.

Chancellor's Award: The Chancellor's Award is awarded in recognition of the academic performance, to graduates who have attained the highest academic standing (Summa Cum Laude), with a strong academic background (first class all throughout), displaying high moral character, demonstrating positive personal attributes, displaying outstanding potential and excellence through their participation in co-curricular activities. Applicants must not have any record of disciplinary violations or misconduct. Only one student from each program (Undergraduate, Graduate, Professional) is presented with the coveted award.

VICE CHANCELLOR’S AWARD: The Vice Chancellor’s award is awarded for the meritorious effort for the completion of:

- Best Thesis for LLB, BSc in CSE, MDS, MPH, and MSCS
- Best ‘Design Project’ for BSc in EEE and IPE, BArch, MEEE, and MTEL
- Best ‘Internship Report’ for BA, BSS, BBA, and MBA

Dr. Anwarul Abedin’s Leadership AWARD (formerly known as the Chairman’s Award): This Leadership Award is presented to deserving students in recognition of the outstanding voluntary efforts, exemplary performance, and noteworthy achievements and contributions in the various categories of co-curricular activities. The student must be a *regular student and with a minimum CGPA is 3.20 on a scale of 4.00.

Convocation and Awarding of Graduation Certificate

According to the constitution of Bangladesh, and the Private University Act – 2010 (Section 30), His Excellency the President of the Country is the Chancellor of all universities of Bangladesh. The Honorable Chancellor confers the respective degrees on all eligible students who successfully comply with all the requirements in a convocation ceremony. The convocation ceremony is held annually on a date with the consent and approval of the Honorable Chancellor.

A provisional certificate is issued to a student until the convocation ceremony is officially held. This provisional certificate is considered as the supplement to the main degree (graduation) certificate.

Once the convocation ceremony is held, the degree (graduation) certificate is issued to all the graduates who were enlisted in the convocation ceremony.

AIUB CODE OF CONDUCT FOR STUDENT OR DISCIPLINARY PROCEDURES FOR STUDENTS

PREAMBLE

Whereas the American International University-Bangladesh (AIUB) (hereinafter, the University) is dedicated to the promotion of a scholarly and professional environment in which intellectual pursuit, ethical conduct, and personal development are fostered for the benefit of the entire university community; and

Whereas AIUB seeks to instill in its students a profound sense of integrity, respect for the rights and dignity of others, accountability, and adherence to standards that contribute positively to the university and the greater society; and

Whereas it is imperative that a structured code of conduct be established to guide the behavior of students in all aspects of university life, both within and beyond the campus boundaries, and to ensure a supportive environment conducive to academic achievement, personal growth, and community welfare; and

Whereas the University acknowledges the rights of students to freedom of expression, as guaranteed under Article 39 of the Constitution of the People's Republic of Bangladesh, which encompasses the freedom of thought and speech, while also understanding that such freedoms shall be exercised responsibly and in alignment with respect for others' rights and the public order.

Whereas the actions of each student reflect not only their individual character but also on the reputation, values, and collective identity of AIUB as an institution committed to ethical and academic standards of the highest caliber.

Now, therefore, in furtherance of AIUB's mission to cultivate an atmosphere of mutual respect, professionalism, and academic rigor, and to safeguard the rights, safety, and well-being of all individuals within the university community, this Code of Conduct is hereby established, adopted, and promulgated as binding upon all AIUB students.

The provisions herein serve as a directive to ensure compliance with university values and to promote a cohesive environment where students, faculty, staff, and stakeholders collaborate in the shared pursuit of excellence, fairness, and the advancement of knowledge. By adhering to this Code, students of AIUB affirm their commitment to the principles of respect, integrity, and responsibility, recognizing that these values are essential to their roles as scholars, future professionals, and responsible citizens.

1. JURISDICTION AND APPLICATION

This Code of Conduct applies to all students enrolled at the university, including those engaged in part-time, full-time, and distance learning programs. The Code encompasses behaviors both within the university's physical premises and in all contexts that may impact the university community and its reputation. By adhering to this Code, students affirm their commitment to AIUB's values and standards, understanding that their conduct is reflective not only of their individual character but also of the integrity of the university as a whole. This includes, but is not limited to:

- 1.1.** All behaviors, interactions, and activities that occur within the university's premises, including classrooms, libraries, laboratories, common areas, and all AIUB facilities.
- 1.2.** Conduct during university-related events held outside the campus, such as internships, fieldwork, study tours, conferences, competitions, and any university-recognized events.
- 1.3.** Any behavior in digital or online platforms associated with AIUB, including university email, learning management systems, social media groups organizations or endorsed by AIUB, and any online conduct that may affect the university community's well-being or reputation.
- 1.4.** Actions or conduct by students when representing AIUB in any official capacity, whether as part of academic, extracurricular, or external university-sponsored activities.
- 1.5.** Conduct outside the university that, though not directly connected to AIUB, has the potential to adversely impact the safety, integrity, or reputation of the AIUB community or its members.

2. GUARANTEE OF FUNDAMENTAL RIGHTS AND FREEDOMS

In support of an inclusive, fair, and respectful environment, American International University-Bangladesh (AIUB) recognizes and upholds the following rights and freedoms for all students, as integral to their personal, academic, and social development:

- 2.1.** AIUB affirms the right of students to express their ideas, opinions, and beliefs, both within academic settings and through university-sponsored platforms, as part of a commitment to intellectual freedom and open dialogue. This freedom shall be exercised in a respectful manner, with regard for the rights and dignity of others, and within the framework of

university policies, national laws, and public order, as referenced under Article 39 of the Constitution of the People's Republic of Bangladesh.

- 2.2. Students have a right to privacy in their personal information and communications. AIUB is committed to safeguarding students' data in accordance with applicable laws and institutional policies. Except where legally or administratively mandated, students' private information shall not be disclosed without their consent.
- 2.3. AIUB encourages academic freedom, allowing students to pursue intellectual inquiry, express scholarly opinions, and participate freely in academic discourse. This freedom includes the right to engage in research, explore diverse perspectives, and challenge prevailing ideas within the framework of respect and ethical standards set forth by the university.
- 2.4. Every student has the right to equal access to university facilities, programs, and resources, free from discrimination on the basis of race, religion, gender, disability, nationality, age, or any other status protected under national or university policies. AIUB strives to maintain an inclusive environment that respects the diversity of its student body.
- 2.5. AIUB is committed to providing a safe and secure learning environment. Students have the right to access health and safety resources, report safety concerns, and expect that reasonable measures will be taken to protect their well-being on campus and during university-sponsored activities.
- 2.6. In cases of alleged violations of this Code, students have the right to a fair, transparent, and impartial disciplinary process. This includes the right to be informed of allegations, to present their perspective, and to appeal decisions according to the established procedures of AIUB.

3. PROHIBITED MISCONDUCTS AND ACTIVITIES

3.1 Physical/Sexual Abuse/Violence

The university is committed to the safety and well-being of all its members and strives to maintain an environment free from violence. Physical abuse or violence includes, but is not limited to:

- a. Physical violence, such as beating, punching, kicking, or any form of aggressive physical contact with anyone within the university.
- b. Direct threats of violence, whether verbal, written, or through electronic messages.
- c. Intimidation through verbal, written, or electronic means.
- d. Deliberate obstruction or interference with any person's right to attend or participate in university functions.

- e. Reckless behavior that endangers or threatens the safety of any person(s).
- f. Intentional obstruction or interference with any person's right to attend or participate in university functions.
- g. Causing fear or apprehension using misrepresentation, misinformation, force, or coercion to solicit support, signatures, or participation in activities of a subversive nature or detrimental to the university's normal functioning.
- h. Any inappropriate conduct, language, or expression when interacting with any student, faculty, university officials, or staff.
- i. Passing any indecent or abusive or vulgar or lascivious language against any other student, teachers, non-teaching staff, officers, guests etc.
- j. Any behavior or gestures or clothing or acts or expression intended to tease or annoy any other student, teachers, non-teaching staff, officers, guests etc.
- k. Sexual harassment and obscenity in any form.
- l. Sexual advances, requests for sexual favors and other verbal or physical harassments of sexual nature.
- m. Promising favors in exchange of sexual conduct and any form of pleasure seeking from others.
- n. Verbal, non-verbal, mental, and/or physical harassment.
- o. Uploading of indecent pictures or making indecent and untruthful comments via any website like Facebook, twitter, messenger, email etc.

3.2 Bullying, Harassment, and Ragging

The university promotes a respectful and inclusive environment where bullying, harassment, and ragging are strictly prohibited. These behaviors include, but are not limited to:

- a. Physical, verbal, or cyberbullying causes mental or emotional harm.
- b. Harassment is based on race, gender, religion, nationality, disability, or other personal attributes.
- c. Initiation or ragging activities that pressure, humiliate, or endanger new students.
- d. Any behavior that creates a hostile, intimidating, or offensive academic or social environment for others.
- e. Distribution of offensive or derogatory content, whether verbal, written, or online.
- f. Engaging in stalking, unwanted contact, or excessive attention that intimidates others.

3.3 Cyber offences:

Cyber harassment refers to harassment using online and offline cyber platforms. This may occur through the use of various messengers, social media, text messaging, professional communication platforms, or derogatory websites to demean, insult, or harass an individual or group through personal or professional attacks. These behaviors include, but are not limited to:

- a. Usage of sexually explicit/double meaning/demeaning language in text messages
- b. Creating and spreading sexual memes/trolled pictures
- c. Posting dirty & sexual jokes on social media relating to someone's personal life or mentioning the person
- d. Sending dirty jokes or explicit contents (pictures/videos/animations/web-links) through text messages, MMS, online platforms
- e. Threatening someone through indirect (pictures/videos/stories/web-links) or messages or direct contents
- f. Usage of offensive and explicit means and words to cause mental harm
- g. Body shaming
- h. Spreading rumors through social media, text messages, or group threads
- i. Spreading someone's pictures without consent/ intentionally misinterpreting and discussing about her/his personal life
- j. Stalking someone to cause harm, and discomfort
- k. Hacking, invading or interfering with someone's personal or professional accounts is a major harassment and crime. It really does not matter whether any harm or occurrence was done as hacking itself is an offense.
- l. Hacking followed by leaking personal information or contents related to personal or professional life.
- m. Usage of different contents or performing different cyber acts to defame someone (i.e. changing someone's gender or name in social media profile by hacking her/his account)

3.4 Disruptive and Intolerable Behavior to Hinder University Activities/ Tarnish the Image of the University or University Personnel

Disruptive and intolerable behavior that interferes with university activities undermines academic progress and campus life. Such behaviors include, but are not limited to:

- a. Interrupting classes, meetings, or university functions with disruptive or loud behavior.

- b. Organizing unauthorized protests or demonstrations that obstruct academic or administrative operations.
- c. Refusing to follow instructions from university staff, faculty, or security in ways that obstruct teaching, learning, or official events.
- d. Refusing to comply with instructions or lawful requests made by university staff, faculty, or administrators.
- e. Providing false information, documents, or identification to university authorities.
- f. Misrepresenting oneself, one's qualifications, or affiliations within the university.
- g. Engaging in acts of dishonesty undermine university rules, procedures, or policies.
- h. Deliberately spreading misinformation to incite disruptions within the university community.
- i. Engaging in actions that prevent others from participating in university activities.
- j. Engaging in conduct that intentionally harms or degrades the university's reputation or its representatives.
- k. Spreading false or misleading information about the university or its staff, which may damage their reputation.
- l. Misuse or alteration or forgery of the University documents and records that include but are not limited to ID cards, University stationary, Letter Pads or Officer's name, seal or stamp etc.
- m. Recording, storage, sharing, distribution of images, videos or sound by any means without consent of owner is unauthorized recording and is strictly prohibited in the University.
- n. Walking, gathering or roaming in the University premises without justified causes at night after the designated office hours.

3.5 Smoking and Other Similar Activities

To promote health and safety, the university restricts smoking and similar activities on campus. Prohibited actions include, but are not limited to:

- a. Smoking tobacco, vaping, or using e-cigarettes outside designated smoking areas, if provided.
- b. Possessing or using tobacco products or other prohibited substances that compromise health and safety.

- c. Disregarding university policies regarding tobacco, vaping, or similar products on campus premises.
- d. Use, production, distribution, sale, possession or stashing of drugs which includes, but is not limited to, alcohol, marijuana, stimulants, narcotics, yaba etc.

3.6 Possession and/or use of Drugs/ Controlled Substances/ Weapons/Explosives

The university strictly prohibits the use, possession, and distribution of illegal drugs, controlled substances, weapons, explosives, or dangerous items on campus. Prohibited actions include, but are not limited to:

- a. Possessing, using, or distributing illegal drugs, controlled substances, or unauthorized prescription medications on campus.
- b. Being under the influence of drugs or controlled substances while on university premises or at university-sponsored events.
- c. Possessing explosive(s) or explosive material(s) such as bombs, cocktails, chemicals or anything in similar nature.
- d. Selling or offering controlled substances within the university community.
- e. Encouraging or coercing others to partake in drug use or other controlled substance abuse.
 - a. Possessing firearms, weapons, knives, clubs, explosives, or other weapons on university property.
 - b. Using or threatening to use any weapon or dangerous item to intimidate or harm others.
 - c. Bringing unauthorized hazardous materials, such as fireworks or chemicals, onto campus.
 - d. Any conduct that involves a dangerous item and poses a risk to the safety of the university community.

3.7 Property Damage/Theft/Other Criminal Activities

The university upholds respect for property and facilities. Property damage includes, but is not limited to:

- a. Deliberately or recklessly damaging university property, including buildings, equipment, or resources.
- b. Defacing or vandalizing university assets, such as facilities, furniture, or artwork.
- c. Damaging or tampering with the personal property of students, faculty, or staff.
- d. Engaging in actions that result in financial losses due to property damage.

- e. Stealing, attempting to steal, or being in possession of stolen property on campus.
- f. Committing fraud, forgery, or financial deceit within university services or resources.
- g. Engaging in unauthorized use of university funds, materials, or resources for personal gain.
- h. Involvement in any criminal activity that poses risks to individuals or the university community.

3.8 Disobedience to Lawful Authority

- a. Disobedience, interference, resistance or failure to comply with the direction given by various Departments or University authorities.
- b. Trespassing and other forms of unauthorized presence
- c. Refusing to show the Identity Card to the University's Officers or security personnel on demand.
- d. Not complying with parking rules of the University.

3.9 Activities Subversive to the State and its Policy

The university maintains high standards for its reputation and expects students to respect this commitment. Prohibited actions include, but are not limited to:

- a. Participating in or promoting activities that contravene national laws or policies or encourage actions subversive to state policies.
- b. Using university resources or platforms for actions that violate public order or state integrity.

4. PUNISHMENTS AND PENALTIES

To uphold the standards outlined in this Code of Conduct, American International University-Bangladesh (AIUB) will enforce disciplinary actions against any student found in violation of the code. The severity of the punishment or penalty will reflect the nature and gravity of the misconduct, with a view to promoting corrective measures, protecting the university community, and deterring future violations. The following are potential penalties, ranging from warnings to permanent dismissal, based on the infraction and mitigating or aggravating circumstances:

4.1 Disciplinary Measures and Penalties

Disciplinary actions for violations of this Code of Conduct may include, but are not limited to:

4.1.1 Verbal or Written Warning: A verbal or written warning detailing the violation, an admonition to correct the behavior, and a statement of possible consequences for repeated misconduct.

4.1.2 Disciplinary Probation: The student is placed on probation for a specific period, during which any further violations may lead to more severe disciplinary actions. Restrictions may include limited access to campus resources or activities.

4.1.3 Suspension: Temporary removal from university privileges, attendance, and participation in classes or extracurricular activities. Duration of suspension may vary from one semester to a full academic year, depending on the violation's severity.

4.1.4 Expulsion: Permanent removal of the student from the university with no eligibility for readmission. Expulsion is enforced in cases where the misconduct severely jeopardizes the safety, integrity, or reputation of the university and its community.

4.1.5 Restitution or Compensation: Requirement to compensate for financial or property damage, either by repairing or replacing damaged items, reimbursing the cost, or fulfilling other reparative obligations. This may be enforced in conjunction with other penalties.

4.1.6 Loss of Privileges: Temporary or permanent restrictions on specific university privileges, such as participation in student clubs, eligibility for university-sponsored events, access to specific facilities, or use of certain university resources.

4.1.7 Community Service: As an educational and rehabilitative approach, assignment to community service within the university or with an approved organization for a set period. The purpose is to promote accountability and encourage positive contributions to the university environment.

4.1.8 Academic Penalties: The university may withhold transcripts, certificates, or other official documents until the student has complied with all disciplinary requirements, including payment of fines, completion of community service, or resolution of pending cases. This measure aims to ensure accountability and compliance with university policies prior to official document release.

4.1.9 Restriction from University Facilities or Areas: Banning or limiting access to certain areas or facilities, such as residence halls, laboratories, common areas, or classrooms, depending on the context of the infraction.

4.1.10 Confiscation of Prohibited Items: Confiscation of items found to be in violation of the code, followed by appropriate disciplinary action regarding possession or usage.

4.2 Aggravating and Mitigating Factors: In determining the appropriate disciplinary actions for a violation of the Code of Conduct, the university considers various aggravating and mitigating factors. These factors serve to ensure that penalties are fair, consistent, and reflective of the individual circumstances surrounding each case. Disciplinary decisions consider various factors, including but not limited to:

- Aggravating factors: Prior Disciplinary Record, Intentionality and Malice, Impact on the Community, Violation of Safety and Security, Lack of Remorse or Accountability: Position of Authority or Influence, and Repeated Offenses.
- Mitigating factors: First-Time Offense, Demonstrated Remorse, Corrective Action Taken, Personal Circumstances, (e.g., mental health challenges, family emergencies), Positive Character References (community service, academic achievements, or leadership roles), Efforts to Reconcile and Impact of Disciplinary Action.

4.5 DISCIPLINARY ACTION PROCESS

To ensure a structured and fair application of disciplinary measures, the Proctor's Office manages the process for Code of Conduct violations. This office oversees the reporting, investigation, and resolution of cases to maintain university integrity and standards.

4.5.1 Any student, faculty, staff, or university affiliate may report a suspected violation either directly to the Proctor's Office or to the Assistant Proctor of the respective faculty. Reports should include the names of parties involved, details of the alleged incident, evidence (if available), and any witnesses.

4.5.2 Upon receiving the report, the Proctor's Office or the respective Assistant Proctor conducts a preliminary review to assess credibility and relevance to the Code of Conduct. For investigations involving specific faculties, the Proctor's Office may designate the Assistant Proctor of the relevant faculty to lead the investigation, ensuring contextually appropriate oversight.

4.5.3 The designated Assistant Proctor gathers evidence, interviews involved parties, and collects necessary documentation to conduct a thorough investigation. Findings are documented and submitted to the Proctor's Office. If further review is warranted, the Proctor's Office may form a Disciplinary Committee, which includes the Assistant Proctor, university representatives, and faculty members, to ensure a balanced review. The investigation and findings are thoroughly documented for transparency.

4.5.4 The Disciplinary Committee (if formed) or the Assistant Proctor evaluates all evidence and testimonies to determine if a violation occurred. If a violation is confirmed, the committee or the Assistant Proctor determines an appropriate penalty based on severity, the student's disciplinary record, and any mitigating circumstances. A report of findings and penalty recommendations is submitted to the Proctor, which may include monetary penalties, withholding of transcripts, probation, suspension, or expulsion. The Proctor's Office notifies the student of the decision, detailing the penalty, rationale, and any conditions for compliance.

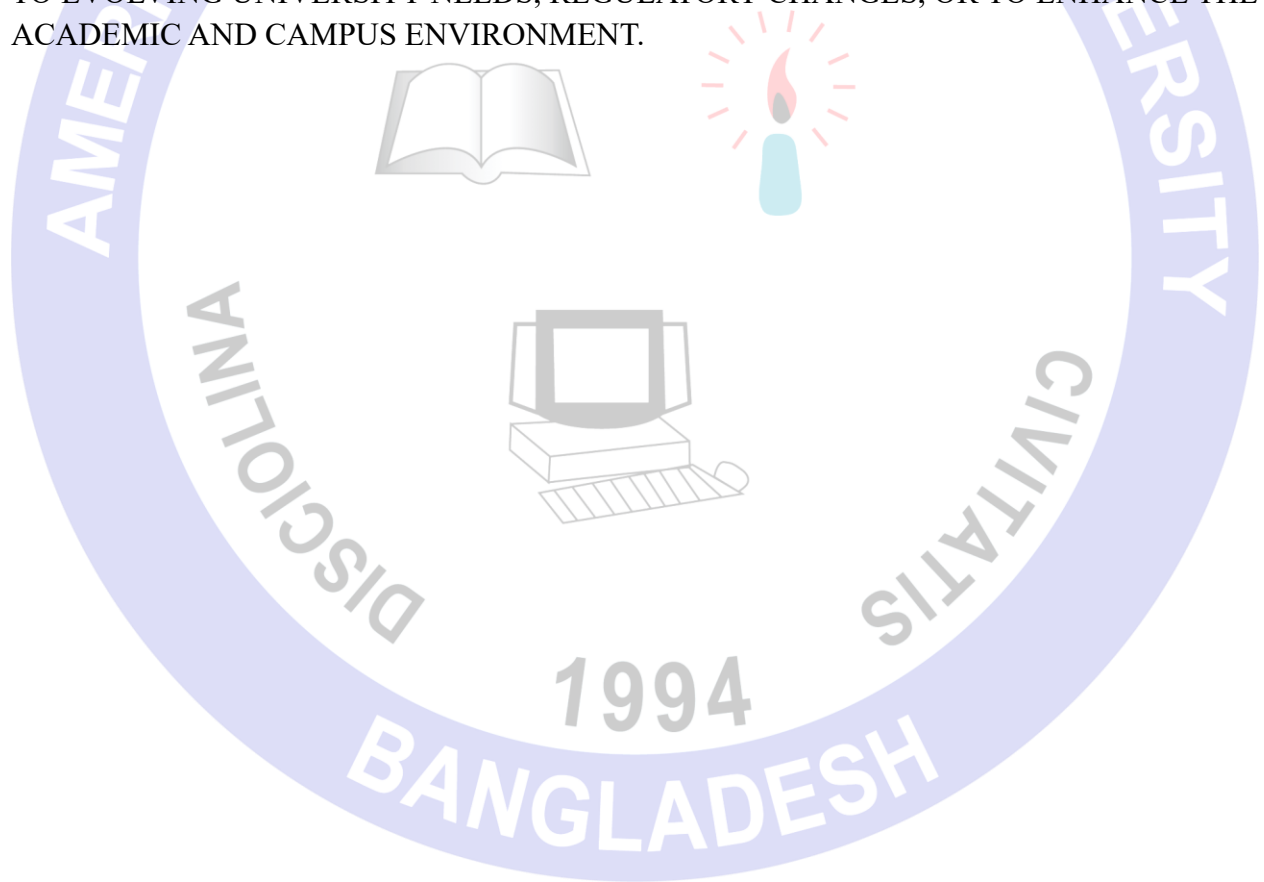
4.5.5 A student may file a formal appeal against the decision. The appeal must be submitted in writing to the Proctor within 3 working days of receiving the disciplinary decision. The appeal letter should include a statement of grounds, relevant supporting documents, and any new evidence if applicable. Based on the review, the Proctor may uphold the original disciplinary decision,

amend the penalty to better reflect the evidence and circumstances or dismiss the case if sufficient grounds are presented. The decision made by the Proctor following the appeal is final and binding, with no further opportunity for appeal within the university's disciplinary framework.

4.5.6 The Proctor's Office, along with the Assistant Proctor, oversees the implementation of penalties, including monetary fines, withholding of transcripts, and community service. Suspensions or expulsions are communicated to relevant departments. Collected fines may be allocated toward student services or welfare funds per university policy. Academic documents may be withheld until disciplinary requirements are met.

4.5.7 Upon successful completion of disciplinary requirements, the Proctor's Office may issue a completion certificate, confirming the student's return to good standing within the university.

THE UNIVERSITY (AIUB) RESERVES THE RIGHT TO MODIFY, AMEND, OR UPDATE THE CODE OF CONDUCT AND ANY RELATED POLICIES AS NECESSARY, TO RESPOND TO EVOLVING UNIVERSITY NEEDS, REGULATORY CHANGES, OR TO ENHANCE THE ACADEMIC AND CAMPUS ENVIRONMENT.



BACHELOR OF SCIENCE IN COMPUTER SCIENCE AND ENGINEERING (CSE)

Computer Science is not merely an academic discipline, but rather a driving force that propels innovation and technological advancement in today's digital era. At AIUB, the Department of Computer Science has continued to take the lead from the very initial years of university, nurturing the next generation of technology-rich leaders through a fine balance of theory and practice. The Department of Computer Science offers two degrees, namely - Bachelor of Science in Computer Science and Engineering and Master of Science in Computer Science. Under these two degrees, the department offers everything from novice courses that have basic foundations to advanced topics such as AI, cybersecurity, data science, and software engineering considering the global industry demands. Students learn not just about the theoretical but are field exposed to in state-of-the-art labs that are outfitted with cutting-edge computing systems along with necessary instruments to provide a smooth learning environment. And it's the aim of the department to keep these facilities up to date with the ever-evolving global IT scenario so that its students are ready to take up new challenges and lead from the front. The blend of experience that our highly experienced faculty have consists of academic and industry exposure and guides the student through future research concepts such as machine learning, blockchain, cloud computing, IoT, robotics, natural language processing, etc.

Whether aiming at higher studies or jumping straight into the tech industry, the Department of Computer Science at AIUB is a perfect breeding ground, mentorship, and opportunity to develop superb problem-solving capabilities along with a demand for future innovation.

BSc in Computer Science & Engineering (CSE) Curriculum

Semester 1

Code	Course Description	Prereq.	Credit
MAT1102	DIFFERENTIAL CALCULUS & CO-ORDINATE GEOMETRY	Nil	3
PHY 1101	PHYSICS 1	Nil	3
PHY 1102	PHYSICS 1 LAB	Nil	1
ENG1101	ENGLISH READING SKILLS & PUBLIC SPEAKING	Nil	3
CSC 1101	INTRODUCTION TO COMPUTER STUDIES	Nil	1
CSC 1103	INTRODUCTION TO PROGRAMMING LAB	Nil	1
CSC 1102	INTRODUCTION TO PROGRAMMING	Nil	3
		Total Credit	15

Semester 2

Code	Course Description	Prereq.	Credit
CSC1204	DISCRETE MATHEMATICS	MAT1102 & CSC1102	3
MAT1205	INTEGRAL CALCULUS & ORDINARY DIFFERENTIAL EQUATIONS	MAT1102	3
CSC1205	OBJECT ORIENTED PROGRAMMING 1	CSC1102 & CSC1103	3/LAB
PHY1203	PHYSICS 2	PHY1101	3
PHY1204	PHYSICS 2 LAB	PHY1102	1
ENG1202	ENGLISH WRITING SKILLS & COMMUNICATIONS	ENG1101	3
COE2101	INTRODUCTION TO ELECTRICAL CIRCUITS	PHY1101	3
COE2102	INTRODUCTION TO ELECTRICAL CIRCUITS LAB	PHY1102	1
Total Credit			20

Semester 3

Code	Course Description	Prereq.	Credit
CHEM1101	CHEMISTRY	PHY1203	3
MAT2101	COMPLEX VARIABLE, LAPLACE & Z-TRANSFORMATION	MAT1205	3
CSC2108	INTRODUCTION TO DATABASE	CSC1205	3/LAB
EEE2104	ELECTRONIC DEVICES LAB	COE2102	1
BBA1102	PRINCIPLES OF ACCOUNTING	MAT1205	3
EEE2103	ELECTRONIC DEVICES	COE2101	3
CSC2106	DATA STRUCTURE	CSC1204 & CSC120	3
CSC2107	DATA STRUCTURE LAB	CSC1204 & CSC1205	1
BAE2101	COMPUTER AIDED DESIGN & DRAFTING	Nil	1
Total Credit			21

Semester 4

Code	Course Description	Prereq.	Credit
CSC2211	ALGORITHMS	CSC2106	3/LAB
MAT2202	MATRICES, VECTORS, FOURIER ANALYSIS	MAT2101	3
CSC2210	OBJECT ORIENTED PROGRAMMING 2	CSC2106 CSC2108	3/LAB
CSC2209	OBJECT ORIENTED ANALYSIS AND DESIGN	CSC2108	3
BAS2101	BANGLADESH STUDIES	CSC1101	3
EEE3101	DIGITAL LOGIC AND CIRCUITS	EEE2103	3
EEE3102	DIGITAL LOGIC AND CIRCUITS LAB	EEE2104	1

MAT3103	COMPUTATIONAL STATISTICS AND PROBABILITY	MAT2101	3
		Total Credit	22

Semester 5

Code	Course Description	Prereq.	Credit
CSC3113	THEORY OF COMPUTATION	CSC2211	3
ECO3150	PRINCIPLES OF ECONOMICS	MAT3103	2
ENG2103	BUSINESS COMMUNICATION	BAS2101	3
MAT3101	NUMERICAL METHODS FOR SCIENCE AND ENGINEERING	MAT2202	3
COE3103	DATA COMMUNICATION	EEE3101 & EEE3102	3/LAB
COE3104	MICROPROCESSOR AND EMBEDDED SYSTEMS	EEE3101 & EEE3102	3
CSC3112	SOFTWARE ENGINEERING	CSC2209	3/LAB
		Total Credit	20

Semester 6

Code	Course Description	Prereq.	Credit
CSC3217	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM	CSC2211 & MAT3103	3/LAB
COE3206	COMPUTER NETWORKS	COE3103	3/LAB
COE3205	COMPUTER ORGANIZATION AND ARCHITECTURE	COE3104	3/LAB
CSC3214	OPERATING SYSTEM	CSC2211 & COE3104	3/LAB
CSC3215	WEB TECHNOLOGIES	CSC3112	3/LAB
EEE2216	ENGINEERING ETHICS	CSC3112 & COE3104	2
CSC3216	COMPILER DESIGN	CSC3113	3/LAB
		Total Credit	20

Semester 7

Code	Course Description	Prereq.	Credit
CSC4118	COMPUTER GRAPHICS	CSC2211 & MAT2202	3/LAB
CSC****	COS ELECTIVE 1	Nil	3
MGT3202	ENGINEERING MANAGEMENT	EEE2216	3
CSC4197	RESEARCH METHODOLOGY	100 Credits	3
CSC#####	CSE MAJOR 1	Nil	3
CSC#####	CSE MAJOR 2	Nil	3
CSC#####	CSE MAJOR 3	Nil	3
		Total Credit	21

Semester 8

Code	Course Description	Prereq.	Credit
CSC4299	THESIS	CSC4197	3
CSC****	COS ELECTIVE 2	Nil	3
CSC4296	INTERNSHIP	139 Credits	3
		Total Credit	9

Grand Total = 148 Credits

CSE ELECTIVES

Major in Information Systems

Code	Course Description	Prereq.	Credit
CSC4181	ADVANCE DATABASE MANAGEMENT SYSTEM	CSC2108	3/LAB
MIS3101	MANAGEMENT INFORMATION SYSTEM	CSC3112	3
MIS4011	ENTERPRISE RESOURCE PLANNING	MIS3101 & CSC3112	3
CSC4285	DATA WAREHOUSE AND DATA MINING	CSC2211 & MAT3103	3
CSC4182	HUMAN COMPUTER INTERACTION	CSC3217 & CSC3215	3
MIS4014	BUSINESS INTELLIGENCE AND DECISION SUPPORT SYSTEMS		3
CSC4180	INTRODUCTION TO DATA SCIENCE		3
CSC4183	CYBER LAWS & INFORMATION SECURITY		3
MIS4007	DIGITAL MARKETING		3
MIS4012	E-COMMERCE, E-GOVERNANCE & E-SERIES		3

Major in Software Engineering

Code	Course Description	Prereq.	Credit
CSC4270	SOFTWARE DEVELOPMENT PROJECT MANAGEMENT	CSC3112	3
CSC4160	SOFTWARE REQUIREMENT ENGINEERING	CSC3112	3
CSC4271	SOFTWARE QUALITY AND TESTING	CSC3112	3
CSC4162	PROGRAMMING IN PYTHON	CSC3215	3/LAB
CSC4274	VIRTUAL REALITY SYSTEMS DESIGN	CSC2210	3
CSC4163	ADVANCE PROGRAMMING WITH JAVA	CSC3215	3/LAB
CSC4164	ADVANCED PROGRAMMING WITH .NET	CSC3215	3/LAB
CSC4161	ADVANCED PROGRAMMING IN WEB TECHNOLOGY	CSC3215	3/LAB
CSC4272	MOBILE APPLICATION DEVELOPMENT	CSC3215	3/LAB

CSC4273	SOFTWARE ARCHITECTURE AND DESIGN PATTERNS	CSC3112	3
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Major in Computational Theory

Code	Course Description	Prereq.	Credit
CSC4125	COMPUTER SCIENCE MATHEMATICS	CSC2211 & MAT3101	3
CSC4126	BASIC GRAPH THEORY	CSC2211	3
CSC4127	ADVANCED ALGORITHM TECHNIQUES	CSC3217	3/LAB
CSC4233	NATURAL LANGUAGE PROCESSING	CSC3217 & CSC4162	3
CSC4128	LINEAR PROGRAMMING	CSC3217 & MAT3103	3/LAB
CSC4231	PARALLEL COMPUTING	CSC3217	3
CSC4232	MACHINE LEARNING	CSC3217	3

Major in Computer Engineering

Code	Course Description	Prereq.	Credit
BAE1201	BASIC MECHANICAL ENGG.	PHY1203	3
EEE3103	DIGITAL SIGNAL PROCESSING	EEE2213	3
EEE4217	VLSI CIRCUIT DESIGN	EEE 3101 & EEE 3102	3
EEE2213	SIGNALS & LINEAR SYSTEM	MAT2202	3
COE4128	DIGITAL SYSTEM DESIGN	COE3205	3
COE4231	IMAGE PROCESSING	CSC4118 & EEE2213	3
COE4129	MULTIMEDIA SYSTEMS	CSC3215	3
COE4230	SIMULATION & MODELING	CSC3217	3/LAB
COE4126	ADVANCED COMPUTER NETWORKS	COE3206	3/LAB
COE4234	COMPUTER VISION AND PATTERN RECOGNITION	CSC4118	3
COE4232	NETWORK SECURITY	COE3103	3
COE4125	ADVANCED OPERATING SYSTEM	CSC3214	3/LAB
EEE4233	DIGITAL DESIGN WITH SYSTEM [VERILOG, VHDL & FPGAS]	EEE4217	3
COE4235	ROBOTICS ENGINEERING	CSC3217	3
EEE4209	TELECOMMUNICATIONS ENGINEERING	COE3103	3
COE4127	NETWORK RESOURCE MANAGEMENT & ORGANIZATION	COE3103	3
COE4233	WIRELESS SENSOR NETWORKS	COE3103	3/LAB
EEE4241	INDUSTRIAL ELECTRONICS, DRIVES & INSTRUMENTATION	EEE3101	3/LAB

BACHELOR OF SCIENCE IN DATA SCIENCE

Data Science is becoming the all-powerful lens through which the modern world understands and leverages information. The Department of Data Science at AIUB is a modern hub for the data-driven-empowerment of decision-making-creating professionals who are analytic by skill and insightful by strength. Currently, the department offers a Bachelor of Science in Data Science degree that covers the entire spectrum of data analytics training, from the basics such as statistics and programming, to the latest fields of study like machine learning, big data analytics, deep learning, and artificial intelligence, which the department changes continually to keep pace with the highly volatile and ever-changing global data market. Notably, the students are not book-bound. They have practical training in specialized labs with industry-standard tools and platforms for processing, visualizing, and interpreting large-scale data. With a vision to keep abreast of all modern data technologies, the department also wants its graduates to be able to identify complex data challenges and make a significant impact across sectors.

The academician at the department uniquely interweaves academic research and hands-on practical knowledge in the field of data and technology while mentoring students in predictive modeling, data mining, data ethics, business intelligence, and cloud data engineering. Whether students wish to continue on to graduate studies or directly into careers as a data analyst, data scientist, or data engineer, the Department of Data Science at AIUB creates an environment, provides mentorship, and furnishes tools needed for the students to form a mindset about the future in the age of data.

BSc in Data Science (DS) Curriculum

Semester 1

Code	Course Description	Prereq.	Credit
CSC1101	INTRODUCTION TO COMPUTER STUDIES		1
CSC1102	INTRODUCTION TO PROGRAMMING		3
CSC1103	INTRODUCTION TO PROGRAMMING LAB		1
MAT1102	DIFF CALCULUS AND COORDINATE GEOMETRY		3
PHY1101	PHYSICS 1		3
PHY1102	PHYSICS 1 LAB		1
ENG1101	ENGLISH READING SKILLS & PUBLIC SPEAKING		3
BAS2101	BANGLADESH STUDIES		3
		Total Credits	18

Semester 2

Code	Course Description	Prereq.	Credit
BSE1201	OBJECT ORIENTED PROGRAMMING 1 (JAVA)	CSC1102, CSC1103	3
CSC1204	DISCRETE MATHEMATICS		3
BBA1102	PRINCIPLES OF ACCOUNTING		3
MAT1205	INTEGRAL CALCULUS & ORD. DIFF EQUATION	MAT1102	3
CSC1205	DATA STRUCTURE	CSC1102, CSC1103	3
CSC1206	DATA STRUCTURE LAB	CSC1102, CSC1103	1
ENG1202	ENGLISH WRITING SKILLS & COMMUNICATIONS [CS/ENGG]	ENG1101	3
		Total Credits	19

Semester 3

Code	Course Description	Prereq.	Credit
BDS2102	INTRODUCTION TO DATA SCIENCE	CSC1205, CSC1206	3
BDS2101	INTRODUCTION TO DATABASE	CSC1205, CSC1206	3
ECO3150	PRINCIPLES OF ECONOMICS		2
CSC2107	ALGORITHMS	CSC1205, CSC1206	3
MAT2101	COMPLEX VARIABLE, LAPLACE & Z- TRANSFORMATION	MAT1205	3
BSE3106	OBJECT ORIENTED PROGRAMMING 2	BSE1201, BDS2101	3
BSE2102	OBJECT ORIENTED ANALYSIS AND DESIGN	BDS2101	3
		Total Credits	20

Semester 4

Code	Course Description	Prereq.	Credit
NE2204	WEB TECHNOLOGIES	BSE1201	3
CNE2202	OPERATING SYSTEMS	CSC2107	3
BSE2203	SOFTWARE ENGINEERING	BSE2102	3
MAT3103	COMPUTATIONAL STATISTICS AND PROBABILITY	MAT2101	3
MAT2202	MATRICES, VECTORS, FOURIER ANALYSIS	MAT2101	3
BDS2203	DATA PROCESSING	BDS2102	3
		Total Credits	18

Semester 5

Code	Course Description	Prereq.	Credit
COE3205	COMPUTER ORGANIGATION & ARCHITECTURE	CNE2202	3

CSC3210	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM	CSC2107, MAT3103	3
MAT3101	NUMERICAL METHODS FOR SCIENCE AND ENGINEERING	MAT2202	3
ENG2103	BUSINESS COMMUNICATION [CS/ENGG]	BAS2101	3
BDS3104	DATA PRIVACY, SECURITY AND PROTECTION	BDS2203	3
BDS3105	STATISTICAL AND DATA ANALYSIS	BDS2203, MAT3103	3
BDS3208	DATA VISUALIZATION	BDS2203	3
		Total Credits	21

Semester 6

Code	Course Description	Prereq.	Credit
BDS4110	DATA WAREHOUSING AND DATA MINING [CS]	BDS2101, CSC3210	3
0	DS MAJOR 1	1 Credits	3
0	DS MAJOR 2		3
CNE3213	INTRODUCTION TO NETWORK ENGINEERING	CNE2202	3
CNE3214	INTRODUCTION TO NETWORK ENGINEERING LAB	CNE2202	1
BDS3106	PROGRAMMING FOR DATA SCIENCE	BSE1201	3
BDS3207	ETHICS IN DATA SCIENCE & ENGINEERING	BDS3104	3
		Total Credits	19

Semester 7

Code	Course Description	Prereq.	Credit
CSC4197	RESEARCH METHODOLOGY	100 Credits	3
BSE4112	PROGRAMMING IN PYTHON	BSE1201	3
0	DS MAJOR 3		3
BDS4109	BIG DATA ARCHITECTURE	BDS3208	3
BDS4112	MACHINE LEARNING & EXPERT SYSTEMS	CSC3210	3
0	DS MAJOR 4		3
0	DS MAJOR 5		3
		Total Credits	21

Semester 8

Code	Course Description	Prereq.	Credit
CSC4299	INTERNSHIP	140 Credits	3
CSC4298	PROJECT & THESIS	CSC4197	3
0	DS ELECTIVE 1		3
0	DS ELECTIVE 2		3
		Total Credits	12

Grand Total = 148 credits

DATA SCIENCE ELECTIVES

General Elective

Code	Course Description	Prereq.	Credit
BDS4113	ADVANCE DATABASE MANAGEMENT SYSTEM	136 Credits	3
BDS4214	NATURAL LANGUAGE PROCESSING		3
BDS4315	DEEP LEARNING		3
BDS4316	SOCIAL COMPUTING AND DATA ANALYTICS FOR BUSINESS		3
BDS4317	EMERGING TECHNOLOGIES IN DATA SCIENCE		3
BDS4220	ADVANCE TOPICS IN DATA SCIENCE		3

Major In Computing

Code	Course Description	Prereq.	Credit
CSC3208	THEORY OF COMPUTATION		3
CSC3209	COMPUTER GRAPHICS		3
CSC4111	COMPILER DESIGN		3
CSC4115	COMPUTER SCIENCE MATHEMATICS		3
CSC4112	BASIC GRAPH THEORY		3
CSC4113	ADVANCED ALGORITHM TECHNIQUES		3
CSC4114	LINEAR PROGRAMMING		3
CSC4216	PARALLEL COMPUTING		3
CSC4218	HUMAN COMPUTER INTERACTION		3
COE4231	IMAGE PROCESSING		3
COE4234	COMPUTER VISION AND PATTERN RECOGNITION		3
CSC4220	ADVANCED TOPICS IN COMPUTING [CS]		3

Major In Software Engineering

Code	Course Description	Prereq.	Credit
BSE3104	SOFTWARE REQUIREMENT ENGINEERING		3
BSE3105	SOFTWARE ARCHITECTURE AND DESIGN PATTERNS		3
BSE3207	MOBILE APPLICATION DEVELOPMENT		3
BSE3208	SOFTWARE QUALITY AND TESTING		3
BSE4109	SOFTWARE DEVELOPMENT PROJECT MANAGEMENT		3
BSE4110	SOFTWARE PROJECT		3
BSE4111	ADVANCED PROGRAMMING IN WEB TECHNOLOGY		3
BSE4112	PROGRAMMING IN PYTHON		3
BSE4113	ADVANCE PROGRAMMING WITH JAVA		3
BSE4114	ADVANCED PROGRAMMING WITH .NET		3
BSE4215	VIRTUAL REALITY SYSTEMS DESIGN		3

BSE4216	METAVVERSE TECHNOLOGY		3
BSE4220	ADVANCE TOPICS IN SOFTWARE ENGINEERING		3

Major In Computer Architecture

Code	Course Description	Prereq.	Credit
COE4128	DIGITAL SYSTEM DESIGN		3
EEE4241	INDUSTRIAL ELECTRONICS, DRIVES & INSTRUMENTATION		3
COE4129	MULTIMEDIA SYSTEMS		3
COE4235	ROBOTICS ENGINEERING		3
EEE4217	VLSI CIRCUIT DESIGN		3
EEE4233	DIGITAL DESIGN WITH SYSTEM [VERILOG, VHDL & FPGAS]		3
COE2166	DIGITAL LOGIC & ELECTRONICS		3
COE4220	ADVANCE TOPICS IN COMPUTER ARCHITECTURE		3
COE2166	DIGITAL LOGIC & ELECTRONICS		3
COE4220	ADVANCE TOPICS IN COMPUTER ARCHITECTURE		3

Major In Network Engineering

Code	Course Description	Prereq.	Credit
CNE2101	DATA COMMUNICATION		3
CNE2203	COMPUTER NETWORKS		3
CNE3106	SECURE NETWORK SYSTEMS DESIGN AND MANAGEMENT		3
CNE3107	ADVANCED COMPUTER NETWORKS		3
CNE3211	ETHICAL HACKING AND NETWORK DEFENSE		3
CNE3212	DISASTER RECOVERY		3
CNE4116	INFORMATION SYSTEM SECURITY PLANNING, DESIGN AND INCIDENT RESPONSE		3
CNE4117	INFORMATION SYSTEM AUDITING		3
CNE4118	PROJECT MANAGEMENT IN IT SECURITY		3
CNE4219	NETWORK SECURITY		3
CNE4220	NETWORK RESOURCE MANAGEMENT & ORGANIZATION		3
CNE4221	CRYPTOGRAPHY		3
CNE4222	SIMULATION & MODELING		3
CNE4223	ADVANCE OPERATING SYSTEM		3
CNE4224	WIRELESS SENSOR NETWORKS		3
EEE2213	SIGNAL & LINEAR SYSTEM		3
EEE3103	DIGITAL SIGNAL PROCESSING		3
EEE4209	TELECOMMUNICATIONS ENGINEERING		3
CNE4220	ADVANCE TOPICS IN NETWORK ENGINEERING		3

Major In Cybersecurity

Code	Course Description	Prereq.	Credit
CYS2101	INTRODUCTION TO NETWORK AND CYBER SECURITY		3
CYS2202	NETWORK SECURITY INFRASTRUCTURE AND CYBERSECURITY		3
CYS3103	CYBER LAWS		3
CYS3204	INTERNET OF THINGS (IOT) SECURITY		3
CYS3205	DIGITAL FORENSIC INVESTIGATION		3
CYS3206	CLOUD SECURITY		3
CYS3207	MOBILE DEVICES AND WIRELESS SECURITY		3
CYS3208	CYBER SECURITY SOCIAL ENGINEERING		3
CNE3211	ETHICAL HACKING AND NETWORK DEFENSE		3
CNE4118	PROJECT MANAGEMENT IN IT SECURITY		3
CNE3106	SECURE NETWORK SYSTEMS DESIGN AND MANAGEMENT		3
CNE3212	DISASTER RECOVERY		3
CNE4116	INFORMATION SYSTEM SECURITY PLANNING, DESIGN AND INCIDENT RESPONSE		3
CYS3214	CYBER CRIME INVESTIGATION		3
CYS3215	EMERGING TECHNOLOGIES IN COMPUTER NETWORKS AND SECURITY		3
CYS4220	ADVANCE TOPICS IN CYBER SECURITY		3

Major In Robotics

Code	Course Description	Prereq.	Credit
RBT4101	INTRODUCTION TO ROBOTICS SYSTEMS		3
RBT4102	INTEGRATED ROBOTICS SYSTEMS ENGINEERING		3
RBT4103	MECHATRONICS		3
RBT4104	SIGNAL PROCESSING		3
RBT4105	BASIC MECHANICAL ENGINEERING		3
RBT4106	ENGINEERING DESIGN AND PROTOTYPING		3
RBT4107	APPLIED ROBOTICS		3
RBT4108	KINEMATICS AND DYNAMICS		3
RBT4109	MICROELECTRONIC CIRCUITS		3
RBT4110	EMBEDDED SYSTEMS		3
RBT4220	ADVANCED TOPICS IN ROBOTICS		3

Major In Business Intelligence

Code	Course Description	Prereq.	Credit
CBI4101	FINANCIAL DATA MANAGEMENT		3
CBI4102	KNOWLEDGE MANAGEMENT SYSTEMS		3

BDS4109	BIG DATA ARCHITECTURE		3
CBI4104	DECISION SUPPORT SYSTEM		3
CBI4105	DIGITAL MARKETING		3
CBI4106	BUSINESS SOFTWARE TECHNOLOGIES		3
CBI4107	BLOCKCHAIN TECHNOLOGIES IN BUSINESS		3
CNE4220	NETWORK RESOURCE MANAGEMENT & ORGANIZATION		3
CBI4109	ACCOUNTING INFORMATION SYSTEMS		3
CBI4110	SUPPLY CHAIN MANAGEMENT SYSTEM		3
CBI4220	ADVANCED TOPICS IN BUSINESS INTELLIGENCE		3

Major In Bioinformatics

Code	Course Description	Prereq.	Credit
BIO4101	INTRODUCTION TO BIOINFORMATICS		3
BIO4102	COMPUTATIONAL BIOLOGY		3
BIO4103	EVOLUTIONARY BIOLOGY		3
BIO4104	CELL BIOLOGY		3
BIO4105	FUNDAMENTALS OF BIOLOGICAL CHEMISTRY		3
BIO4106	MOLECULAR BIOLOGY		3
BIO4107	BIostatISTICS		3
BIO4108	ORGANIC CHEMISTRY		3
BIO4109	COMPUTERIZED GENETIC SEQUENCE ANALYSIS		3
BIO4110	BIOINFORMATICS ALGORITHMS		3
BIO4120	ADVANCED TOPICS IN BIOINFORMATICS		3

Major In Information Technology Management

Code	Course Description	Prereq.	Credit
ITM4101	IT STRATEGY AND GOVERNANCE		3
ITM4102	IT PROJECT MANAGEMENT		3
ITM4103	INFORMATION SECURITY		3
CNE4220	NETWORK RESOURCE MANAGEMENT & ORGANIZATION		3
CYS3103	CYBER LAWS		3
CNE4116	INFORMATION SYSTEM SECURITY PLANNING, DESIGN AND INCIDENT RESPONSE		3
CNE4117	INFORMATION SYSTEM AUDITING		3
ITM4108	ENTERPRISE RESOURCE PLANNING [CS]		3
ITM4109	E-COMMERCE, E-GOVERNANCE & E-SERIES		3
ITM4110	EMERGING TECHNOLOGY AND ISSUES		3
ITM4220	ADVANCED TOPICS IN INFORMATION TECHNOLOGY MANAGEMENT		3

BACHELOR OF SCIENCE IN COMPUTER NETWORK & CYBER SECURITY

In a world that's more connected than ever before, ensuring secure and reliable communication has become one of the most critical priorities across all sectors. The Department of Network Engineering at AIUB steps in right at this intersection—building professionals who are both technically skilled and strategically aware of the digital threats that shape our present and future. The department currently offers a Bachelor of Science in Computer Network and Cyber Security degree. Under this degree, department focuses on a wide-ranging curriculum, covering the core foundations of networking, operating systems, and protocols to cutting-edge areas like ethical hacking, digital forensics, network defense mechanisms, cryptography, and cyber law. The programs are continuously updated to reflect the real-time evolution of global cyber and network threats. Students learn not just how systems connect, but how they can be protected. With access to simulation labs, security testing tools, and threat analysis platforms, learners gain real-world exposure in a controlled and collaborative environment that prepares them for the unpredictability of cyber warfare. These labs and learning tools are regularly upgraded to meet the demands of new security standards and advanced networking configurations.

The department is strengthened by a group of highly experienced academicians who bring with them a balance of academic research and industry-led security practice. Mentoring is provided to students in subjects like risk analysis, safe architecture design, penetration testing, cloud and IoT security, and intrusion detection systems. The Department of Network Engineering at AIUB offers the resources, direction, and platform required to thrive in the demanding digital environment, regardless of their career goals- be they network engineers, cybersecurity analysts, or specialists in digital forensics.

BSc in Computer Network & Cyber Security (CNCS) Curriculum

Semester 1

Code	Course Description	Prereq.	Credit
CSC1101	INTRODUCTION TO COMPUTER STUDIES		1
CSC1102	INTRODUCTION TO PROGRAMMING		3
CSC1103	INTRODUCTION TO PROGRAMMING LAB		1
MAT1102	DIFF CALCULUS AND COORDINATE GEOMETRY		3
PHY1101	PHYSICS 1		3
PHY1102	PHYSICS 1 LAB		1

ENG1101	ENGLISH READING SKILLS & PUBLIC SPEAKING		3
BAS2101	BANGLADESH STUDIES		3
Total Credits			18

Semester 2

Code	Course Description	Prereq.	Credit
BSE1201	OBJECT ORIENTED PROGRAMMING 1 (JAVA)	CSC1102, CSC1103	3
CSC1204	DISCRETE MATHEMATICS		3
CSC1205	DATA STRUCTURE	CSC1102, CSC1103	3
CSC1206	DATA STRUCTURE LAB	CSC1102, CSC1103	1
MAT1205	INTEGRAL CALCULUS & ORD. DIFF EQUATION	MAT1102	3
COE2166	DIGITAL LOGIC & ELECTRONICS	PHY1101, PHY1102	3
ENG1202	ENGLISH WRITING SKILLS & COMMUNICATIONS [CS/ENGG]	ENG1101	3
Total Credits			19

Semester 3

Code	Course Description	Prereq.	Credit
BDS2101	INTRODUCTION TO DATABASE	CSC1205, CSC1206	3
PHY1203	PHYSICS 2	PHY1101	3
PHY2104	PHYSICS 2 LAB	PHY1102	1
CNE2101	DATA COMMUNICATION		3
BBA1102	PRINCIPLES OF ACCOUNTING		3
MAT2202	MATRICES, VECTORS, FOURIER ANALYSIS	MAT1205	3
CSC2107	ALGORITHMS	CSC1205, CSC1206	3
ECO3150	PRINCIPLES OF ECONOMICS		2
Total Credits			21

Semester 4

Code	Course Description	Prereq.	Credit
CNE2203	COMPUTER NETWORKS	CNE2101, CSC2107	3
CNE2204	WEB TECHNOLOGIES	BSE1201	3
CYS2202	NETWORK SECURITY INFRASTRUCTURE AND CYBERSECURITY	CNE2101	3
CNE2202	OPERATING SYSTEMS	CSC2107	3
MAT3101	NUMERICAL METHODS FOR SCIENCE AND ENGINEERING	MAT2202	3

MAT3103	COMPUTATIONAL STATISTICS AND PROBABILITY	MAT2202	3
		Total Credits	18

Semester 5

Code	Course Description	Prereq.	Credit
ENG2103	BUSINESS COMMUNICATION [CS/ENGG]	BAS2101	3
COE3205	COMPUTER ORGANIZATION AND ARCHITECTURE	CNE2202	3
CSC3210	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM	CSC2107, MAT3103	3
CYS3207	MOBILE DEVICES AND WIRELESS SECURITY	CNE3107	3
CYS3103	CYBER LAWS	CYS2202	3
CNE3107	ADVANCED COMPUTER NETWORKS	CNE2203	3
BSE4112	PROGRAMMING IN PYTHON	BSE1201	3
		Total Credits	21

Semester 6

Code	Course Description	Prereq.	Credit
CNE3211	ETHICAL HACKING AND NETWORK DEFENSE	CYS3103	3
CNE3212	DISASTER RECOVERY	CNE3107	3
CYS3205	DIGITAL FORENSIC INVESTIGATION	CYS3103	3
COE3104	MICROPROCESSOR AND EMBEDDED SYSTEMS	COE3205	3
0	NE MAJOR 1		3
0	NE MAJOR 2		3
Total Credits			18

Semester 7

Code	Course Description	Prereq.	Credit
CSC4197	RESEARCH METHODOLOGY	100 Credits	3
CNE4117	INFORMATION SYSTEM AUDITING	CNE3212	3
CNE4116	INFORMATION SYSTEM SECURITY PLANNING, DESIGN AND INCIDENT RESPONSE	CNE3212	3
CNE4118	PROJECT MANAGEMENT IN IT SECURITY	CNE3212	3
0	NE MAJOR 3		3
0	NE MAJOR 4		3
0	NE MAJOR 5		3
		Total Credits	21

Semester 8

Code	Course Description	Prereq.	Credit
CSC4299	INTERNSHIP	140 Credits	3
CSC4298	PROJECT & THESIS	CSC4197	3
0	NE ELECTIVE 1		3
0	NE ELECTIVE 2		3
Total Credits			12

Grand Total = 148 credits

CYBER SECURITY ELECTIVES

General Elective

Code	Course Description	Prereq.	Credit
CYS3204	INTERNET OF THINGS (IOT) SECURITY		3
CYS3206	CLOUD SECURITY		3
CYS3208	CYBER SECURITY SOCIAL ENGINEERING		3
CYS3214	CYBER CRIME INVESTIGATION		3
CYS3215	EMERGING TECHNOLOGIES IN COMPUTER NETWORKS AND SECURITY		3
CYS4220	ADVANCE TOPICS IN CYBER SECURITY		3

Major In Computing

Code	Course Description	Prereq.	Credit
CSC3208	THEORY OF COMPUTATION		3
CSC3209	COMPUTER GRAPHICS		3
CSC4111	COMPILER DESIGN		3
CSC4115	COMPUTER SCIENCE MATHEMATICS		3
CSC4112	BASIC GRAPH THEORY		3
CSC4113	ADVANCED ALGORITHM TECHNIQUES		3
CSC4114	LINEAR PROGRAMMING		3
CSC4216	PARALLEL COMPUTING		3
CSC4218	HUMAN COMPUTER INTERACTION		3
COE4231	IMAGE PROCESSING		3
COE4234	COMPUTER VISION AND PATTERN RECOGNITION		3
CSC4220	ADVANCED TOPICS IN COMPUTING [CS]		3

Major In Software Engineering

Code	Course Description	Prereq.	Credit
BSE3104	SOFTWARE REQUIREMENT ENGINEERING		3

BSE3105	SOFTWARE ARCHITECTURE AND DESIGN PATTERNS		3
BSE3207	MOBILE APPLICATION DEVELOPMENT		3
BSE3208	SOFTWARE QUALITY AND TESTING		3
BSE4109	SOFTWARE DEVELOPMENT PROJECT MANAGEMENT		3
BSE4110	SOFTWARE PROJECT		3
BSE4111	ADVANCED PROGRAMMING IN WEB TECHNOLOGY		3
BSE4112	PROGRAMMING IN PYTHON		3
BSE4113	ADVANCE PROGRAMMING WITH JAVA		3
BSE4114	ADVANCED PROGRAMMING WITH .NET		3
BSE4215	VIRTUAL REALITY SYSTEMS DESIGN		3
BSE4216	METAVEVERSE TECHNOLOGY		3
BSE4220	ADVANCE TOPICS IN SOFTWARE ENGINEERING		3

Major In Data Science

Code	Course Description	Prereq.	Credit
BDS2102	INTRODUCTION TO DATA SCIENCE		3
BDS2203	DATA PROCESSING		3
BDS3104	DATA PRIVACY, SECURITY AND PROTECTION		3
BDS3105	STATISTICAL AND DATA ANALYSIS		3
BDS3106	PROGRAMMING FOR DATA SCIENCE		3
BDS3207	ETHICS IN DATA SCIENCE & ENGINEERING		3
BDS3208	DATA VISUALIZATION		3
BDS4109	BIG DATA ARCHITECTURE		3
BDS4110	DATA WAREHOUSING AND DATA MINING [CS]		3
BDS4112	MACHINE LEARNING & EXPERT SYSTEMS		3
BDS4113	ADVANCE DATABASE MANAGEMENT SYSTEM		3
BDS4214	NATURAL LANGUAGE PROCESSING		3
BDS4315	DEEP LEARNING		3
BDS4316	SOCIAL COMPUTING AND DATA ANALYTICS FOR BUSINESS		3
BDS4317	EMERGING TECHNOLOGIES IN DATA SCIENCE		3
BDS4110	DATA WAREHOUSING AND DATA MINING [CS]		3

Major In Computer Architecture

Code	Course Description	Prereq.	Credit
COE4128	DIGITAL SYSTEM DESIGN		3
EEE4241	INDUSTRIAL ELECTRONICS, DRIVES & INSTRUMENTATION		3

COE4129	MULTIMEDIA SYSTEMS		3
COE4235	ROBOTICS ENGINEERING		3
EEE4217	VLSI CIRCUIT DESIGN		3
EEE4233	DIGITAL DESIGN WITH SYSTEM [VERILOG, VHDL & FPGAS]		3
COE2166	DIGITAL LOGIC & ELECTRONICS		3
COE4220	ADVANCE TOPICS IN COMPUTER ARCHITECTURE		3
COE2166	DIGITAL LOGIC & ELECTRONICS		3
COE4220	ADVANCE TOPICS IN COMPUTER ARCHITECTURE		3

Major In Network Engineering

Code	Course Description	Prereq.	Credit
CNE2101	DATA COMMUNICATION		3
CNE2203	COMPUTER NETWORKS		3
CNE3106	SECURE NETWORK SYSTEMS DESIGN AND MANAGEMENT		3
CNE3107	ADVANCED COMPUTER NETWORKS		3
CNE3211	ETHICAL HACKING AND NETWORK DEFENSE		3
CNE3212	DISASTER RECOVERY		3
CNE4116	INFORMATION SYSTEM SECURITY PLANNING, DESIGN AND INCIDENT RESPONSE		3
CNE4117	INFORMATION SYSTEM AUDITING		3
CNE4118	PROJECT MANAGEMENT IN IT SECURITY		3
CNE4219	NETWORK SECURITY		3
CNE4220	NETWORK RESOURCE MANAGEMENT & ORGANIZATION		3
CNE4221	CRYPTOGRAPHY		3
CNE4222	SIMULATION & MODELING		3
CNE4223	ADVANCED OPERATING SYSTEM		3
CNE4224	WIRELESS SENSOR NETWORKS		3
EEE2213	SIGNAL & LINEAR SYSTEM		3
EEE3103	DIGITAL SIGNAL PROCESSING		3
EEE4209	TELECOMMUNICATIONS ENGINEERING		3
CNE4220	ADVANCE TOPICS IN NETWORK ENGINEERING		3

Major In Robotics

Code	Course Description	Prereq.	Credit
RBT4101	INTRODUCTION TO ROBOTICS SYSTEMS		3
RBT4102	INTEGRATED ROBOTICS SYSTEMS ENGINEERING		3

RBT4103	MECHATRONICS		3
RBT4104	SIGNAL PROCESSING		3
RBT4105	BASIC MECHANICAL ENGINEERING		3
RBT4106	ENGINEERING DESIGN AND PROTOTYPING		3
RBT4107	APPLIED ROBOTICS		3
RBT4108	KINEMATICS AND DYNAMICS		3
RBT4109	MICROELECTRONIC CIRCUITS		3
RBT4110	EMBEDDED SYSTEMS		3
RBT4220	ADVANCED TOPICS IN ROBOTICS		3

Major In Business Intelligence

Code	Course Description	Prereq.	Credit
CBI4101	FINANCIAL DATA MANAGEMENT		3
CBI4102	KNOWLEDGE MANAGEMENT SYSTEMS		3
BDS4109	BIG DATA ARCHITECTURE		3
CBI4104	DECISION SUPPORT SYSTEM		3
CBI4105	DIGITAL MARKETING		3
CBI4106	BUSINESS SOFTWARE TECHNOLOGIES		3
CBI4107	BLOCKCHAIN TECHNOLOGIES IN BUSINESS		3
CNE4220	NETWORK RESOURCE MANAGEMENT & ORGANIZATION		3
CBI4109	ACCOUNTING INFORMATION SYSTEMS		3
CBI4110	SUPPLY CHAIN MANAGEMENT SYSTEM		3
CBI4220	ADVANCED TOPICS IN BUSINESS INTELLIGENCE		3

Major In Information Technology Management

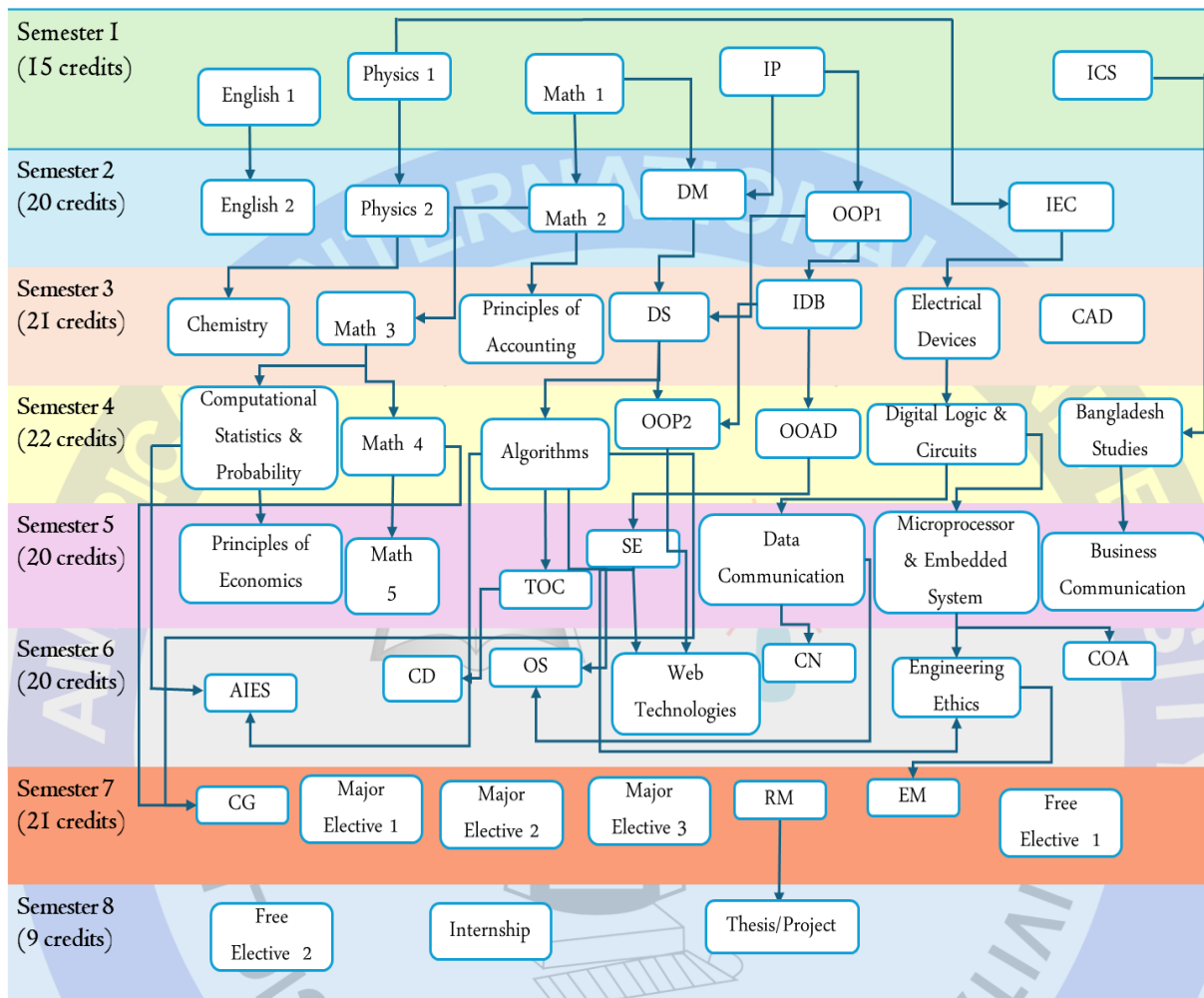
Code	Course Description	Prereq.	Credit
ITM4101	IT STRATEGY AND GOVERNANCE		3
ITM4102	IT PROJECT MANAGEMENT		3
ITM4103	INFORMATION SECURITY		3
CNE4220	NETWORK RESOURCE MANAGEMENT & ORGANIZATION		3
CYS3103	CYBER LAWS		3
CNE4116	INFORMATION SYSTEM SECURITY PLANNING, DESIGN AND INCIDENT RESPONSE		3
CNE4117	INFORMATION SYSTEM AUDITING		3
ITM4108	ENTERPRISE RESOURCE PLANNING [CS]		3
ITM4109	E-COMMERCE, E-GOVERNANCE & E-SERIES		3
ITM4110	EMERGING TECHNOLOGY AND ISSUES		3
ITM4220	ADVANCED TOPICS IN INFORMATION TECHNOLOGY MANAGEMENT		3

Major In Bioinformatics

Code	Course Description	Prereq.	Credit
BIO4101	INTRODUCTION TO BIOINFORMATICS		3
BIO4102	COMPUTATIONAL BIOLOGY		3
BIO4103	EVOLUTIONARY BIOLOGY		3
BIO4104	CELL BIOLOGY		3
BIO4105	FUNDAMENTALS OF BIOLOGICAL CHEMISTRY		3
BIO4106	MOLECULAR BIOLOGY		3
BIO4107	BIostatISTICS		3
BIO4108	ORGANIC CHEMISTRY		3
BIO4109	COMPUTERIZED GENETIC SEQUENCE ANALYSIS		3
BIO4110	BIOINFORMATICS ALGORITHMS		3
BIO4120	ADVANCE TOPICS IN BIOINFORMATICS		3



The semester-by-semester flow chart of the program BSc. CSE under the Department of Computer Science is provided below:



**** NOTE:** The above figure contains the flowchart of the program as per semester. Due to lack of space, shortcuts for courses are used, the full form of the courses are given below for further understanding.

IP- Introduction to Programming

ICS- Introduction to Computer Studies

DM- Discrete Mathematics

OOP1- Object- Oriented Programming 1

IEC- Introduction to Electrical Circuits

DS- Data Structure

IDB- Introduction to Database

CAD -Computer Aided Design and Drafting

OOP2- Object-Oriented Programming 2

OOAD- Object-Oriented Analysis and Design

TOC- Theory of Computation

SE- Software Engineering

AIES- Artificial Intelligence and Expert System

CD- Compiler Design

OS- Operating Systems

CN- Computer Networks

COA- Computer Organization and Architecture

CG- Computer Graphics

RM- Research Methodology

EM- Engineering Management



MASTER OF SCIENCE IN COMPUTER SCIENCE

Master of Science in Computer Science (MSCS) is offered under the Faculty of Science which requires 40 credit hours. Students in the MSCS program must complete, present, and defend a thesis for a thesis and project-based degree. During the thesis/project all graduate students will be associated with a supervisor.

Admission Requirements

- Those who have completed a 4-year undergraduate program in CS, CSE, CIS, SE, CSSE, EEE, COE, ECE, MIS, Mathematics, Electronics, Physics, Applied Physics or in any other science/technical disciplines (to be decided by the Program Director) with at least 2.5 CGPA or its equivalent are eligible for admission to the MSCS program.
- Acceptable score in the AIUB administered admission test or a score of above 1100 in the Quantitative and Verbal part of GRE General Test.
- Two letters of recommendation.

Admission Test

- An admission test may be arranged to evaluate the candidate's formal academic ability or his/her ability to follow the courses of study prescribed.
- Every candidate is required to qualify in the admission test (written and viva).
- After passing the admission test, students who need remedial course work (to be decided by the Program Director) may be advised to take some appropriate pre-requisite courses (may not exceed 6 credit hours) prior to taking graduate courses.

MSc in CS Curriculum

- Core Courses (7 credits): Three courses - two ($2 \times 3 = 6$ credits) + one ($1 \times 1 = 1$ credits)
- Specialization (18 credits): 6 courses ($6 \times 3 = 18$ credits) any **one** area of specialization
- Electives & Capstone (15 credits): Electives can be taken from any of the areas of specialization.
 - **Research Based:** Elective 3 courses ($3 \times 3 = 9$ credits) + Thesis (6 credits)
 - **Project Based:** Elective 4 courses ($4 \times 3 = 12$ credits) + Project (3 credits)
 - **Course Based:** Elective 5 courses ($5 \times 3 = 15$ credits)

Foundation Courses

(For those who haven't completed any degree pertaining to Computer Science)

Code	Course Description	Prereq.	Credit
CSC 5001	Foundation in Computing	-	3
CSC 5002	Foundation in Computer Systems		3

Core (Course Based)

Semester 1

Code	Course	Prereq.	Credit
CSC####	SPECIALIZATION COURSE 1		3
CSC####	SPECIALIZATION COURSE 2		3
CSC####	ELECTIVE COURSE 1		3
CSC5011	COMPUTER SCIENCE APPLICATIONS AND ADVANCEMENTS [MScCS]		3
Total			12

Semester 2

Code	Course	Prereq.	Credit
CSC####	SPECIALIZATION COURSE 3		3
CSC####	SPECIALIZATION COURSE 4		3
CSC####	ELECTIVE COURSE 2		3
CSC5012	COMPUTER ETHICS AND GOVERNANCE [MScCS]		3
Total			12

Semester 3

Code	Course	Prereq.	Credit
CSC####	SPECIALIZATION COURSE 5		3
CSC####	ELECTIVE COURSE 3		3
CSC5013	FOUNDATION IN COMPUTER PROGRAMMING [MScCS]		1
CSC####	SPECIALIZATION COURSE 6		3
Total			10

Semester 4

Code	Course	Prereq.	Credit
CSC####	ELECTIVE COURSE 4		3
CSC####	ELECTIVE COURSE 5		3
Total			6
Grand Total		40 credits	

Core (Project Based)**Semester 1**

Code	Course	Prereq.	Credit
CSC####	SPECIALIZATION COURSE 1		3
CSC####	SPECIALIZATION COURSE 2		3
CSC####	ELECTIVE COURSE 1		3
CSC5011	COMPUTER SCIENCE APPLICATIONS AND ADVANCEMENTS [MScCS]		3
Total			12

Semester 2

Code	Course	Prereq.	Credit
CSC####	SPECIALIZATION COURSE 3		3
CSC####	SPECIALIZATION COURSE 4		3
CSC####	ELECTIVE COURSE 2		3
CSC5012	COMPUTER ETHICS AND GOVERNANCE [MScCS]		3
Total			12

Semester 3

Code	Course	Prereq.	Credit
CSC####	SPECIALIZATION COURSE 5		3
CSC####	ELECTIVE COURSE 3		3
CSC5013	FOUNDATION IN COMPUTER PROGRAMMING [MScCS]		1
CSC####	SPECIALIZATION COURSE 6		3
Total			10

Semester 4

Code	Course	Prereq.	Credit
CSC####	PROJECT [MScCS]	18 Credits	3
CSC####	ELECTIVE COURSE 4		3
Total			6
Grand Total	40 credits		

Core (Thesis Based)**Semester 1**

Code	Course	Prereq.	Credit
CSC####	SPECIALIZATION COURSE 1		3
CSC####	SPECIALIZATION COURSE 2		3
CSC####	ELECTIVE COURSE 1		3
CSC5011	COMPUTER SCIENCE APPLICATIONS AND ADVANCEMENTS [MScCS]		3
Total			12

Semester 2

Code	Course	Prereq.	Credit
CSC####	SPECIALIZATION COURSE 3		3
CSC####	SPECIALIZATION COURSE 4		3
CSC####	ELECTIVE COURSE 2		3
CSC5012	COMPUTER ETHICS AND GOVERNANCE [MScCS]		3
Total			12

Semester 3

Code	Course	Prereq.	Credit
CSC####	SPECIALIZATION COURSE 5		3
CSC6000	THESIS	18 Credits	3
CSC####	ELECTIVE COURSE 3		3
CSC5013	FOUNDATION IN COMPUTER PROGRAMMING [MScCS]		1
CSC####	SPECIALIZATION COURSE 6		3
Total			13

Semester 4

Code	Course	Prereq.	Credit
CSC6000	THESIS CONTINUED	CSC6000	3
Total			3
Grand Total	40 credits		

Each student must choose an AREA OF SPECIALIZATION from the following five groups.

Area of Specialization 1: Interactive System Engineering

Code	Course	Prereq.	Credit
CSC5111	HUMAN COMPUTER INTERACTION		3
CSC5112	METHODOLOGY OF INTERACTION DESIGN [MScCS]		3
CSC5113	PRINCIPALS OF VISUALIZATION [MScCS]		3
CSC5114	COMPUTER SUPPORTED COLLABORATIVE WORKS [MScCS]		3
CSC5115	UBIQUITOUS COMPUTING [MScCS]		3
CSC5116	AUGMENTED AND VIRTUALLY REALITY [MScCS]		3
CSC5117	SIMULATION AND MODELING [MScCS]		3
CSC5118	E-COMMERCE AND E-GOVERNANCE [MScCS]		3
CSC5119	WEB DEVELOPMENT TECHNOLOGIES [MScCS]		3
CSC5199	ADVANCED TOPICS IN INTERACTIVE SYSTEM ENGINEERING [MScCS]		3

Area of Specialization 2: Computer Network & Cyber Security

Code	Course	Prereq.	Credit
CSC5211	CYBER SECURITY AND MANAGEMENT [MScCS]		3
CSC5212	IT INFRASTRUCTURE AND DISASTER RECOVERY [MScCS]		3
CSC5213	DIGITAL FORENSIC INVESTIGATION [MScCS]		3
CSC5214	INFORMATION SYSTEM AUDITING [MScCS]		3
CSC5215	NETWORK DEFENSE AND ETHICAL HACKING [MScCS]		3

CSC5216	BLOCKCHAIN AND CRYPTOGRAPHY [MScCS]		3
CSC5217	CLOUD COMPUTING TECHNOLOGIES [MScCS]		3
CSC5218	SENSOR NETWORKS AND WIRELESS COMPUTING [MScCS]		3
CSC5219	MOBILE AND MULTIMEDIA NETWORKING [MScCS]		3
CSC5299	ADVANCED TOPICS IN CYBER SECURITY [MScCS]		3

Area of Specialization 3: Data Science

Code	Course	Prereq.	Credit
CSC5311	INFORMATION SECURITY MANAGEMENT [MScCS]		3
CSC5312	DATA WAREHOUSING AND DATA MINING [MScCS]		3
CSC5313	DATABASE TECHNOLOGY, MANAGEMENT, AND SECURITY		3
CSC5314	BIG DATA TECHNOLOGIES [MScCS]		3
CSC5315	DATA VISUALIZATION AND COMMUNICATION [MScCS]		3
CSC5316	RESEARCH DESIGN AND APPLICATIONS FOR DATA SCIENCE [MScCS]		3
CSC5317	STATISTICAL DATA ANALYSIS [MScCS]		3
CSC5318	DATA ANALYTICS FOR BUSINESS [MScCS]		3
CSC5319	PROGRAMMING FOR DATA SCIENCE [MScCS]		3
CSC5399	ADVANCED TOPICS IN DATA SCIENCE [MScCS]		3

Area of Specialization 4: Software Engineering

Code	Course	Prereq.	Credit
CSC5411	SOFTWARE REQUIREMENTS ENGINEERING		3
CSC5412	SOFTWARE CONSTRUCTION, ARCHITECTURE AND DESIGN		3
CSC5413	SOFTWARE ENGINEERING PROCESS & CONFIGURATION MANAGEMENT		3

CSC5414	SOFTWARE EVOLUTION AND MAINTENANCE		3
CSC5415	SOFTWARE QUALITY ASSURANCE AND TESTING		3
CSC5416	SOFTWARE PROJECT MANAGEMENT		3
CSC5417	SOFTWARE DOCUMENTATION AND TOOLS		3
CSC5418	IT MARKETING & MANAGEMENT		3
CSC5419	METHODS IN SOFTWARE ENGINEERING		3
CSC5499	ADVANCED TOPICS IN SOFTWARE ENGINEERING		3

Area of Specialization 5: Intelligent Systems

Code	Course	Prereq.	Credit
CSC5511	KNOWLEDGE-BASED SYSTEMS		3
CSC5512	MACHINE LEARNING & NEURAL NETWORKS		3
CSC5513	COMPUTER VISION & PATTERN RECOGNITION		3
CSC5514	IMAGE PROCESSING		3
CSC5515	NATURAL LANGUAGE PROCESSING		3
CSC5516	BIOINFORMATICS		3
CSC5517	AI PROGRAMMING AND TOOLS		3
CSC5518	COMBINATORIAL & GRAPH ALGORITHMS [MScCS]		3
CSC5519	DIGITAL SPEECH PROCESSING		3
CSC5599	ADVANCED TOPICS IN INTELLIGENT SYSTEMS		3

Elective Courses

Code	Course	Prereq.	Credit
CSC5111	HUMAN COMPUTER INTERACTION		3
CSC5112	METHODOLOGY OF INTERACTION DESIGN [MScCS]		3
CSC5113	PRINCIPALS OF VISUALIZATION [MScCS]		3
CSC5114	COMPUTER SUPPORTED COLLABORATIVE WORKS [MScCS]		3
CSC5115	UBIQUITOUS COMPUTING [MScCS]		3
CSC5116	AUGMENTED AND VIRTUALLY REALITY [MScCS]		3

CSC5117	SIMULATION AND MODELING [MScCS]	3
CSC5118	E-COMMERCE AND E-GOVERNANCE [MScCS]	3
CSC5119	WEB DEVELOPMENT TECHNOLOGIES [MScCS]	3
CSC5199	ADVANCED TOPICS IN INTERACTIVE SYSTEM ENGINEERING [MScCS]	3
CSC5211	CYBER SECURITY AND MANAGEMENT [MScCS]	3
CSC5212	IT INFRASTRUCTURE AND DISASTER RECOVERY [MScCS]	3
CSC5213	DIGITAL FORENSIC INVESTIGATION [MScCS]	3
CSC5214	INFORMATION SYSTEM AUDITING [MScCS]	3
CSC5215	NETWORK DEFENSE AND ETHICAL HACKING [MScCS]	3
CSC5216	BLOCKCHAIN AND CRYPTOGRAPHY [MScCS]	3
CSC5217	CLOUD COMPUTING TECHNOLOGIES [MScCS]	3
CSC5218	SENSOR NETWORKS AND WIRELESS COMPUTING [MScCS]	3
CSC5219	MOBILE AND MULTIMEDIA NETWORKING [MScCS]	3
CSC5299	ADVANCED TOPICS IN CYBER SECURITY [MScCS]	3
CSC5311	INFORMATION SECURITY MANAGEMENT [MScCS]	3
CSC5312	DATA WAREHOUSING AND DATA MINING [MScCS]	3
CSC5313	DATABASE TECHNOLOGY, MANAGEMENT, AND SECURITY	3
CSC5314	BIG DATA TECHNOLOGIES [MScCS]	3
CSC5315	DATA VISUALIZATION AND COMMUNICATION [MScCS]	3
CSC5316	RESEARCH DESIGN AND APPLICATIONS FOR DATA SCIENCE [MScCS]	3
CSC5317	STATISTICAL DATA ANALYSIS [MScCS]	3
CSC5318	DATA ANALYTICS FOR BUSINESS [MScCS]	3

CSC5319	PROGRAMMING FOR DATA SCIENCE [MScCS]		3
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CSC5517	AI PROGRAMMING AND TOOLS		3
CSC5518	COMBINATORIAL & GRAPH ALGORITHMS [MScCS]		3
CSC5519	DIGITAL SPEECH PROCESSING		3
CSC5599	ADVANCED TOPICS IN INTELLIGENT SYSTEMS		3

Thesis

Students in the MSCS program must complete, document, present and defend a thesis. During the first two semesters all graduate students will be associated with a supervisor.

Every MSCS candidate must complete a thesis (equivalent to 6 credit hours) describing research work of publishable quality. The thesis must be defended before a committee consisting of the

supervisor and at least two other faculty members in relevant fields. The thesis defense is open to all interested faculty and students.

Upon the completion of 18 credits, a student is eligible to register for the Thesis. Thesis is distributed over two consecutive semesters each having 3 credit hours.

Project

Students of Project Based Masters shall complete a software project related to his/her profession or area of interest under the supervision of respective faculty.

Upon the completion of 18 credits, a student is eligible to register for the Project. The duration of a project can no longer be more than 6 months.



OUTCOME BASED EDUCATION (OBE)

Mission and Vision of Faculty of Science and Technology (FST)

Faculty of Science and Technology (FST) consists of the following four departments:

- ❖ Department of Computer Science
- ❖ Department of Data Science
- ❖ Department of Computer Network & Cyber Security
- ❖ Department of Mathematics
- ❖ Department of Physics
- ❖ Department of Chemistry

FST Vision Statement

The Faculty of Science and Technology is committed to equip students with world class scientific research and industry-oriented knowledge and skills.

FST Mission Statement

To create highly skilled and globally competitive professionals with advanced theoretical and applied knowledge responsive to the needs of society in the discipline of science and technology.

FST Goals

- Enrich the computer education curriculum to suit the needs of the industry- wide standards for both domestic and international markets
- Equip the faculty and staff with professional, modern technological and research skills
- Upgrade continuously computer hardwares, facilities and instructional materials to cope with the challenges of the information technology age
- Initiate and conduct relevant research, software development and outreach services
- Establish linkage with industry and other IT-based organizations/institutions for sharing resources and expertise, and better job opportunities for students

Mission and Vision of Department of Computer Science

The vision and mission of Computer Science and Engineering (CSE) program at American International University - Bangladesh (AIUB) is stated as follows.

CSE Vision Statement

“Our vision is to be the preeminent Department of Computer Science through creating recognized professionals who will provide innovative solutions by leveraging contemporary research methods and development techniques of computing that are in line with the national and global context.”

CSE Mission Statement

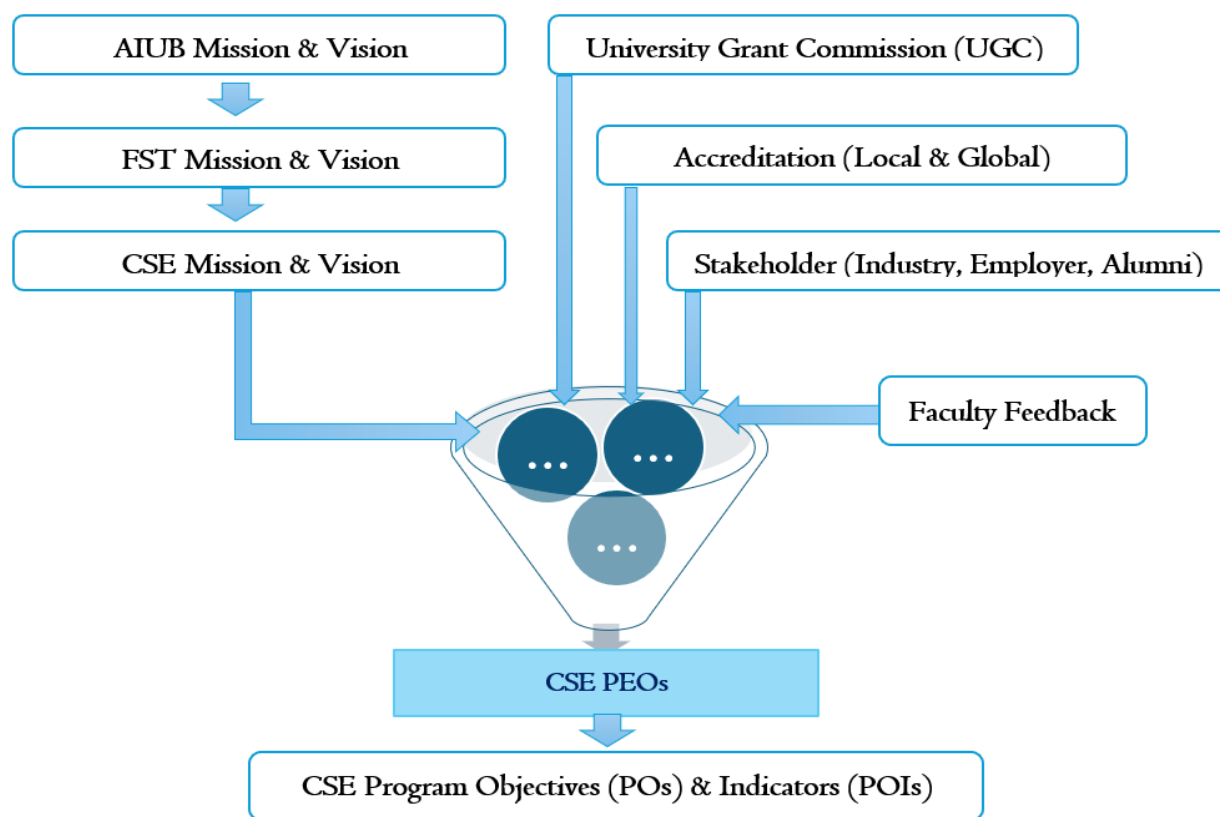
“The mission of the Department of Computer Science of AIUB is to educate students in a student-centric dynamic learning environment; to provide advanced facilities for conducting innovative research and development to meet the challenges of the modern era of computing, and to motivate them towards a life-long learning process. To create highly skilled and globally competitive professionals with advanced theoretical and applied knowledge responsive to the needs of society in the discipline of science and technology.”

Program Educational Objective (PEO)

The establishment of the Program Educational Objectives (PEOs) for the CSE program at American International University – Bangladesh (AIUB) involved a thorough process that considered both local and international job market needs. The process began with aligning the PEOs with the AIUB Mission and Vision, as well as the Faculty of Science and Technology's Mission and Vision. Furthermore, the three PEOs are then mapped with the 12 Program Outcomes (POs) recommended by the Board of Accreditation of Engineering and Technical Education (BAETE).

The Program Educational Objectives (PEOs) for the CSE program at AIUB outlines the expected achievements of graduates within the first 3 to 5 years of their careers, in alignment with the guidelines of the Washington Accord and BAETE, Institution of Engineers (IEB). These objectives emphasize the application of technical knowledge to solve real-world problems, lifelong learning, effective teamwork and leadership, adherence to professional ethics, and engagement in innovation and research. By focusing on these goals, the program ensures that graduates are well-prepared to meet industry challenges and contribute positively to technological advancements.

PEO-1	Excel the career of graduates within Computer Science, and related disciplines by applying knowledge in mathematics, computing, software engineering, and IT principles.
PEO-2	Demonstrate professionalism, ethics, and ability to work in inter and multidisciplinary teams and to adapt to the latest trends and technology.
PEO-3	Engage the graduates toward lifelong learning and to pursuit of research-intensive postgraduate or other professional education.



Furthermore, the Program Educational Objectives (PEOs) for the CSE program at AIUB are aligned with the university’s mission, as well as the missions of the Faculty of Science and Technology (FST) and the Department of Computer Science and Engineering. This alignment ensures that the PEOs support the broader educational goals of AIUB, preparing graduates for professional success and technological contributions.

MISSION	MISSION STATEMENTS
University Mission-1 (AIUB-M1)	Provide quality and excellent academic programs responsive to the emerging global challenges.
University Mission-2 (AIUB-M2)	Produce competent world class graduates with strong sense of ethical values to face the competitive world of business, science, technology, engineering and social sciences.
Faculty Mission-1 (FST-M1)	Create highly skilled and globally competitive professionals.
Faculty Mission-2 (FST-M2)	Provide advanced theoretical and applied knowledge responsive to the needs of society in the discipline of science and technology.
Department Mission-1 (CS-M1)	Educate students in a student-centric dynamic learning environment.

Department Mission-2 (CS-M2)	Provide advanced facilities for conducting innovative research to meet the challenges of the modern era of computing.
Department Mission-3 (CS-M3)	Develop globally competitive professionals with advanced knowledge, fostering life-long learning and societal responsiveness

The following illustrates the connection between the mission statements of AIUB, the Faculty of Science and Technology (FST), and the Program Educational Objectives (PEOs) of the CSE program. This association highlights how the program's objectives are aligned with the overarching goals of the institution and faculty, ensuring that the PEOs support the broader educational mission and contribute to the development of well-rounded, capable graduates.

PEO Statement	CSE Mission			FST Mission		AIUB Mission	
	CS Mission-1	CS Mission-2	CS Mission-3	FST Mission-1	FST Mission-2	AIUB Mission -1	AIUB Mission -2
PEO-1	H	H	L	H	H	H	M
PEO-2	M	M	H	M	L	L	H
PEO-3	M	H	H	M	M	M	H

H: High Relation M: Medium Relation L: Low Relation

The measurement and attainment of PEOs are closely linked, with the PEOs being subdivided into specific skill sets to assess the status of CSE graduates in each field. The PEOs can only be considered fully attained if employers and alumni provide confirmatory feedback about the following skill sets.

PEOs	Required Skill Sets	
PEO-1	1	Subject Knowledge (e.g., Math, Natural Science, Engineering fundamental, Engineering Specialization)
	2	IT Knowledge
	3	Ability to link theory to practice
	4	Ability to model complex engineering problems with understanding of its limitation
	5	Ability to apply reasoning to professional engineering practice
	6	Ability of data analysis in Engineering design and practice
PEO-2	1	Teamwork
	2	Leadership
	3	Decision Making
	4	Responsibility
	5	Discipline
	6	Communication
PEO-3	1	Research & Publication/Certification

	2	Self-Motivation
	3	Openness to new idea

Program Outcome (PO)/ Program Learning Outcome (PLO)

The program Outcomes (POs) and their corresponding alignment with the Program Educational Objectives (PEOs) have been mapped as follows which serves to illustrate how each outcome contributes to achieving the overarching goals set by the program's educational framework.

PO No.	Program Outcome (PO) statement	PEO 1	PEO 2	PEO 3
a	Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization as specified in K1 to K4 respectively to the solution of complex engineering problems.	0.3		
b	Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. (K1 to K4).	0.3		
c	Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations. (K5).		0.2	
d	Conduct investigations of complex problems using research-based Knowledge (K8) and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.			0.5
e	Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, with an understanding of the limitations. (K6).	0.2		
f	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems. (K7)	0.2		
g	Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts. (K7)		0.2	
h	Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice. (K7)		0.2	

i	Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.		0.2	
j	Communicate effectively 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, and give and receive clear instructions.		0.1	
k	Demonstrate 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 to manage projects and in multidisciplinary environments.		0.1	
l	Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.			0.5

Furthermore, the POs have been subdivided and mapped into three key domains: Knowledge Profile (K), Complex Engineering Problem Solving (P), and Complex Activity (A). A unique coding system has been implemented to identify each Program Outcome Indicator (POI), which includes the PO, the subpart number, and the corresponding domain. For example, the code "PO-a1.C3" refers to the first subpart of PO-a at Cognitive domain level 3. The mapping of POIs to POs is provided as follows:

PLOs	POI Code. Blooms Level	BNQF Indicator	POI Statement	K	P	A
1.	PO-a1.C3	FS.1	Apply information and concepts in <i>natural science</i> with the familiarity of issues.	K1		
	PO-a2.C3	FS.2	Apply information and concepts of <i>mathematics</i> with the familiarity of issues.	K2		
	PO-a3.C3	FS.1	Apply information and concepts in <i>engineering fundamentals</i> to solve complex engineering problems with a range of conflicting requirements.	K3	P1, P2, P6	
	PO-a4.C3	FS.2	Apply information and concepts in <i>specialized engineering sciences</i> with the in-depth analysis of a complex engineering problem.	K4	P1, P3, P7	
2.	PO-b1.C2	FS.1	Identify the first principles of <i>natural sciences</i> and engineering sciences in practical applications.	K1		

	PO-b2.C4	FS.1	Formulate solutions, procedures, and methods using the first principles of mathematics for engineering sciences.	K2		
	PO-b3.C5	FS.3	Analyze solutions for complex engineering problems reaching a substantiated conclusion.	K3	P1, P3, P7	
	PO-b4.C4	FS.2	Research literature and analyze the validity and accuracy of existing solutions for complex engineering problems.	K4	P1, P2, P6	
3.	PO-c1.C4	PS.2	Design solutions for components of a complex engineering problem considering public health and safety.	K5	P1, P3, P7	
	PO-c2.C6	PS.2	Develop process for complex engineering problems considering cultural and societal factors.	K5	P1, P3, P7	
	PO-c3.C5	PS.2	Evaluate engineering solutions that meet specified needs with appropriate environmental considerations.	K5	P1, P2, P6	
4.	PO-d1.C5	FS.3	Design Experiment, to test complex engineering problems for certain constraints through appropriate research.	K8	P1, P3, P7	
	PO-d2.C4	FS.6	Analysis and interpretation of collected data to provide valid conclusions acknowledging the limitations.	K8		
	PO-d3.C5	FS.2	Investigate solution of complex engineering problem by synthesis of information to provide valid conclusions.	K8	P1, P4, P5	
5.	PO-e1.C3	FS.6	Select modern engineering and IT tools and apply appropriate techniques to solve complex engineering problems considering the limitations.	K6	P1, P4, P5	
	PO-e2.P4	FS.6	Use modern engineering and IT tools for prediction and modeling of complex engineering problems considering the practice in engineering discipline.	K5	P1, P4, P5	
	PO-e3.P5	FS.6	Create relevant resources for complex engineering problems using modern engineering and IT tools.	K5	P1, P3, P7	
6.	PO-fl.A3	PS.4	Accepts and recognizes the role of engineering in society, health, safety, legal and culture.			

	PO-f2.C6	FS.4	Design solution for complex engineering problem in accordance with professional practices.	K5 K7	P1, P3, P7	
7.	PO-g1.C5	PS.2	Evaluate the sustainability of complex engineering problems considering society and the environment.	K3 K7	P1, P2, P6	
	PO-g2.A4	PS.2	Evaluate the impact of professional engineering solutions on society and environment.	K7		
8.	PO-h1.C3	PS.2	Apply professional codes of ethics and standards considering public safety; the impacts of engineering activity; economic, social, cultural, environmental and sustainability.	K7		
	PO-h2.A4	SS.5	Demonstrates professional and/or individual responsibilities based on norms of engineering practice.	K7		
9.	PO-i1.A2	PS.1	Function as an effective team member in multi-disciplinary problems in engineering.			
	PO-i2.A5	FS.5	Demonstrate individual skills as a team member or leader in diverse teams solving multi-disciplinary problems in engineering.			
10.	PO-j1.A2	SS.1	Optimize engineering solutions by giving and responding to clear instructions. (Communicate effectively by giving and responding to clear instructions to produce engineering solutions.)			A1, A3, A5
	PO-j2.P3	SS.3	Produces written engineering reports by applying principle-based approaches and design documentation on complex engineering activities for different stakeholders.			A1, A4
	PO-j3.A4	SS.2	Make and deliver effective presentations based on complex engineering activities.			A1, A2
11.	PO-k1.C3	TS.1	Apply engineering management principles and economic decision making to solve engineering projects as a team.			
	PO-k2.P4	TS.2	Manage multi-disciplinary components of a engineering project as a member/leader.			
	PO-k3.A5	SS.4	Demonstrate competency in completing individual engineering projects based on			

			relevant management principles and economic models.			
12.	PO-11. A1	PS.1	Investigate and gather information on a given engineering issue beyond classroom learning.			
	PO-12. A4	PS.1	Seek and use resources in solving engineering problems.			
	PO-13. A5	PS.3	Recognizing the need for continuing education and participation in professional societies and meetings.			

BNQF Learning Outcome Domains and Level Descriptors		
Learning Outcome	Domain Code	Descriptions
Fundamental Skills (FS)	FS.1	Demonstrate knowledge and critical understanding of the well-established principles of his/her field of study, and of the way in which those principles have developed.
	FS.2	Apply underlying concepts and principles outside the context in which they were first studied, including, where appropriate, the application of those principles in an employment context.
	FS.3	Apply knowledge and skills in addressing issues/solving problems with minimal supervision.
	FS.4	Evaluate critically the appropriateness of different approaches to solving problems in his/her field of study.
	FS.5	Support supervision of junior staff via a mentor or a leader/manager.
	FS.6	Display advanced digital literacy which is adequate to perform complex tasks and bring about solutions.
Social Skills (SS)	SS.1	Communicate and interact effectively and clearly, ideas, information, problems and solutions as a team to peers, experts and non-experts in Bangla and English.
	SS.2	Express her/himself fluently and spontaneously in English and Bangla.
	SS.3	Use language flexibly and effectively for social, academic and professional purposes.
	SS.4	Produce clear, well structured, detailed text on complex subjects, showing controlled use of organisational patterns, connectors and cohesive devices in advanced proficiency level of Bangla and English.
	SS.5	Demonstrate the ability to incorporate entrepreneurial skills in planning daily activities.
	SS.6	Display advanced civic literacy and knowledge, exercising civic rights and obligations at all levels as well as participating in changes for the improvement of Bangladesh society.

Thinking Skills (TS)	TS.1	Exercise very substantial degree of autonomy and often significant responsibility in making judgments/ decisions towards the management of self, others and for the allocation of substantial resources.
	TS.2	Demonstrate professional knowledge and practical skills in both technical and management to lead a team in inexperienced environment.
Personal Skills (PS)	PS.1	Engage in self-direction and self-enterprise skills.
	PS.2	Demonstrate social, professional, environmental and ethical practice/ values.
	PS.3	Show-case global knowledge and competencies to fulfil employment, entrepreneurial and lifelong learning skills.
	PS.4	Contribute significantly to the society.

Bloom's Taxonomy: Domain and Levels of Teaching-Learning

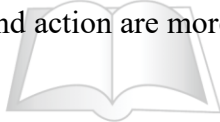
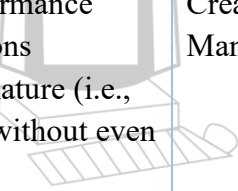
Level	Cognitive (C)	Psychomotor (P)	Affective (A)
1.	Remember	Receive	Imitation
2.	Understand	Respond	Manipulation
3.	Apply	Value	Precision
4.	Analyze	Organize	Articulation
5.	Evaluate	Characterize	Naturalization
6.	Create	-	-

Bloom's Taxonomy: Cognitive Doman

Blooms Level	Description	Cognitive: Key Verbs (keywords)
1: Remember	Recognizing and recalling facts	list, recite, outline, define, name, match, quote, recall, identify, label, recognize, state, select.
2: Understand	Understand what the facts mean	describe, comprehend, defend, distinguish, generalize, predict, explain, paraphrase, restate, rewrite, give original examples of, summarize, contrast, interpret, discuss.
3: Apply	Applying the facts, rules, concepts, and ideas	calculate, predict, apply, change, compute, solve, manipulate, <u>illustrate</u> , use, demonstrate, determine, model, perform, present.
4: Analyze	Breaking down information into component parts	classify, break down, compare, categorize, analyze, differentiate, diagram, <u>illustrate</u> , criticize, simplify, associate.

5: Evaluate	Judging the value of information or ideas	choose, support, relate, determine, defend, judge, explain, grade, compare, contrast, argue, justify, support, convince, select, evaluate, conclude.
6: Create	Combine parts to make a new whole	design, formulate, build, invent, create, compose, generate, derive, modify, develop, explain.

Bloom's Taxonomy: Psychomotor Domain

Blooms Level	Description	Affective: Key Verbs (keywords)
1: Imitation	Learn by watching and imitating actions	Adhere, Follow, Repeat, Reproduce, Trace
2: Manipulation	Actions performed through memorization or following directions	Build, Complete, Execute, Follow, Implement, Play, Perform, Produce, Recreate, etc.
3: Precision	Performance becomes more exact, and action are more precise 	Adapt, Alter, Construct, Calibrate, Combine, Complete, Control, Create, Customize, Demonstrate, Execute, Formulate, Modify, Perfect, Perform, Show, etc.
4: Articulation	Several skills can perform together in a harmonious way	Adapt, Combine, Construct, Coordinate, Create, <u>Develop</u> , Integrate, Modify, etc.
5: Neutralization	High level of performance achieved with actions becoming second nature (i.e., can perform tasks without even thinking of it) 	Create, Design, <u>Develop</u> , Invent, Specify, Manage, etc.

Bloom's Taxonomy: Affective Domain

Blooms Level	Description	Affective: Key Verbs (keywords)
1: Receiving	Being aware of or attending to something in the environment.	Acknowledge, Ask, Choose, Describe, Follow, Identify, Listen, Locate, Name, Notice, Select, Use, Tolerate, Understand, etc.
2: Responding	Showing some new behavior as a result of experience	Answer, Assist, Aid, Comply, Conform, Discuss, Enjoy, Follow, Perform, Practice, Present, Report, Select, Write, etc.

3: Valuing	Showing some definite involvement or commitment	Appreciate, Demonstrate, Differentiate, Explain, Follow, Form, Initiates, Invites, Justifies, Propose, Respect, Carry out, Express, etc.
4: Organization	Integrating a new value into one's general set of values relative to other priorities.	Adhere, Alter, Arranges, Choose, Combines, Compare, Consider, Defend, Explain, Formulates, Generalize, Identify, Integrate, Modify, Order, Organize, Prefer, Prepare, Relate, Synthesize, etc.
5: Characterization	Acting consistently with the new value; person is known by the value	Act, Display, Modify, Perform, Revise, Serve, Solve, Verify, Act on, Depict, Exemplify, etc.

Knowledge Profile (K)		
Indicator		Attribute
K1	Theory based natural science	A systematic, theory-based understanding of natural sciences applicable to the discipline
K2	Conceptual based mathematics	Conceptually based mathematics, numerical analysis, statistics and the formal aspects of computer and information science to support analysis and modeling applicable to the discipline
K3	Theory based engineering fundamentals	A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline
K4	Forefront specialist knowledge for practice	Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline
K5	Engineering Design	Knowledge that supports engineering design in a practice area
K6	Engineering Practice (Technology)	Knowledge of engineering practice (technology) in the practice areas in the engineering discipline
K7	Comprehension of engineering in society	Comprehension of the role of engineering in society and identified issues in engineering practice in the discipline: ethics and the engineer's professional responsibility to public safety; the impacts of engineering activity; economic, social, cultural, environmental and sustainability
K8	Research Literature	Engagement with selected knowledge in the research literature of the discipline

Range of Complex Engineering Problem Solving (P)		
Indicator	Title	Description
P1	Depth of knowledge required	Cannot be resolved without in-depth engineering knowledge at the level of one or more of K3, K4, K5, K6 or K8 which allows a fundamentals-based, first principles analytical approach
P2	Range of conflicting requirements	Involve wide-ranging or conflicting technical, engineering, and other issues
P3	Depth of analysis required	Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models
P4	Familiarity of issues	Involve infrequently encountered issues
P5	Extent of applicable codes	Are outside problems encompassed by standards and codes of practice for professional engineering
P6	Extent of stakeholder involvement and conflicting requirements	Involve diverse groups of stakeholders with widely varying needs
P7	Interdependence	Are high level problems including many component parts or sub-problems

Range of Complex Engineering Activities (A)		
Indicator	Title	Description
A1	Range of resources	Involve the use of diverse resources (and for this purpose resources include people, money, equipment, materials, information, and technologies)
A2	Level of interaction	Require resolution of significant problems arising from interactions between wide-ranging or conflicting technical, engineering, or other issues
A3	Innovation	Involve creative use of engineering principles and research-based knowledge in novel ways
A4	Consequences for society and the environment	Have significant consequences in a range of contexts, characterized by difficulty of prediction and mitigation
A5	Familiarity	Can extend beyond previous experiences by applying principles-based approaches

Course Outcome (CO)/ Course Learning Outcome (CLO)

Each core course in the BSc. in CSE program is associated with specific Program Outcomes (POs) and aims to achieve through its Course Outcomes (COs). All courses that fulfill the OBE requirements are detailed in the following table. The relationships between COs and POs are

presented in the following in line with the OBE requirements, with blank cells signifying the absence of a correlation.

Course & COs			Program Outcomes (POs)												
#	Subject	CO	PO I	a	b	c	d	e	f	g	h	I	j	k	l
	Course No. and title			Knowledge	Analysis	Design	Investigation	Tool usage	Society	Environment	Ethics	Individual & Teamwork	Communication	Project Mgt & Finance	Life-long Learning
1	CSC 1101 Introduction to Computer Studies	CO4	a-1	Yes											
2	CSC 1102 Intro. to Programming	CO2	a-3	Yes											
3	CSC 1103 Intro. to Programming Lab	CO2	b-1		Yes										
4	CSC 1204 Discrete Mathematics	CO1	a-2	Yes											
5	CSC 1205 Object Oriented Programming 1	CO3	h-1								Yes				
6	CSC 2106 Data Structure	CO3	d-2				Yes								
7	CSC 2107 Data Structure	CO2	a-4	Yes											
8	CSC 2108 Introduction to Database	CO4	j-1										Yes		
9	CSC 2209: Object Oriented Analysis and Design	CO2	f-2						Yes						
		CO3	e-1					Yes							
10	CSC 2210 Object	CO2	k-3											Yes	

	Oriented Programming 2																	
11	CSC 2211 Algorithms	CO4	d-3				Yes											
12	CSC 3112 Software Engineering	CO3	g-1						Yes									
		CO4	k-1											Yes				
13	CSC 3113 Theory of Computation	CO4	l-2															Yes
14	CSC 3214 Operating Systems	CO2	d-1				Yes											
		CO3	b-3			Yes												
15	CSC 3215 Web Technologies	CO3	c-2				Yes											
		CO4	k-2											Yes				
16	CSC 3220 Compiler Design	CO2	c-3				Yes											
17	CSC 3217 Artificial Intelligence and Expert System	CO3	f-1						Yes									
18	CSC 4118 Computer Graphics	CO3	e-2						Yes									
19	COE 3204 Computer Networks	CO2	e-3						Yes									
20	COE 3203 Computer Organization & Architecture	CO1	l-1															Yes
21	CSC 4195 Research Methodology	CO3	h-2										Yes					
		CO4	l-3															Yes
22	CSC 4298 Thesis/Project	CO1	b-4			Yes												
		CO2	c-1				Yes											
		CO3	c-3				Yes											
		CO4	g-2								Yes							
		CO5	j-3															
23	CSC 4299 Internship	CO1	i-1										Yes					

		CO2	i-2												Yes			
		CO3	j-2												Yes			

Mapping of Knowledge Profile, Complex Engineering Problems and Complex Engineering Activities

Course & COs			Knowledge Profile (K)								Complex Engineering Problem Solving							Complex Engineering Activities				
#	Subject	Course Outcome	K1	K2	K3	K4	K5	K6	K7	K8	P1	P2	P3	P4	P5	P6	P7	A1	A2	A3	A4	A5
			Science	Mathematics	Eng Fundamentals	Eng Specialization	Design	Technology	Society	Research	Knowledge (K3-6,	Conflicting range	No Obvious Solution	Infrequent Issues	Outside Problems	Diverse Groups	Many Components	Range of Resources	Level of Interaction	Innovation	Consequences	Familiarity
1	CSC 1101 Intro. to Computer Studies	CO4	Y																			
2	CSC 1102 Introduction to Programming	CO2			Y						Y	Y				Y						
3	CSC 1103 Intro. to Programming Lab	CO2	Y																			
4	CSC 1204 Discrete Mathematics	CO1		Y																		
5	CSC 1205 Object Oriented Prog. 1	CO3							Y													
6	CSC 2106 Data Structure	CO3								Y												

20	COE 3203 Computer Organization & Arch.	CO1																		
21	CSC 4195 Research Methodology	CO3						Y												
		CO4																		
22	CSC 4298 Thesis/ Project	CO1				Y				Y	Y				Y					
		CO2					Y			Y		Y			Y					
		CO3					Y			Y	Y				Y					
		CO4							Y											
		CO5															Y	Y		
23	CSC 4299 Internship	CO1																		
		CO2																		
		CO3														Y			Y	

Mapping of Knowledge Profile (K) with Program Outcomes (POs)

Knowledge Profile (K)		
Indicator		Program Outcomes (POs)
K1	Theory based natural science	PO-a1.C3; PO-b1.C2
K2	Conceptual based mathematics	PO-a2.C3; PO-b2.C4
K3	Theory based engineering fundamentals	PO-a3.C3; PO-b3.C5; PO-g1.C5
K4	Forefront specialist knowledge for practice	PO-a4.C3; PO-b4.C4
K5	Engineering Design	PO-c1.C4; PO-c2.C6; PO-c3.C5; PO-e2.P4; PO-e3.P5; PO-f2.C6
K6	Engineering Practice (Technology)	PO-e1.C3
K7	Comprehension of engineering in society	PO-f2.C6; PO-g1.C5; PO-g2. A4; PO-h1.C3; PO-h2. A4
K8	Research Literature	PO-d1.C5; PO-d2.C4; PO-d3.C5

Mapping of Complex Engineering Problem Solving (P) with Program Outcomes (POs)

Range of Complex Engineering Problem Solving (P)		
Indicator	Title	Program Outcomes (POs)
P1	Depth of knowledge required	PO-a3.C3; PO-a4.C3; PO-b3.C5; PO-b4.C4; PO-c1.C4; PO-c2.C6; PO-c3.C5; PO-d1.C5; PO-d3.C5; PO-e1.C3; PO-e2. P4; PO-e3.P5; PO-f2.C6; PO-g1.C5
P2	Range of conflicting requirements	PO-a3.C3; PO-b4.C4; PO-c3.C5; PO-g1.C5
P3	Depth of analysis required	PO-a4.C3; PO-b3.C5; PO-c1.C4; PO-c2.C6; PO-d1.C5; PO-e3. P5; PO-f2.C6
P4	Familiarity of issues	PO-d3.C5; PO-e1.C3; PO-e2. P4
P5	Extent of applicable codes	PO-d3.C5; PO-e1.C3; PO-e2. P4
P6	Extent of stakeholder involvement and conflicting requirements	PO-a3.C3; PO-b4.C4; PO-c3.C5; PO-g1.C5
P7	Interdependence	PO-a4.C3; PO-b3.C5; PO-c1.C4; PO-c2.C6; PO-d1.C5; PO-e3. P5; PO-f2.C6

Mapping of Range of Complex Engineering Activities (A) with Program Outcomes (POs)

Range of Complex Engineering Activities (A)		
Indicator	Title	Program Outcomes (POs)
A1	Range of resources	PO-j1. A2; PO-j2. P3; PO-j3. A4
A2	Level of interaction	PO-j3. A4
A3	Innovation	PO-j1. A2
A4	Consequences for society and the environment	PO-j2. P3
A5	Familiarity	PO-j1. A2

COURSE DESCRIPTION

CSC 1101 Introduction to Computer Studies

CREDIT HOUR(S): 1/Lab

CONDUCT HOURS: 3 hours of Laboratory classes per week

PRE-REQUISITE: NIL

COURSE DESCRIPTION:

- This course is designed for freshmen (1st semester students). It is an introductory course on computer studies. Also, students will understand the key differences between university education and Higher Secondary level along with the full four years CSE program structure.
- Fundamental topics of computing such as number systems, hardware and software systems, flow chart design, aspects of the different operating systems, using Office-365 tools, etc.
- Students will achieve knowledge on very basic structural programming (how to write a simple program using variables, printf and scanf). This course also focuses on safe internet browsing for 21st century.
- Students will undertake CISCO IT Essentials training during this course.
- The course will highlight university and department's rules, regulations and policies
- The course will highlight university and department rules, regulations and policies (pre-registration, registration, exam permit, Set-B exams, Adding/Dropping, Grading scale, Course Evaluation procedures) etc. along with the online learning system VUES (Virtual University Expert Systems) which they must use throughout their bachelor studies for every educational and official operation.
- Concept of Digital Piracy and Academic Integrity

CSC 1102: Introduction to Programming Language &

CSC 1103: Introduction to Programming Language Lab

CREDIT HOUR(S): 3 & 1/Lab

CONDUCT HOURS: 3 hours of Theory classes & 3 hours of Laboratory class per week

PRE-REQUISITE: NIL

COURSE DESCRIPTION:

- The goal of this course is to teach the key programming and problem-solving skills where the students will be able to design, implement, debug, and test structured and Object-Oriented Programs (OOP).
- Fundamentals of Structured and OOP programming including – Data types, Operators & Expressions; Standard input/output (I/O); Conditional statements (if...else), Switch; Loops (do...while, while, for); Arrays (single, multidimensional); Pointers, Functions; Structure, Unions & Enumerations; Strings using C++
- The Object-Oriented Programming (OOP) Principles such as Classes and Objects; Constructors; Operator Overloading; Inheritance and Polymorphism; Encapsulation, Abstract Class; Stream Input/Output, File Processing, Exception Handling, String Processing, Standard Template Library (STL) etc. using C++.

CSC 1204: Discrete Mathematics

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MAT 1102: Diff. Calculus & Co-Ordinate Geometry & CSC 1102: Introduction to Programming Language

COURSE DESCRIPTION:

- Explain propositional logic and propositional equivalences
- Explain different types of sets and set operations
- Determine whether two compound propositions are logically equivalent using different techniques
- Describe different types of functions, representations of graphs
- Describe different types of tree traversal algorithms such as Preorder, Inorder, Postorder
- Explain Euler and Hamilton paths and circuits
- Discuss Relations and their properties

CSC 1205: Object Oriented Programming 1

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 1102 & CSC 1103: Introduction to Programming Language & Lab

COURSE DESCRIPTION:

- Create Java technology applications that leverage object-oriented features of the Java language, such as developing and declaring classes, encapsulation, inheritance, polymorphism, and abstraction.
- Execute Java applications from the command line; Use Java technology data types and expressions; flow control constructs; arrays and other data collections; concept of package.
- Implement error-handling techniques using exception handling
- Perform multiple operations on database tables, including creating, reading, updating and deleting using both JDBC
- Create an event-driven graphical user interface (GUI) using Swing components: panels, buttons, labels, text fields, and text areas
- Implement input/output (I/O) functionality to read from and write to data and text files and understand advanced I/O streams; Create multithreaded programs

CSC 2106: Data Structure

CSC 2107: Data Structure Lab

CREDIT HOUR(S): 3 & 1/Lab

CONDUCT HOURS: 3 hours of Theory classes & 3 hours of Laboratory class per week

PRE-REQUISITE: CSC 1204: Discrete Mathematics & CSC 1205: Object Oriented Programming 1

COURSE DESCRIPTION:

- Define data structure for computer programming; Explain ADTs along with their advantages and disadvantages; Details of array, stack, queue, linked list and trees and their applications.
- Explain different types of algorithms to search and sort and manipulate data using such data structure; Sorting Algorithm: Selection Sort, Bubble Sort, Counting Sort; Searching Algorithm: Linear and Binary Search; Demonstrate algorithms for efficient searching, insertion and deletion operation for every data structure by computer programs; Explain Tree; Basic terminology (Node, Vertex, Leaf, Left subtree,

Right subtree, Height, Depth, m-ary tree), Binary tree, Binary tree representation, Binary tree traversal, Simulations.; Binary search tree

- Explain Graphs: Definition and terminology, Representation techniques using 2D arrays and linked lists

CSC 2108: Introduction to Database

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 1205: Object Oriented Programming 1

COURSE DESCRIPTION:

- Identify the drawbacks of file-based management system and the necessity of Database management system; Use of modern tools used in Database management system
- Understanding different types of terminologies used in Database management system
- Discuss different tools and techniques for better performance of Database management system
- Execute necessary and sufficient SQLs; Design ER Models and Diagrams; Use of different types of Normalization process; Analyze a system with a view to DBMS implementation; Understand different types of joining and use of different complex queries

CSC 2209: Object Oriented Analysis and Design

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: CSC 2108: Introduction to Database

COURSE DESCRIPTION:

- Explain the necessity of formal modelling techniques in system development
- Describe system analysis and design using object-oriented concepts and techniques
- Quote the UML building blocks along with their notations
- Demonstrate the use of object-oriented analysis concept with UML diagrams
- Solve complex engineering problems using UML concepts and tools

CSC 2210: Object Oriented Programming 2

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 2106: Data Structure & CSC 2208: Introduction to Database

COURSE DESCRIPTION:

- Introduction to the .Net Framework
- C# language basics
- Creating User Interfaces for Console, Windows and WPF applications
- Creating and Managing Components and .NET Assemblies
- Consuming and Manipulating Data
- Testing and Debugging
- Deploying projects
- Maintaining, Supporting, Configuring and Securing
- Prepared, developed and presented a group project using .Net Solution Architectures.

CSC 2211: Algorithms

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 2106 & CSC 2207: Data Structure & Laboratory

COURSE DESCRIPTION:

- Discuss the principles, objectives, purpose, and necessity of Algorithms in the program domain.
- Distinguish computational problems with respect to inputs and outputs in addition to their solutions in efficient ways.
- Simplify in different ways to find out solutions of fundamental computational problems, their solutions, and performances.
- Justify the necessary and sufficient condition behind a solution of any widely accepted or self-developed algorithm.
- Demonstrate well known algorithmic solutions of different problems as essential parts of study along with recent improvements.
- Discuss efficiencies of different types of algorithms on different problem domains; Analyze time and space complexities of any widely accepted or self-developed algorithm.
- Apply appropriate data structures to implement efficient algorithms; Explain classical tools and techniques for algorithms analysis and design.
- Judge creativity in designing algorithms.

CSC 3112: Software Engineering

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 3 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 2209: Object Oriented System Analysis and Design

COURSE DESCRIPTION:

- Comprehend introduction to the modern study of software engineering.
- Discuss the present software engineering practices; Discuss various process models used in software engineering
- Describe requirements for engineering and design process; Comprehend the technologies used in coding and testing; Discuss software project management and planning
- Prepare software requirement specification and design document based on standard SRS and Design document templates.
- Assess and prepare a project plan using standard project planning process and tools.
- Assess project associated risks and prepare Risk management documentation.
- Apply appropriate data structures to implement efficient algorithms; Explain classical tools and techniques for algorithms analysis and design.

CSC 3113: Theory of Computation

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory class

PRE-REQUISITE: CSC 2211: Algorithms

COURSE DESCRIPTION:

- Introduction to computational theory, Understand and use of Computational models to solve problems, Basic Notations.
- Finite automata: deterministic finite automata, nondeterministic finite automata, equivalence and conversion, pushdown automata.
- Language Theory; Context free languages, Context free grammar.
- Turing Machines: basic machines, configuration, computing and combining Turing machines.
- Undecidability

CSC 3214: Operating Systems

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: COE 3102: Microprocessor & Embedded Systems & CSC 2211: Algorithms

COURSE DESCRIPTION:

- Explain modern operating systems, Overview and history of the structure of modern operating systems
- Describe the fundamental concepts and issues involved in operating system design and explain about the basic services provided by operating systems in general (main focus on UNIX-based operating systems along with alternative operating systems, including Windows.)
- Analyze in detail each of the major components of an operating system (from processes to threads);
- Explore the topics – process description and control, critical sections and mutual exclusion, deadlock, process scheduling, threads, process synchronization, semaphores and memory management strategies and file input/output.
- Present two central building blocks of modern operating systems: Processes and Threads.
- Processes (instances of a running computer program) and threads (a specific task running within a program) are integral to the understanding of how an OS executes a program and the communication of information between each of the computer's architectural layers.
- Apply appropriate data structures to implement efficient algorithms; Explain classical tools and techniques for algorithms analysis and design.
- Differentiate between processes and threads; Explain process on Context Switching; Analyze process synchronization methods and techniques
- Justify and explain different levels of access control, operating system protection and security.
- Analyze CPU scheduling algorithm; Categorize different scheduling algorithms and justify a good algorithm which will allocate resources, allowing an efficient execution of all running programs.
- Describe Deadlock in Operating system. Relate Deadlock with previous two units of CPU Scheduling and Processes and Threads; Analyze different algorithms to prevent Deadlock; Discuss about deadlock detection, as well as methods for recovering from a deadlocked state.
- Discuss the role of memory in an Operating System.
- Implement error-handling techniques using exception handling.
- Create multithreaded programs and explain the advantages compared with single threaded programs.

CSC 3215: Web Technologies

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 3112: Software Engineering & CSC 2210: Object Oriented Programming 2

COURSE DESCRIPTION:

- Escalate the increasing importance of Web technology and how it is changing the role of IT.
- Understand what strategic web development is and apply a framework to help identify strategic uses of Internet
- Compare the fundamental types of web technologies and how they can be used to provide real business benefit.
- Explore new technologies and issues affecting web development
- Apply a web development approach in analyzing the role of web technology in organizations
- Describe the process used in developing information systems and the concepts of web engineering and web process reengineering
- Analyze the skills needed for web development professionals
- Develop real life and society targeted Web Applications

CSC 3216: Compiler Design

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: CSC 3113: Theory of Computation

COURSE DESCRIPTION:

- Define Preprocessor, Compiler, Assembler and Linker.
- Describe how high-level languages can be implemented on a computer.
- Include specification of languages and its relation to automata, lexical analysis, finite state machines, context free languages, LL and LR parsing methods, syntax directed translation, error recovery, code generation, and portability
- Analyze the principles, algorithms and data structures involved in the design and constructions of compilers.

CSC3217: Artificial Intelligence and Expert System

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: CSC 2211: Algorithms & MAT 3103: Computational Statistics & Probability

COURSE DESCRIPTION:

- Analyze four different types of intelligent agents and their environment.
- Compare the learning agent with other agents.
- Solve problems using BFS, DFS, UCS, DLS and IDS search techniques.
- Solve informed search and exploration methods like A*, Hill Climbing, Genetic Algorithms etc.
- Solve Constraint satisfaction problems and search techniques in game playing.
- Analyze Logic representation in propositional and first-order logic.
- Solve the problem using Genetic Algorithm.
- Use Neural Network notations and architecture. Solve problems using perception learning rules.

CSC 4118: Computer Graphics

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: MAT 2202: Matrices, Vectors & Fourier Analysis & CSC 2211: Algorithms

COURSE DESCRIPTION:

- Broad overview of the basic concepts of computer graphics. Both 2D raster graphics and 3D graphics will be covered.
- 2D Raster graphics include transformations, color theory and scan conversion of lines and polygons.
- 3D graphics include projective geometry, representations of curves and surfaces, modeling and viewing transformations, hidden surface removal algorithms, reflection models and illumination algorithms.
- In addition, with this a practical glimpse of computer graphics will be given using OpenGL. Learn to use mathematical transformations and vector techniques in the production of computer graphics as well as how to use these things in real world using OpenGL. Gain familiarity with the OpenGL library as a tool for writing C/C++ programs to create real graphics applications.

EEE 2108: Introduction to Electrical Circuits

EEE 2109: Introduction to Electrical Circuits Lab

CREDIT HOUR(S): 3 & 1/Lab

CONDUCT HOURS: 3 hours of Theory classes & 3 hours of Laboratory class per week

PRE-REQUISITE: PHY 1101: Physics 1 & PHY 1102: Physics 1 Lab

COURSE DESCRIPTION:

- Basic concepts of DC circuit. Familiarizing with different components: Resistor, capacitor, Inductor, Voltage source, etc.
- Familiarizing with Series, Parallel and Series-parallel circuits Basic idea about alternating quantity: Period and cycle, frequency, angular velocity, angular frequency, Sinusoidal waveform. Vector Diagram.
- Ohm's Law; Total resistance of series & parallel circuits; KVL; KCL. Equation of instantaneous voltage, current and power of an R branch, L branch, C branch, RL, RC and RLC circuits. Impedance of R, L and C; Total impedances of their series or parallel combinations. Calculation of power and power factor Brief study of transients in capacitive networks.
- AC Power. Y-Delta and Delta-Y conversions; Dependent Current Source, Dependent Voltage Source; Network Theorems for DC and AC circuits; Superposition theorem Network Theorems for DC and AC circuits. Electromagnetism, Flemings's hand rules,
- DC generator and DC motor, Transformer, Induction motor, Synchronous generator, Alternator, Stepper Motor, Induction Motor, Universal Motor, Servo Motor, Permanent-magnet Synchronous motor, hysteresis motor, Reluctance motor, Linear motor,

EEE 2103: Electronic Devices

EEE 2104: Electronic Devices Lab

CREDIT HOUR(S): 3 & 1/Lab

CONDUCT HOURS: 3 hours of Theory classes & 3 hours of Laboratory class per week

PRE-REQUISITE: EEE 2108 & EEE 2109: Introduction to Electrical Circuits & Laboratory

COURSE DESCRIPTION:

- Semiconductors: electrons and holes in an intrinsic semiconductor, donor and acceptor impurities.
- Introduction to solid state electronics: Energy band structure in solids, insulators, semiconductors and metals, Conductance and semiconductors, electrons and holes,
- Diodes: open circuit p-n junction, diode characteristics, small signal model of diode, and circuit applications of diode, rectifiers and zener diode.
- Bipolar junction transistors: characteristics, different configuration of transistor amplifiers, voltage and current amplifiers small signal low frequency h parameter model analysis of transistor amplifier using h parameters, high input resistance transistor circuits, transistor biasing and thermal stabilization.
- MOSFET: Introduction- PMOS, NMOS and CMOS transistors and their switching characteristics, depletion and enhancement MOSFET. Analog Electronics Operational Amplifiers (Op-Amp), Introduction to Op- Amps and its applications, AC Performance of Op-Amp: Familiarize with the frequency response of Op- Amp, Active Filter: Analyze and design diverse types of filter, Transistor at High Frequencies: Observe the performance of hybrid model and the amplifier response, Feedback Amplifiers: Classify the amplifiers and analyze different methods of a feedback amplifier, Multistage Amplifiers: Achieve a clear idea about RC coupled amplifiers and their frequency response.

EEE 3101: Digital Logic and Circuits

EEE 3101: Digital Logic and Circuits Lab

CREDIT HOUR(S): 3 & 1/Lab

CONDUCT HOURS: 3 hours of Theory classes & 3 hours of Laboratory class per week

PRE-REQUISITE: EEE 2103: Electronic Devices & EEE 2104: Electronic Devices Lab

COURSE DESCRIPTION:

- Digital Logic and Circuits Perform arithmetic operations in many number systems, Definition and Problem solving on Fan out, Noise Margin, Propagation Delay, Speed Power Product, Basic Diode Transistor,
- Logic Gates: RTL, DTL and HTL, ECL & CML with operational detail, Simplify the Boolean expressions using Karnaugh Map, Implement the Boolean Functions using various Logic Gates, Analyze and design various combinational logic circuits,
- Basic memory units & operations. RAM-ROM Family, Flash memory, Magnetic & optical storage, CCDs,
- Sequential Circuits: Analyze and design clocked sequential circuits, Timing Analysis: Introduction to timing analysis of combinational and sequential circuits,
- Briefly introduce the concept of Hardware Description Language (HDL) using VHDL, Programmable Logic Devices (PLDs); Implementation with PAL, PLA, CPLD and FPGA.

EEE 2216: Engineering Ethics

CREDIT HOUR(S): 2

CONDUCT HOURS: 2 hours of Theory class per week

PRE-REQUISITE: CSC 3112: Software Engineering, COE 3102: Microprocessor & Embedded Systems

COURSE DESCRIPTION:

- Technology has a pervasive and profound effect on the contemporary world, and engineers play a central role in all aspects of technological development. To hold paramount the safety, health, and

welfare of the public, engineers must be morally committed and equipped to grapple with ethical dilemmas they confront. This course will introduce the issues in engineering ethics. It places those issues within a philosophical framework, and it seeks to exhibit their social importance and intellectual challenge.

- Explain basic ethical concepts, basic theory of professional ethics, professional codes of ethics, moral reasoning; ethical issues to uphold paramount the safety, health and welfare of the public.
- Illustrate different case studies for resolving various ethical dilemmas and making proper decisions.
- Make the students oriented for research and development, improvement of communication skills through arranging presentation session.

BAE 2101: Computer Aided Design & Drafting Lab

CREDIT HOUR(S): 1/Lab

CONDUCT HOURS: 3 hours of Laboratory classes per week

PRE-REQUISITE: EEE 2108: Introduction to Electrical Circuits

COURSE DESCRIPTION:

- Introduction to design & drafting using computers, drafting instruments and materials, lettering, alphabet of lines, dimensioning, geometric construction, conic sections, orthographic projection, isometric and oblique views, free hand sketching, construction of scale, sections and conventions, surface development.
- Making plans, sections and elevation of residential buildings. Safety rules, electricity rules and electricity codes.
- Electrical and Electronic symbols. Electrical wiring, house wiring and industrial installation wiring
- Insulation measurement. Use of Meggars. Battery charging. Creating PCB layout, editing PCB layout, printing PCB layout. Laboratory works are based on taught theory.

COE 3101: Data Communication

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: EEE 3101 & EEE 3102: Digital Logic & Circuits with Laboratory

COURSE DESCRIPTION:

- Introduction to data communication concepts, Protocol concepts and functionality,
- Network Architectures - OSI Model and TCP/IP Model.
- Physical Layer: Signals, Analog and Digital Signals, Data Rate Limits, Transmission impairments.
- Transmission Media: Guided media, Wireless media; Digital Transmission: Line Coding, Block Coding, Sampling, Transmission Mode; Analog Transmission: Modulation of digital data, Telephone modems, Modulation of analog signals.
- Multiplexing: FDM, WDM, TDM; High Speed Digital Access: DSL, Cable Modems, and SONET.
- Data Link Layer: Error Detection and Correction, Data Link Control and Protocols; Point-to-point Access: PPP, Multiple Access; Local Area Networks.
- Wireless LAN: IEEE 802.11, Bluetooth; Internetworking devices, Frame Relay, ATM.

COE 3102: Microprocessor and Embedded Systems

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: EEE 3101 & EEE 3102: Digital Logic & Circuits with Laboratory

COURSE DESCRIPTION:

- Introduction to microprocessor and microcontroller, understanding their basic differences and applications. Introduction to embedded systems and their applications.
- Understanding principles of operation of microcontrollers, including assembly language programming as well as internal architecture of processors.
- Learning about hardware-software interfacing and different interfacing techniques.
- Understanding the concept of built-in timers in microcontrollers and their uses. Learning about hardware and software interrupts in microcontroller and effectively implementing them in the lab to observe the performance improvement of the program.
- Understanding processor speed (oscillator frequency). Learning how to change the default frequency and observing the change effects.
- Introduction to serial communication and different protocols. Emphasis will be given on RS-232 communication, understanding the principle of RS-232 communication and its implementation. Introduction to SPI and I2C protocols.
- Introduction to ADC conversion, principle of operation and implementing an ADC converter using Arduino.
- Understanding the basics of pulse-width modulation (PWM), duty cycle and observing the effect of PWM through a stepper motor.
- Introduction to Embedded systems, a brief overview of the system and internal architecture, state-of-the-art technology.

COE 3203: Computer Organization & Architecture

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: COE 3102: Microprocessor & Embedded System

COURSE DESCRIPTION:

- Fundamental concepts of computer organization
- Instruction types and their formats
- Assembling and executing assembly language program
- Program Structure Input and Output Instructions; Use of subroutines and macros; Interrupts and system services; Flag Registers
- Translation of high-level language to assembly language
- Fundamental concepts of computer architecture
- Components of the computer and how they interact
- BUS standards; Addressing methods; High level control structure formation; Registers; cache.
- Numeric processing and string processing; Concurrent processes and high level linking
- Disk geometry
- File system and file I/O handling
- Application development using Raspberry/Arduino.

COE 3204: Computer Networks

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: COE 3101: Data Communication

COURSE DESCRIPTION:

- Introduce students with modern and up to date concepts on computer networks, beginning at the application layer and works its way down toward the physical layer.
- Application Layer protocols – HTTP, FTP, DNS, SMTP
- Transport Layer- TCP & UDP protocols; TCP congestion control, Flow control, three-way handshake
- Network layer - Introduction of IPv4 addressing; Subnetting – FLSM, VLSM, routing algorithms simulation using Dijkstra and Bellman-ford.
- Data Link Layer - Introduction of different multiple access protocols; Error Detection and Correction
- Switching- Circuit & Packet Switching, network delay calculation

MAT 1102: Differential Calculus and Coordinate Geometry

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: Nil

COURSE DESCRIPTION:

- Rectangular coordinates in two and three dimensions, direction cosines and direction ratio of a line, pair of straight lines,
- Scalar and vector products of vectors, plane and straight-line using vectors, identification of conics, equation of sphere, paraboloid and ellipsoid,
- Domain and range, limit, continuity and differentiability of functions, Rolle's, Mean value and Taylor's theorem, analysis of functions,
- Derivative of functions of several variables, homogeneous function and Euler's theorem.

MAT 1205 Integral Calculus and Ordinary Differential Equations

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MAT 1102: Differential Calculus and Coordinate Geometry

COURSE DESCRIPTION:

- Integral Calculus – Indefinite and definite integrals, numerical integrations, improper integrals and application of integration, multiple integrals.
- Solutions of different types of ordinary differential equations and their applications. System of linear ordinary differential equations.

MAT 2101: Complex Variables, Laplace and Z-transformations

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MAT 1205 Integral Calculus and Ordinary Differential Equations

COURSE DESCRIPTION:

- Laplace transform, inverse Laplace transform (Cauchy Residue Theorem, partial fraction and convolution theorem) and Application of Laplace transform.
- Complex Variables (complex number, conjugate, algebra of complex numbers, graphical representation of complex numbers, polar form, modulus and argument of complex number. De Moivre's theorem and roots of complex number.
- Function of complex variables, analytic function, Cauchy-Riemann equations in Cartesian and polar forms, construction of analytic function, Laplace equation, Harmonic and conjugate Harmonic functions).
- Complex integrals (line integrals, Cauchy-Goursat's theorem, Cauchy's integral formula, Cauchy's integral formula for higher order derivative, Taylor's theorem and Laurent's theorem).
- Singularity, poles, zeros and residue of complex valued function. Residue theorem, contour integration and mapping.
- Finally, the Z-transform will be discussed here and Z- transform includes properties of Z-transform and inverse Z-transform, methods of finding inverse Z-transform and application of Z-transform.

MAT 2202 Matrices, Vectors and Fourier Analysis

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MAT 2101: Complex Variables, Laplace and Z-transformations

COURSE DESCRIPTION:

- Different types of matrices, adjoint and inverse of a matrix, elementary row transformations of a matrix, row echelon and canonical forms of a matrix,
- Inverse matrix by elementary row transformations, rank of matrix, solution of a system of linear equations by matrix inversion and row transformations, transformation matrix,
- Application of transformation matrix in robotics, characteristic polynomial, eigenvalues and eigenvectors,
- Cayley-Hamilton theorem, linear combination and linear dependency of vectors, differentiation of a vector function, gradient and directional derivative of a scalar function, divergence and curl of a vector function in Cartesian,
- Cylindrical and spherical coordinate systems, Divergence theorem and Stokes theorem in Cartesian, cylindrical and spherical co-ordinate systems.
- periodic function, Fourier series of a periodic function, half range Fourier series, finite Fourier transformations, Fourier integral, Fourier sine and cosine integrals, Fourier transformations and inverse Fourier transformations, applications of Fourier.

MAT 3103: Computational Statistics and Probability

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MAT 1205 Integral Calculus and Ordinary Differential Equations

COURSE DESCRIPTION:

- Introduction of statistics, representation of data by measurement, counting methods and measures of central tendency and dispersion are designed.

- Basic concepts of probability, probability laws, use of probability in Statistics, conditional probability using Bayes' theorem and check for independence of events.
- Random variable, random experiment, mathematical expectation and variance and different types of distributions, sampling theory and estimation theory. Stochastic process. Hypothesis testing. Compute the covariance and correlation between jointly distributed variables and regression. Use of statistical packages to analyze data.

MAT 3101: Numerical Methods for Science and Engineering

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MAT 2202: Matrices, Vectors and Fourier Analysis

COURSE DESCRIPTION:

- Introduction to MATLAB. Basic commands, syntax and function. Basics introduction to decimal places, significant figures, rounding, loss of significance. Gaussian elimination with pivoting. Gauss-Seidal Iterative method of solution.
- Application of MATLAB for linear system. Newton's divided difference formula. Lagrange polynomial. Applying MATLAB to find polynomial. Linear, quadratic and cubic splines using MATLAB. Interpolation using a fixed curve. Least square method. To find interpolating curve using MATLAB. Number of roots by graphical method. Bisection, secant and Newton-Raphson methods. Fixed point iteration method. Solution of non-linear system of equation using Newton-Raphsons and fixed-point iteration methods.
- MATLAB application to find roots for non-linear equations. Solution of system of non-linear equations using Newton-Raphsons and iterative methods. MATLAB application to find roots for non-linear systems. Derivation of forward, backward and central difference formulae for first and second derivative. Richardson's extrapolation.
- MATLAB applications to find various order derivatives. Introduction. Newton-Cotes quadrature rules. Composite trapezoidal and Simpson's rules. Romberg integration. Double Integration Gaussian quadrature rule. To find single and multiple (definite) integration using MATLAB. Solution of Initial value problems using Taylor series, Euler's and modified Euler's method, The Runge-Kutta methods (Rk-2 and RK-4 methods). Solution of two points boundary value problems using finite difference method. Application of MATLAB to find the solution of ODEs and system of ODEs.

PHY 1101: Physics-1

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: Nil

COURSE DESCRIPTION:

- Motion in 2D and 3D, Applications of Newton's laws of motion, Static and Kinetic friction, Work-Kinetic energy theorem, Power, Conservative forces, Conservation of energy, Gravitation, Gravitational field, Kepler's Law, Center of mass motion, Conservation of linear momentum for a system of particles, Elastic and inelastic collision in 1D, Angular velocity and acceleration, relation between linear and angular velocity, Calculating rotational inertia, Parallel-axis theorem, Conservation of angular momentum.

- Electric charge, Coulomb's law, Calculation of Electric fields for different charge distributions; Dipole in an electric field; Gauss' law and its applications; Electric potential and its calculation for different charge distributions; Capacitance and its calculation for different geometrical shapes, energy stored by a capacitor; dielectrics and Gauss' law; Concept of electric current, resistance and Ohm's law, DC circuits, Kirchoff's rules, RC circuits, Magnetic field, The Hall effect, Biot-Savart law, Ampere's law, Faraday's Law, LR circuits, LC circuits and LRC circuits.

PHY 1102: Physics 1 Lab

CREDIT HOUR(S): 1/Lab

CONDUCT HOURS: 3 hours of Laboratory classes per week

PRE-REQUISITE: Nil

COURSE DESCRIPTION:

- Undergraduate labs are designed to reinforce information presented during course lectures by providing students "hands-on" opportunities to explore the concepts and principles of physics taught in the course Physics 1. Topics include:
- Determination of acceleration due to gravity using a simple pendulum; determination of projectile motion and collision of a ball
- Verification of Newton's second law of motion by Atwood's machine.
- Measurement of moment of inertia of a flywheel about its axis of rotation; Measurement of Young's modulus of a wire using Searle's apparatus; measuring the surface tension of water using capillary tube method.
- Verification of Ohm's law and verification of the laws of series and parallel combinations of resistances; Measurement of temperature co-efficient of resistance of a wire.
- Determination of DC & AC voltages and frequencies using cathode ray oscilloscope.
- Investigation of DC voltage and frequency of a full-wave bridge-rectifier circuit
- Measurement of RC time constant in an RC circuit; internal resistance/emf of a cell.

PHY 1203: Physics 2

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: PHY 1101: Physics 1

COURSE DESCRIPTION:

- Specific heat, first law of thermodynamics, working principle of Carnot cycle and efficiency of heat engines; Second law of thermodynamics, idea of entropy, change in entropy for different processes, Thermodynamic functions and Maxwell's thermodynamic relations, Clausius-Clapeyron equations.
- Wave motion, characteristics of wave motion, equation of simple harmonic progressive wave, particle velocity and wave velocity, energy of a progressive wave, formation of Stationary wave, analytical treatment of stationary waves, velocity of a particle in a stationary wave, change of density at places traversed by a stationary wave, acceleration of a particle in the stationary wave, energy of a stationary wave, distinction between progressive and stationary waves, wave velocity and group velocity, velocity of a transverse wave along a stretched string, laws of vibration of a stretched string, Melde's experiment.
- An introduction to nature and propagation of light, reflection and refraction, total internal reflection, dispersion, polarization, scattering of light, Huygens' principle.

- Interference, interference and coherent sources, constructive and destructive interference, Young's double slit experiment, Interference in thin films, Newton's Rings.
- Fresnel and Fraunhofer Diffraction, diffraction from a single slit, diffraction by a double slit, multiple slit diffraction, the diffraction gratings.
- Laser basics and applications, optical effects in crystals, Nonlinear optics – an introductory discussion, elementary discussion on fiber optics.

PHY 1204, Physics 2 Lab

CREDIT HOUR(S): 1/Lab

CONDUCT HOURS: 3 hours of Laboratory classes per week

PRE-REQUISITE: PHY 1102: Physics 1 Lab

COURSE DESCRIPTION:

- Undergraduate labs are designed to reinforce information presented during course lectures by providing students "hands-on" opportunities to explore the concepts and principles of physics taught in the course Physics 1. Topics include:
- Determination of acceleration due to gravity using a simple pendulum; determination of projectile motion and collision of a ball
- Verification of Newton's second law of motion by Atwood's machine.
- Measurement of moment of inertia of a flywheel about its axis of rotation; Measurement of Young's modulus of a wire using Searle's apparatus; measuring the surface tension of water using capillary tube method
- Verification of Ohm's law and verification of the laws of series and parallel combinations of resistances; Measurement of temperature co-efficient of resistance of a wire.
- Determination of DC & AC voltages and frequencies using cathode ray oscilloscope.
- Investigation of DC voltage and frequency of a full-wave bridge-rectifier circuit
- Measurement of RC time constant in an RC circuit; internal resistance/emf of a cell.

Chem 1101: Chemistry

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: PHY 1203: Physics 2

COURSE DESCRIPTION:

- Introduction to atomic structure: Dalton, Rutherford and Bohr atomic models, quantum theory radiation, atomic spectra, calculation of radius and energy of orbits of hydrogen atoms.
- Wave mechanical approach of the atom: Dual nature of matters, de Broglie's equation, Heisenberg's certainty principle, probability distribution curve, quantum numbers, shapes of orbitals and principle of electronic configuration.
- Modern periodic table: Law of periodicity, main features of modern periodic table, classification of elements based on their properties into metal, nonmetal and metalloid, studies on group chemistry of elements.
- Chemical bonds: Main types of chemical bonds and their properties, bond energy, bond length and bond angle; theories of covalent bonding; molecular structure of compounds.

- Chemical reactions: Types of chemical reactions, concept of acids and bases, electrolytes, neutralization reactions, oxidation-reduction reactions, pH and ionization of water.
- Solutions, solubility and solubility products: Different types of solutions, solubility, solubility product law, solubility product vs ionic product, solubility product principle with its applications and properties of dilute solution.
- Electrochemistry: Principle of electrolysis and its application, conductance of electrolytes, specific conductance and equivalent conductance, Kohlrausch's law of electrolysis, conductometric titration, conductometric titration behavior of acids and bases, electrochemical cells, photolithography.
- Phase rule and phase diagram: Phase rule and its characteristics, phase diagram of a mono component system, water system and sulphur system.
- Solid state chemistry: Crystalline and amorphous solids, crystal lattices and unit cells, closed packed structures, coordination number and packing efficiency, formation of voids in closed packing, crystal defects, band theory of conductivity,
- electrical properties of solids: conductors, insulators and semiconductors; n-type and p-type semiconductors.
- Thermo chemistry: Laws of thermochemistry, exothermic and endothermic systems with block diagrams, total energy of a body, energy and its units, enthalpy and entropy, types of heat of reactions, fuels.
- Chemical kinetics and chemical equilibrium: Rate of reaction, rate laws and order of reaction, equilibrium law and its characteristics.
- Some selected topics: Sources and importance of organic compounds, classification and functional groups and selected organic reactions, Selected topics of nanoscience, polymer chemistry and biochemistry.
- Laboratory experiments based on theory involving quantitative inorganic analysis: Acid-base titration, pH measurements, oxidation-reduction titration, determination of total hardness of water, estimation of Cu, Fe, Ca etc. and conductometric analysis.

ENG 1101: English Reading Skills and Public Speaking

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: Nil

COURSE DESCRIPTION:

- Extracting information from academic texts: Reading about a Process; reading for Specific Information; Reading for Main Ideas; Scanning Graphs for Information
- Comparing & Contrasting: Understanding Vocabulary in Context; Using Comparative Structures
- Understanding Cause & Effect relations: Identifying Cause and Effect; Reading for Gist; Listening and Note-Taking
- Academic Presentations: Making Informative Presentations; Making Argumentative Presentations
- Generalizing & Specifying: Reading Descriptions of Graphs; Describing Functions; Generalizing
- Making Arguments & Providing Evidence: Distinguishing Fact and Opinion; Justifying Opinions; Evaluating Opinions; Giving Opinions

ENG 1202: English Writing Skills and Communication

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: ENG 1101: English Reading Skills and Public Speaking

COURSE DESCRIPTION:

- Understanding the Writing processes; Academic Writing
- Identifying key features, types and purposes; Gathering Ideas and Developing Focus on Academic Writing; Generate ideas for a writing task through Brainstorming, Mind mapping, etc.; Narrowing down a topic
- Using Sources, Data, and Graphics in Academic Writing; Selecting suitable sources for writing essays and reports; Identifying Types of data and graphics; Using appropriate language to interpret data and graphics
- Organizing Ideas: Outlining an Essay Plan; Formulating Thesis Statements for Essays; Developing Effective Introductions; Structure an Academic Essay; Writing Well-structured Paragraphs; Writing Body, an Introduction and a Conclusion.
- Writing in Academic Style; Using Objective and Impersonal Language; Developing Precision; Understanding Formality and Tone of Academic Writing; Using Cohesive Devices to Connect Ideas
- Referencing: Paraphrasing, Summarizing; Using References in Writing; Paraphrasing and Summarizing information and ideas from different sources.
- Avoid plagiarism, providing in-text citation and a bibliography.
- Comparing and Contrasting; Planning and writing a comparative essay; Evaluating different styles of organizing comparative essays; Making an outline of a comparative essay. Cause and Effect; Using Cause Effect Language to express cause effect relationships; Planning, organizing and writing a cause-and-effect essay.
- Argument and Problem-solving; Avoiding weak arguments; Planning, organizing and structuring argumentative writing; Using appropriate language and structuring to discuss problems and solutions; Structure a problem-solution essay Letter writing for academic purposes.

ENG 2103 Business Communication

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: ENG 1202: English Writing Skills and Communication

COURSE DESCRIPTION:

- *Use of Technology*: Describing technical functions and applications; Explaining how technology works.
- Employment Communication; Analyzing Job Advertisements; Preparing Résumé and covering letter
- Technical Specifications and Instructions, Processes; Giving hardware specification; Giving instruction for using a GUI; Describing different multimedia types; Explaining an installation process
- Materials in Technology; Describing specific materials; Categorizing materials; Specifying and describing properties; Components and Assemblies; Describing component shapes and features; Explaining and assessing manufacturing techniques; Explaining jointing and fixing techniques; Describing positions of assembled components

- Communicating through E-mails; Understanding differences between traditional letters and e-mails in work related context; Writing work related e-mails using clear, simple language; Incorporating abbreviations and acronyms in e-mails when appropriate
- Technical Presentation; Giving presentation on a product; Writing in a note taking framework; Taking notes from product presentations.
- Designing an experiment; Describing approaches to data collection; Designing an experimental set-up; Describing material phenomena and forces; Making predictions of experimental results; Describing an experiment; Describing a process; Evaluating the results of an experiment; Describing problems with an experiment; Keeping a Lab notebook
- Writing up research: materials and methods; Describing states and processes; Describing data: numbers / numerical values; Writing up from Lab notes; presenting data; Analyzing data (statistical analysis); Summarizing data in visual form; Writing captions for figures; Describing visual data; results and discussion; Organizing the results and discussion sections.
- Preparing and writing the results section; Preparing and writing the discussion section; introduction and abstract; Writing the introduction; Writing the abstract; Giving a title to your paper

BBA 1102: Principles of Accounting

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MAT 1205 Integral Calculus and Ordinary Differential Equations

COURSE DESCRIPTION:

- Basic accounting equation and the meaning of assets, liabilities, and owner's equity, analyzing business transactions and its effects on basic accounting equation, understanding four financial statements etc.
- The Recording Process: What is an account, debits and credits, basic steps in accounting process, journal and its recording process, ledger and its recording process, preparation of trial balance etc.
- Adjusting the Accounts; Time-period assumption, accrual basis of accounting, adjusting entries, adjusting entries for prepayments and accruals, purpose of adjusted trial balances.
- Completion of Accounting Cycle; Preparing a work sheet, processing closing the books, the content and purpose of post-closing trial balance, the required steps in accounting cycle, correcting entries, reversing entries, classified balance sheet.
- Inventories and concept of depreciation; Steps in determining inventory quantities, inventory cost flow methods, financial statements and tax effects of inventory cost flow methods; concept of depreciation, depreciation by using different methods
- Managerial Accounting Basics: Distinguishing features of Managerial Accounting, functions of management, defining classes of manufacturing costs, product & period cost.
- Cost concepts and classification: Manufacturing costs, difference between merchandising & manufacturing Income Statement & Balance Sheet, determining cost of goods manufactured, Cost Terms & Concept, Cost behavior, Cost driver & cost estimation etc.
- CVP Analysis: Cost behavior and its pattern; types of variable and fixed costs; contribution margin ratio; application of CVP concepts; break-even analysis; target profit analysis; the margin of safety; operating leverage.
- Variable Costing: Absorption costing and variable costing; income comparison of absorption costing and variable costing; effect of changes in production on net income.

MGT 3202: Engineering Management

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: EEE 2216: Engineering Ethics

COURSE DESCRIPTION:

- Introduction to Management: Course Introduction, Engineering Management
- Introduction to productivity, productivity measures, productivity growth, problem solving.
- Fundamentals of forecasting, forecasting models
- Decision Making Tools: Decision tree model, formulation of decision problem, graphical presentation
- Linear Programming (LP), problem solving, Capacity Planning; Fundamentals of capacity planning, BEP analysis, problem solving
- Fundamentals of inventory management, inventory models (ABC, EOQ, ROP), case study;
- Fundamentals of location decisions, location analysis (Cost-Volume- Profit analysis and Centre of Gravity method), problem solving
- Transportation Model and problem; scenario, requirements, assumptions, formulation of LP, problem and network presentation, transportation models
- Basics of quality, quality control tools (Histogram, Control Chart, Pareto and check Sheet), problem solving, case study
- Fundamentals of project management, project management tools: (WBS, PERT/CPM, Gantt chart), case study; Fundamentals of project cost management, cost monitoring: (planned value, earned value, actual cost), Case study
- Project Software: Microsoft Project

ECO 3150: Principles of Economics

CREDIT HOUR(S): 2

CONDUCT HOURS: 2 hours of Theory classes per week

PRE-REQUISITE: MAT 3103: Computational Statistics & Probability

COURSE DESCRIPTION:

- Introduce the principles that are essential to understand the basic economizing problem and specific economic issues and policy alternatives for dealing with them.
- Two fortunate outcomes of this course are an ability to reason accurately and dispassionately about economic matters and a lasting interest in economics.
- Topics included are concepts of demand and supply, elasticity, theory of production, theory of cost, market structure, unemployment, inflation, fiscal and monetary policies.

BAS 2101: Bangladesh Studies

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: CSC 1101: Introduction to Computer Studies

COURSE DESCRIPTION:

- Bangla Language and Literature: Explore the socio-cultural context of Bangla through the basic tenets of its linguistic features. Texts and poems of several literary maestros make students acquainted with

Bangla's rich literary elements in relation to Bangladeshi cultural values. In this course, students will grasp the evolution of modern Bengali language, culture, history and arts (including cinema, painting and songs as well as literature). This course will also give the students brief idea about literary periods or age divisions in the history of Bangla literature and Language.

- National Culture and Heritage: By taking a historical approach, this course explores the political process and institutions, the building blocks of a national economy, and key cultural debates in the country. Discuss electoral system, political parties, parliament, and forms of government. Explore the building blocks of a national economy such as budget, taxation, banking and share market. Discuss key cultural issues such as identity, secularism, and nationalism.
- History of Emergence of Bangladesh: Present a general overview of political events, organizations and issues that contributed to the birth of Bangladesh and post-independence developments till today. This part will focus on peasant resistance, marginalized peoples, ethnic and caste issues, women and culture, Iconic historic moments, such as the 1857 movement, how the first partition of Bengal in 1905 and its multiple nationalist implications; Hindu-Muslim conflict; partition of Bengal in 1947; the 1952 Language Movement, Pakistan experiences, as a background to the war of 1971; democracy, authoritarianism and militarism in post-independent Bangladesh.

CSC 4197: Research Methodology

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: Students must complete 100 credits

COURSE DESCRIPTION:

- Define and Comprehend research, research perspective and need to conduct research.
- Comprehend basic building blocks of research (e.g., framework).
- Define and explain different research methods, ethics, research ethics, integration in real life scenarios.
- Analyze and Formulate research proposal.
- Evaluation and Design research based on problem analysis.
- Comprehend and associate experimental validation techniques in relation to research methods and solutions.
- Comprehend the basics of scientific writing; Compose a demo research article.

CSC 4298: Thesis/Project

CREDIT HOUR(S): 3

CONDUCT HOURS: Student meet with the supervisor every week

PRE-REQUISITE: CSC 4197: Research Methodology

COURSE DESCRIPTION:

- Thesis:
 - Study of problems in the field of Computer Science & Engineering.
 - A supervisor is assigned to guide the progress & outcome the thesis
 - The final outcome is documented as a furnished book/report (in AIUB Thesis Format) with the supervisor's endorsement.
 - The document is then presented & defended in front of a board consisting of internal & external experts on the field to be evaluated.

- Projects:
 - Development of significant software system, employing knowledge gained from courses throughout the program. Includes development of requirements, design, implementation, and quality assurance.
 - Students may follow any suitable process model, must pay attention to quality issues, and must manage the project themselves, following all appropriate project management techniques. Success of the project is determined in large part by whether students have adequately solved their customer's problem.

CSC 4299: Internship

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: Students must complete 140 credits

COURSE DESCRIPTION:

- The student, under the supervision of a faculty, is assigned or placed in a Technological Firm/Institution/Organization for a semester's practicum (at least 10 weeks).
- The student prepares an Affiliation Report and submits this for evaluation and endorsed by the supervisor.
- This report is then presented for oral defense before a panel.

CSC 4125: Computer Science Mathematics

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MAT 3101: Numerical Methods of Science & Engineering & CSC 2211: Algorithms

COURSE DESCRIPTION:

- The objective of this course is to teach how we can construct, implement, and compare algorithms using "Abstract Mathematics" needed for a thorough, well-grounded understanding of computer programs. It is the controlled manipulation of mathematical formulas, using collection of techniques for solving problems.
- Recurrent problems (Tower of Hanoi, Lines in the plane, Josephus problem),
- Sum, Integer Functions, Number Theory, Binomial Coefficients (Basic identities, Practice, Tricks of the trades, generating functions).
- Special Numbers, Generations Functions (Domino Theory, basic maneuvers, solving recurrences),
- Discrete Probability, Asymptotic, Random Numbers, Polynomial Arithmetic.

CSC 4126: Basic Graph Theory

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: CSC 2211: Algorithms

COURSE DESCRIPTION:

- Fundamental Concepts of Graph; Paths, Cycles, and Trails. Vertex Degrees and Counting. Directed Graphs), Trees and Distance (Basic Properties. Spanning Trees and Enumeration. Optimization and Trees),
- Matchings and Factors (Matchings and Covers. Algorithms and Applications. Matchings in General Graphs), Connectivity and Paths (Cuts and Connectivity. k-connected Graphs. Network Flow Problems), Coloring of Graphs (Vertex Colorings and Upper Bounds. Structure of k-chromatic Graphs. Enumerative Aspects) Planar Graphs (Embeddings and Euler's Formula. Characterization of Planar Graphs. Parameters of Planarity), Edges and Cycles (Line Graphs and Edge-Coloring. Hamiltonian Cycles. Planarity, Coloring, and Cycles), Additional Topics (Optional) (Perfect Graphs. Matroids. Ramsey Theory. More Extremal Problems. Random Graphs. Eigenvalues of Graphs).

CSC 4127: Advanced Algorithm Techniques

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 32 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 3217: Artificial Intelligence and Expert Systems

COURSE DESCRIPTION:

- Computational, Parameterized, Amortized analysis & complexity,
- Algorithms for combinatorial optimization, Practical computing and heuristics,
- Advanced Data Structures: Binomial Heaps, Fibonacci Heaps, Splay Trees
- Approximation algorithms, LP based approximation algorithms,
- Randomized algorithms, Online algorithms
- Algorithms in state-of-the-art fields like Bioinformatics, Grid Computing, VLSI design etc.

CSC 4128: Linear Programming

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 3217: Artificial Intelligence and Expert Systems

COURSE DESCRIPTION:

- Introduction and overview, Linear inequalities, Geometry of linear programming, The linear programming problem, Structural optimization, FIR filter design,
- Applications in control, Network optimization, Duality, The simplex method, The barrier method, Convergence analysis of the barrier method, Primal-dual interior-point methods, Self- dual formulations, Large-scale linear programming, Integer linear programming.

CSC 4230: Bioinformatics

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 3217: Artificial Intelligence and Expert Systems

COURSE DESCRIPTION:

- Computational methods for analyzing biological systems. Dynamic programming, Markov models, Neural Networks, and Bayesian analysis are used to predict secondary structure, tertiary structure, and active sites for drug docking given molecular DNA sequence data.

- Structure and function of DNA; Mechanisms of molecular evolution; use of computer databases and tools to study biology; Algorithms used in bioinformatics.

CSC 4231: Parallel Computing

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 2211: Algorithms & COE 3203: Computer Organization & Architecture

COURSE DESCRIPTION:

- This course explores various aspects of parallel computing including parallel architecture, algorithms, systems, programming languages and implementation issues.
- The focus is on solving real problems with existing parallel machines. Students will be expected to read recent research publications and participate in significant parallel implementation projects.

CSC 4232: Machine Learning

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 3217: Artificial Intelligence and Expert Systems

COURSE DESCRIPTION:

- Machine learning uses interdisciplinary techniques such as statistics, linear algebra, optimization, and computer science to create automated systems that can sift through large volumes of data at high speed to make predictions or decisions without human intervention. Machine learning as a field is now incredibly pervasive, with applications spanning from business intelligence to homeland security, from analyzing biochemical interactions to structural monitoring of aging bridges, and from emissions to astrophysics, etc.
- The course will contain the introduction to ML; Problems, data, and tools; Visualization; Supervised Learning Setup: Linear Regression.; Weighted Least Squares. Logistic Regression. Netwon's Method Perceptron. Exponential Family. Generalized Linear Models. Classification Setup: Gaussian Discriminant Analysis; Naive Bayes; Laplace Smoothing; Support Vector Machines; Kernels; Neural Networks: Perceptron; Evaluation Metrics; Random Forest; Decision Trees; Bias-Variiances; Regularization; Feature/Model Selection; Unsupervised Learning: Clustering; K-means; Hierarchical Agglomeration; Principal Component Analysis; Independent Component Analysis.

CSC 4233: Natural Language Processing

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC3216: Compiler Design & CSC4162: Programming in Python

COURSE DESCRIPTION:

- This course is about a variety of ways to represent human languages (like English) as computational systems, and how to exploit those representations to write programs that do useful things with text and speech data, like translation, summarization, extracting information, question answering, natural interfaces to databases, and conversational agents.

- Introduction: Knowledge in Speech and Language Processing; Ambiguity; Models and Algorithms; Language, Thoughts, and Understanding; Regular Expressions and Automata: Regular Expressions; Disjunctions, Grouping, and Precedence; Finite-state Automata; FSA Recognizing Search; Words and Transducers: Morphology; Derivational Morphology; Cliticization; Agreement; Morphological Parsing; Building Finite State Lexicon; Finite State Transducers; Transducers and Orthographic Rules; Combining FST Lexicon and Rules; Tokenization; Detecting and Correcting Lexical Errors; Human Morphological Processing; N- Grams, Word Classes, and Part of Speech Tagging: Counting Words; Simple N-Grams; Perplexity; Smoothing; Interpolation; Backoff; Entropy and Entropy Rate Consistency; Rule Bases and HMM Part of Speech Tagging; Statistical Linguistic Models: Markov Chains; Hidden Markov Model; The Forward Algorithm; Linear Regression; Classification; Maximum Entropy Model; Decoding and Learning.

EEE 2101: Basic Mechanical Engineering

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: PHY 1203: Physics 2

COURSE DESCRIPTION:

- Basic introductory knowledge and theory behind the major mechanical applications such as internal combustion engines and their thermodynamic cycles, steam generators and turbines, refrigeration and air conditioning system etc. Introduces students to the terminology related to the topics included and approach to solve associated complex engineering problems.
- Summarize the properties of water and steam, the working principle of steam boilers, purpose of the mountings and accessories of boilers, and the performance of steam boilers.
- Illustrate the working principle of external combustion engines, working strokes and thermodynamic cycles of internal combustion engines (Spark Ignition and Compression Ignition engines).
- Explain the steam power cycles (thermodynamic vapor cycles). Review the laws of thermodynamics, methods of heat transfer and heat transfer laws. Demonstrate the vapor compression refrigeration system.
- Describe the psychrometric terms, psychrometric processes and psychrometry of air conditioning system. Recapitulate the properties of fluid, Newton's law of viscosity, Bernoulli's principle and types of fluid flow.

EEE 2213: Signals and Linear Systems

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MAT 2202: Matrix, Vectors, and Fourier analysis

COURSE DESCRIPTION:

- Characteristics, classifications and operations of signals.
- Characteristics of linear and time-invariant systems.
- Methods of transient and steady state solution of Differential equations.
- Methods of transient and steady state solution of Integral-Differential equations.
- Convolution integral and their applications.
- Matrix with simple applications in circuit: network function.

- State equation and state variables for small linear systems.
- Network theorems and Analogous systems.
- Fourier series properties and applications.
- Fourier Transform and its applications to signals and systems
- Laplace transforms and its application to linear circuits.

EEE 3103: Digital Signal Processing (DSP)

CREDIT HOUR(S):3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: EEE 2213: Signal and Linear System

COURSE DESCRIPTION:

- This course covers the techniques of modern digital signal processing that are fundamental to a wide variety of application areas. The summarized course description is as follows:
- Discrete Fourier Transform and Fast Fourier Transform algorithms and applications, Z- transforms.
- Frequency domain analysis of discrete-time systems; Design and implementation of FIR and IIR filters with Computer-aided design projects; Discrete time signals and systems. Discrete Fourier Transformation of Discrete signals; Frequency domain analysis of discrete-time systems.
- Performing Z and inverse Z transform using the definitions, and properties and partial fraction expansion.
- Determining if a DT (Discrete-time) system is linear, time-invariant, causal, and memory less; the BIBO stability of systems given in frequency domain.
- Designing and implementing digital filters by theoretical calculation and by using MATLAB.
- Using computers and MATLAB to create, analyze and process signals, and to simulate and analyze systems to plot and interpret magnitude and phase of LTI system frequency responses.

EEE 4241: Industrial Electronics, Drives & Instrumentation

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: EEE 3101: Digital Logic and Circuits & EEE 2101: Basic Mechanical Engineering

COURSE DESCRIPTION:

- Industrial Electronics and Drives Introduction to solid state devices: Thyristors, BJT, MOSFET and IGBT; Turning On and turning Off mechanisms Introduction to triggering devices: UJT, Programmable UJT (PUT), DIAC.
- Power semiconductor circuits: AC to DC controlled converters, DC to DC converters, Single phase AC power control circuits, triggering and control circuits design. DC to AC converters with frequency and voltage control, PWM and Harmonic elimination, Resonant converters, Switch mode power supplies.
- Introduction to SVM. Machine drives: fundamentals, quadrants of operation, torque balance, acceleration and deceleration control. DC motor drives: speed control, braking and plugging circuits for separate excitement, series and shunt motors. Induction motor Drives: constant torque and constant power operation, scalar control, V/f control, slip power recovery. Control of motor speeds and applications of drives in the industries.
- Introduction to power supplies, push-pull power supply, UPS etc. Heating: Induction and dielectric heating. Measurement and Instrumentation Define measurement and instrument system. Different static

and dynamic characteristics of measurement and instrument system. Acquire knowledge about different methods of resistance measurement.

EEE 4209: Telecommunications Engineering

CREDIT HOUR(S):3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: COE 3101: Data Communication & EEE 2101: Basic Mechanical Engineering

COURSE DESCRIPTION:

- This is core course of Electrical and Electronic Engineering program that presents basic understanding of Telecommunications Engineering. It serves as a foundation for the students to make them familiarized with all important aspects of Telecommunications Engineering, ranging from the old simple telephony system up to the high-tech mobile communications networks while covering microwave and radar technologies, Fiber-optic communication, satellite communication systems etc. The goal of this course is to:
- Introducing simple telephony and Telecommunication systems, signal spectra, Modulation,
- Analog modulation: Amplitude modulation and demodulation (DSB-SC, SSB, VSB), Frequency modulation and demodulation (NBFM, WBFM), Phase Modulation (PM), Sampling theorem, Pulse Modulation (Voice Digitization: PAM, PCM, Quantization, Binary Coding, SQNR, Companding, DPCM, Delta Modulation.
- Understand digital modulation techniques (ASK, PSK, FSK, CPFSK, MSK, GMSK and QAM) and Multiplexing techniques: FDM, TDM.
- Introduce to different Switching, systems: space and time switching, SPC, and digital switching
- Understand tele traffic theory and traffic analysis.
- Introduce Optical Fiber communications, LED, Laser, APD, WDM, and Optical Fiber Cable.
- Familiarize with broadband transmission systems: ATM, SONET and SDH.
- Introduce cellular mobile communications (Cellular concepts, GSM, CDMA, and UMTS).
- Familiarize with radio wave propagation, effects of ionosphere and earth's curvature, Basics of RADAR and Satellite Communication. Introduction to Spectrum Management Issues, Emerging Technologies (Bluetooth, Wi-Fi).

EEE 4217: VLSI Circuit Design

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: EEE 4241: Industrial Electronics, Drives & Instrumentation

COURSE DESCRIPTION:

- This is a core course of Electrical and Electronic Engineering program that presents performance parameters (delay, power, robustness etc.) of CMOS digital circuits and their geometric/physical design.
- VLSI technology: terminologies and trends
- MOS transistor characteristics and equations; NMOS and CMOS inverters, DC transient characteristics
- Pass transistors and pass gates
- CMOS layout and design rules; Complex CMOS gates
- Resistance and capacitance

- Estimation and modeling, Signal propagation, delay, noise margin and power consumption
- Interconnect
- BiCMOS circuits; CMOS building blocks, Adders, Counters, Multipliers and barrel shifters
- Datapaths; Memory Structures
- PLAs and FPGAs; VLSI testing, Objectives and strategies.

EEE 4233: Digital Design with System Verilog, VHDL & FPGAs

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: EEE 4217: VLSI Circuit Design

COURSE DESCRIPTION:

- This is an elective course of Electrical and Electronic Engineering & Computer Engineering program that presents Register Transfer Level design with System Verilog HDL and VHDLs and targeted to FPGAs. The goal of this course is to teach:
- Introduction to HDL-based Top-Down design methodology for ASICs and FPLDs (CPLDs/FPGAs), FPLD and ASIC architecture and Electronic Design Automation (EDA). RTL and Logic Synthesis, Mapping, Place and Route (P & R), Device Configuration, Functional and Timing Simulation. Use of an industrial EDA tool for Simulation, Synthesis, Implementation (P & R) and Hardware Realization.
- Introduction to a standard Hardware Description Language (HDL) Verilog HDL (IEEE Std 1364) and a standard Hardware Description and Verification Language (HDVL) System Verilog (IEEE Std 1800). Basic language constructs—module, interface, ports, data types (i.e. unresolved (i.e. reg, logic) and resolved (wire) multi-valued data types, signed), design management (library and config, User-defined packages), parameterization (parameter), hierarchical structuring (component instantiation, structural replication (generate)), concurrent code (assign statements), procedural code (always), control structures (i.e. if, case, case x, while), event-control (posedge, negedge), conditional compilation. Levels of Abstraction— Behavior, Dataflow, Gate and Switch. Importance of Synthesis.
- Advanced Digital Design with Verilog HDL and System Verilog—Emphasis on Behavioral Modeling and Synthesizable coding style. Design of combinational logic (adder-subtractors, multipliers, ALUs etc.) and sequential logic (registers, counters, shift registers, LFSR, Explicit and Implicit FSMs).
- Design of FSMs and FSMDs with and without Controller-data path partitioning. ASM and ASMD charts. Emphasis on FSM/FSMD design techniques. FSM/FSMDs for signal (pulse) generator, UART, stepper motor control and central ALU-based computation units.
- Design of complex digital systems such as RISC processors.
- Introduction to Pipelining.
- Writing stimulus (Test benches) for Verification. Introduction to Assertion-based verification—using assert and embedded PSL. Simulator control (\$stop, \$finish).
- IP Encryption (protect).
- Introduction to VHSIC HDL (VHDL) standard Hardware Description Language (IEEE Std 1076). Basic language constructs. Synthesizable fixed- and floating-point data types (i.e. ufixed, sfixed, float). A brief introduction to advanced verification features in SystemVerilog—Constrained Random Verification (CRV) and Functional Coverage.

COE 4140: Advanced Operating Systems

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: CSC 3214: Operating Systems

COURSE DESCRIPTION:

- Understand fundamental operating system abstractions such as processes, threads, files, semaphores, IPC abstractions, shared memory regions, etc.,
- Understand how the operating system abstractions can be used in the development of application programs, or to build higher level abstractions; how the operating system abstractions can be implemented,
- Understand the principles of concurrency and synchronization, and apply them to write correct concurrent programs/software,
- Understand basic resource management techniques (scheduling or time management, space management) and principles and how they can be implemented. These also include issues of performance and fairness objectives, avoiding deadlocks, as well as security and protection.
- Basic understanding of Unix operating system; Different Unix command; Different Server Configuration of UNIX Operating System; Different Features, Porting, and Implementation of Tizen (Smart Mobile Phone) Operating System.

COE 4141: Advanced Computer Networks

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: COE 3204: Computer Networks

COURSE DESCRIPTION:

- Introduction to IPv6 addressing, special addressing of IPv6, address mapping
- Introduction to Virtual Local Area Network (VLAN), Inter-VLAN communication and Virtual Trunk Port (VTP)
- Introduction to Network Address Translation (NAT) and Port Address Translation (PAT) in details.
- Introduction to different protocols – DHCP, ARP, ICMP, OSPF
- Routing table formation and optimization of routing protocols.
- Analyze the network security threads, for example virus, intrusion types etc. and introduction to basic network security, Multimedia.
- Introduction to advanced topics of networking – wireless sensor networks (WSN), IoT, SDN, Cloud Computing.

COE 4142: Network Resource Management & Organization

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MIS 3101: Management Information Systems & COE 3204: Computer Networks

COURSE DESCRIPTION:

- This course provides in-depth knowledge of applying advanced approaches of management information tools such as transformation of global business using IT tools; business process automations; the

changing trends in e-commerce; ERP implications in enterprises; web-based learning and resource sharing; cloud computing and global workforce; IT project management

- Networked enterprise environment- The students are exposed to various practical exercises for mastery of networked MIS knowledge and skills-

COE 4143: Digital System Design

CREDIT HOUR(S):3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: COE 3203: Computer Organization & Architecture EEE 2101: Basic Mechanical Engineering

COURSE DESCRIPTION:

- Know the difference between computer organization and computer architecture.
- Understand the computer as a layered system.
- Learn the components common to every modern computer system.
- Understand a simple architecture invented to illuminate these basic concepts, and how it relates to some real architecture.
- Instruction set design; I/O organization, memory organization, Control unit design.
- Measuring performance.
- Instructions and data access methods: Operations and operands of computer hardware,
- Arithmetic Logic Unit (ALU) operations,
- Floating point operations,
- Designing ALU.
- Processor design
- Single cycle and multicycle implementations.
- Designing I/O system; I/O devices; Designing Microprocessor based system with interfacing chips
- Design special purpose controllers

CSC 4144: Multimedia Systems

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: CSC 3215: Web Technologies

COURSE DESCRIPTION:

- This course introduces the multimedia system and its applications. The basic components of multimedia system and their usage will be introduced.
- The basic idea about the Signals, audio, video system in multimedia system. Different compression techniques such as MPEG, JPEG etc. will be taught on this course.
- Multimedia communication system will introduce the session management, resource reservation technique, QoS in multimedia system.
- Database system provides basic ideas about the database management process in multimedia system.
- Multimedia operating system introduces the management process of real-time data in different operating systems; Vector Graphics and Virtual Reality.
- The impact of computer networks, synchronization techniques, hypertext, hypertext, hypermedia and different applications in multimedia systems will also be taught in this course.

COE 4250: Simulation and Modelling

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: CSC 3217: Artificial Intelligence and Expert Systems COE 4141: Advanced Computer Networks

COURSE DESCRIPTION:

- Introduction to simulation modelling of dynamic systems that will include theoretical studies and hands- on modelling workshops.
- System analysis and modelling with applications and case studies drawn primarily from ecology and economics; modelling software packages including Stella, Madonna, StarLogo, etc;
- Different modelling strategies and ways to formulate, build and analyze models, Investigation of alternative modelling software packages.

CSC 4251: Image Processing

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: CSC 4254: Computer Vision & Pattern Recognition & EEE 2213: Signals and Linear Systems

COURSE DESCRIPTION:

- This course introduces the basic concepts and methodologies of digital image processing.
- The covered topics include image enhancement, high-dimensional spectral analysis, spatial and frequency domain linear image filtering, nonlinear image filtering, binary image processing, edge detection, image segmentation, feature extraction, and the basics of digital video processing.
- The course will also discuss the fundamentals of deep learning with its application to machine vision

COE 4252: Network Security

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: COE 4141: Advanced Computer Network

COURSE DESCRIPTION:

- Introduction to Basic Network Security, Generic Classification of Intrusion Types,
- Hacking tools and techniques.
- Different phase of attacks, Virus, DOS attack and some DOS attack methods, Brute force attack, TCP SYN attack, Smurf attack, Ping of death attack etc.
- Basic Cryptography, Introduction with Public and Private key, Stream Cipher (Substitution Ciphers (Playfair Cipher, Transposition Cipher, Caesar Cipher, Vigenere Cipher), Block Cipher (DES, AES).
- Firewalls, Packet Filtering Router Concepts, Gateway Firewall,
- Network Address Translation (NAT), Digital Signatures in Authentication Systems, Virtual Private Network (VPN).

COE 4253: Wireless Sensor Network

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: COE 4141: Advanced Computer Network

COURSE DESCRIPTION:

- Introduction to Wireless Sensor Network - Sensing and Sensors, components and construction of sensor network.
- Challenges and Constraints in WSN – Energy, Self-Management, Design Constraints, Decentralized Management etc.
- Overview of sensor networks' protocols, issues, and applications.
- Node Architectural- The Sensing Subsystem (Analog-to-Digital Converter), Processor Subsystem (Architectural Overview, Microcontroller, Digital Signal Processor)
- Medium Access Control - MAC-layer issues, S-MAC Protocol, IEEE 802.15.4 and ZigBee
- Multiple Access with Collision Avoidance (MACA) and MACAW
- Network Layer Protocols: Multi-hop (Directed diffusion: a data dissemination network layer protocol); Cluster-based: (LEACH protocol, cluster head rotation) Security issues in Sensor Networks: Fundamentals of Network Security, Challenges of Security in Wireless Sensor Networks, Security attacks in Sensor Networks (SPINS protocol, Secure Information Aggregation)

CSC 4254: Computer Vision & Pattern Recognition

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: CSC 4118: Computer Graphics & CSC 4180: Introduction to Data Science

COURSE DESCRIPTION:

- Bayesian Decision Theory: A solid treatment of classification theory in terms of Bayesian costs, decision functions and the geometry of decision regions for continuous and discrete random variables.
- Classification error probabilities and bounds; missing features; Bayesian belief networks. Maximum-Likelihood & Bayesian Parameter Estimation, and Bayesian Recognition Using A Priori Partially Unknown Distributions: General theory; Sufficient statistics; Large sample behavior for arbitrary distributions; Principal component analysis and discriminants; EM algorithm. Nonparametric Recognition: Parzen windows classifiers; K-Nearest-Neighbor classifiers. Support Vector Machines. Multilayer Neural Networks: Introduction to feedforward operation and classification; Backpropagation algorithm; Behavior considerations. Decision Trees: CART (classification and regression trees).
- Algorithm-Independent Machine Learning: Resampling for estimating statistics and classifier accuracy Bootstrap; Boosting. Unsupervised Learning & Clustering: Mixture densities and identifiability; K-Means clustering; Unsupervised Bayesian learning; Decision-directed approximation; Hierarchical clustering; Minimum spanning trees. Applications to estimation and recognition of 3D geometry from 3D range data or from multi-view images.

COE 4255: Robotics Engineering

CREDIT HOUR(S):3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: EEE 2101: Basic Mechanical Engineering & CSC 3217: Artificial Intelligence and Expert Systems

COURSE DESCRIPTION:

- Expose students to the history and current developments in the field of robotics.
- Strengthening students' grasp of mathematics and physics is involved in the design, construction and control of robots, with a focus on linear algebra and geometry.
- Introduce students to fundamental concepts of electrical and mechanical engineering that will help them better understand the design and development challenges in the field of robotics.
- Give students hands-on practice in building and programming an actual robot; Engage students in an engineering design task that sharpens their analytical, planning, presentation and teamwork skills; Provide a challenging, highly engaging and personally rewarding learning experience.

CSC 4160: Software Requirement Engineering

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: CSC 3112: Software Engineering

COURSE DESCRIPTION:

- Despite the wealth of development knowledge, experience, and tools available today, a substantial percentage of software projects fail, often because requirements are not correctly determined and defined at the outset or are not managed correctly as the project unfolds. This course focuses on this critical cause of failure and offers a practical, proven approach to building systems that meet customers' needs on time and within budget.
- In this course the students will learn how analysts and developers can effectively identify requirements by applying a variety of techniques, centered on the power of use cases.

CSC 4261: Advanced Programming in Web Technologies

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS:2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 3215: Web Technologies

COURSE DESCRIPTION:

- At the end of the course, the following objectives shall have been attained
- Understood and appreciated the object-oriented programming concept using JavaScript
- Understood and appreciated programming Web-based applications using JS framework
- Prepared and presented a group project using JS framework
- Understood and appreciated the object-oriented programming concept using PHP
- Understood and appreciated programming Web-based applications using PHP framework
- Understand and appreciated programming the security for framework-based applications
- Prepared and presented a group project using PHP framework

CSC 4262: Programming in Python

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: CSC 3215: Web Technologies

COURSE DESCRIPTION:

- The goal of this course is to teach advanced programming and problem-solving techniques where the students will be able to design, implement, debug, and test in Python by creating a variety of scripts and applications for the Web and for systems development.
- Python is a versatile programming language, suitable for projects ranging from small scripts to large systems. The course will emphasize best practices such as version control, unit testing and recommended styles and idioms. Students will explore the large standard library of Python 2.7 and Python 3, which supports many common programming tasks.

CSC 4263: Advanced Programming with JAVA

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: CSC 3215: Web Technologies

COURSE DESCRIPTION:

- The Java Enterprise Edition or Java EE course covers the fundamental components of Oracle's enterprise Java computing platform.
- The framework supports network and web services, and supports large-scale, multi-tiered, scalable, reliable, and secure network applications. Topics covered will include J2EE architecture, Web Server, Servlets, and JSPs.
- J2EE Architecture; Multi-tiered client-server architecture; Configure Http Server and/or Web Server Architecture (specially Apache Tomcat 7.0); Servlet Architecture; JSP Architecture; Model View Controller (MVC) Architecture; Implement multi-tiered application using J2EE technologies

CSC 4264: Advanced Programming with .NET

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: CSC 3215: Web Technologies

COURSE DESCRIPTION:

- Introduction to the ASP.Net Framework, ADO.NET, AJAX and web Services.
- Concept of the ASP.Net Framework 4.0; programming Web-based applications in Visual C# 2005/2008
- Programming the security for applications in Visual C# 2005/2008
- Prepared and presented a group project using .Net Solution Architectures.

CSC 4270: Software Development Project Management

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: CSC 4160: Software Requirement Engineering

COURSE DESCRIPTION:

- A basic knowledge of software project management principles.
- The ability to come up with a project schedule and assign resources.
- Choose an appropriate project development methodology (e.g. waterfall, spiral, etc.)
- Identify project risks, monitor and track project deadlines.
- The capability to work in a team environment and be aware of different modes of communication.
- Examine the software project management principles in real life scenarios.
- Be able to independently evaluate a particular topic of research interest and critically analyze the issues.

CSC 4271: Software Quality and Testing

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: CSC 4160: Software Requirement Engineering

COURSE DESCRIPTION:

- This course provides a comprehensive study of software quality assurance and testing.
- Topics include levels and techniques of testing, verification and validation, quality assurance processes and techniques, ISO 9126 and CMMI models. The course focuses on real-life software quality assurance and testing activities as well.
- The course covers both manual and automated testing techniques with an introduction to functional and regression testing tools like Selenium.

CSC 4272: Mobile Application Development

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3hours of Laboratory class per week

PRE-REQUISITE: CSC 3215: Web Technologies

COURSE DESCRIPTION:

- Students learn how to develop applications for mobile devices, including smartphones and tablets.
- Students are introduced to the survey of current mobile platforms, mobile application development environments, mobile device input methods, as well as developing applications for two popular mobile platforms.
- Students will design and build a variety of Apps throughout the course to reinforce learning and to develop real competency.
- Upon successful completion of the course, the student will demonstrate the ability to:
- Explain mobile devices, including their capabilities and limitations.
- Use current mobile platforms and their architecture.
- Develop mobile applications on a popular mobile platform. Evaluate development with another mobile platform

CSC 4273: Software Architecture & Design Patterns

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory class

PRE-REQUISITE: CSC 4160: Software Requirement Engineering

COURSE DESCRIPTION:

- Introduces the concepts of software architecture and software design patterns.

- Principles of reusable OOP, creational, structural, and behavioral patterns.
- Software quality attributes, architectural tactics and patterns, designing and documenting software architecture, architecture reconstruction, architecture evaluation, and software product lines.
- Students will practice applying and implementing design patterns and software architecture design and evaluation in course work by developing various software systems.

MIS 3101 Management Information Systems

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: CSC 3112: Software Engineering

COURSE DESCRIPTION:

- Foundations of Information Systems in Business.
- Competing with Information Technology; Computer Hardware and Computer Software; Data Resource Management.
- Telecommunications and Networks; Electronic Business Systems and Enterprise Business Systems; Electronic Commerce Systems; Decision Support Systems.
- Planning Fundamentals for Developing Business/IT Strategies; Implementation Challenge of Developing Business/IT Strategies and Developing Business/IT Solutions; Security and Ethical Challenges; Enterprise and Global Management of Information Technology.
- The students are exposed to various practical exercises for mastery of MIS knowledge and skills

MIS 4007: Digital Marketing

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MIS 3101: Management Information Systems, CSC 3215: Web Technologies

COURSE DESCRIPTION:

- This course investigates how the Internet and related changes in the technological environment affect the marketing of goods and services.
- With an emphasis on traditional marketing concepts, theories, and frameworks, this course explores factors that affect the adoption of digital technologies, changes in customer behavior across digital platforms.
- B2B, B2C, C2B and C2C E-businesses.
- Resulting in opportunities and challenges for firms' marketing strategies.
- Tools including mobile and location marketing, crowd sourcing and user generated content, and social media communication.

MIS 4011: Enterprise Resource Planning

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MIS 3101: Management Information Systems, CSC 3112: Software Engineering

COURSE DESCRIPTION:

- This course provides an-introduction to enterprise-level system development concepts, principles and practices.
- Evaluate and set up comprehensive system development projects for enterprises.
- Student teams will analyze, design and plan systems of moderate complexity, using current technologies and the appropriate project management methods in the solution.

MIS 4012: E-Commerce, E-Governance & E-Series

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: CSC 3215: Web Technologies

COURSE DESCRIPTION:

- This course will introduce students to the ways in which internet technologies are affecting how people interact with government, and how governments, in turn, are using and managing these technologies to (hopefully) better provide information and services to the public.
- Course content is divided into three main themes and begins with an overview of development techniques and assessment methods for public web sites and on-line applications.
- Examine the key policy issues relevant to implementation of e-government programs, as well as to the broader use of information technology in democratic societies.
- Explore the skills and concepts needed to effectively manage e-government projects and programs.
- Given the nature of the class, a variety of internet tools will be used to help accomplish this, including blogs, RSS feeds, and virtual technologies, such as Second Life.

MIS 4014: Business Intelligence and Decision Support System

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: MIS 4011: Enterprise Resource Planning

COURSE DESCRIPTION:

- This unit aims to generate an awareness of the importance of decision-making through business intelligence tools and techniques and how to provide such information to decision support mechanism to ensure its usefulness to the decision makers.
- This course introduces business intelligence and analytics, defined as the extensive use of data, statistical and quantitative analysis, exploratory and predictive models, and fact-based management to drive decisions and actions. The development and use of data warehouses and data marts, and the application of selected data (including text and web) mining techniques to business decision making is illustrated. Students actively participate in the delivery of the course through case and project presentations. In addition to this, this course provides the student with the skills necessary to conceptualize, build, and implement decision support systems in organizations.

CSC 4180: Introduction to Data Science

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: CSC 3217: Artificial Intelligence and Expert Systems

COURSE DESCRIPTION:

- Data Science is the study of extracting knowledge from data. Familiar with the field of data science and prepare the students with basic principles and tools.
- Fundamental concepts, techniques and tools to deal with various aspects of data science application, including data collection, data types, statistical description of data, data visualization, data pre-processing, data classification, data clustering, model evaluation, outlier detection methods, and algorithmic techniques used in recommender systems.

CSC 4181: Advance Database Management Systems

CREDIT HOUR(S): 3/Lab

CONDUCT HOURS: 2 hours of Theory class & 3 hours of Laboratory class per week

PRE-REQUISITE: CSC 2108: Introduction to Database

COURSE DESCRIPTION:

- Advance database module is designed to enhance the knowledge of database for those students who has already completed basic database.
- Completion of this module will provide the students with the insight of RDBMS and ORDBMS using ORACLE.
- A real-life project is also designed for this module to help the students with their concepts of RDBMS and present business need regarding databases.

CSC 4182: Human Computer Interaction

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: CSC 3217: Artificial Intelligence and Expert Systems & CSC 3215: Web Technologies

COURSE DESCRIPTION:

- Overview of human-computer interaction strategies from a number of perspectives including that of the engineer, cognitive psychologist, and end-user.
- Major themes include the design and evaluation of usable interfaces, matching computer systems with the cognitive capabilities of users and an investigation of novel paradigms in human-computer interaction.
- A team-based project, dealing with the design, development, and evaluation of a computer- based device to support distributed human communication.

CSC 4183: Cyber Laws & Information Security

CREDIT HOUR(S): 3

CONDUCT HOURS: 3 hours of Theory classes per week

PRE-REQUISITE: CSC 3215: Web Technologies

COURSE DESCRIPTION:

- Overview of Cyber World and the scope of cyber laws. Regulatory Framework of Cyber Law in International and national (in Bangladesh) regime.

- Computer crime and Cyber Crime; Classification of Cyber Crimes; Cyber Forensic; Cyber Criminals and their Objectives; Kinds of cyber-crimes – cyber stalking; cyber pornography; forgery and fraud; crime related to IPRs; Cyber terrorism; computer vandalism etc.
- Introduction to Intellectual Property (IP) Law; Origin, Development, Sources, Principles, and Classification of IP Law. E-commerce practices, online contracts, IPRs (Copyright, trademarks, & software patenting). Electronic Signatures, Intellectual Property Issues, Cyber Crimes, Jurisdictional issues, Data Protection and privacy. Security services, mechanisms, threats and attacks, model for network security and access security models. Authentication: Message authentication and entity authentication, message authentication code, hash functions, MD5, Secure Hash Algorithm, RSA digital signature, Digital Signature Standard, biometrics.

CSC 4285: Data Warehouse and Data Mining

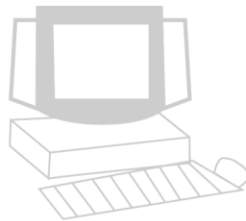
CREDIT HOUR(S):3

CONDUCT HOURS:3 hours of Theory classes per week

PRE-REQUISITE: CSC 4180: Introduction to Data Science

COURSE DESCRIPTION:

- Introduction to knowledge discovery and data mining in databases and to present basic concepts relevant to real data mining applications, as well as reveal important research issues related to the knowledge discovery and mining applications.
- Fundamental concepts underlying knowledge discovery, data mining and hands-on experience with implementation of some data mining algorithms applied to real world cases.
- Research issues as well as mining strategies and issues relating specific industrial sectors; Systems for data mining.



ACADEMIC FACILITIES & TECH SUPPORT

LIBRARY

The AIUB Library encompasses an area of 11,590 square feet and accommodates 500 people simultaneously for academic purposes. The AIUB library has a comprehensive and well-curated collection of information in Business Administration, Science and Technology, Computer Science, and Social Science. The library offers an extensive variety of books, encompassing periodicals, newsletters, theses, CDs, and DVDs. The facility has kiosks, equipped with internet access for students and professors, enabling them to search for and locate books via AIUB's tailored software, the "University Management System (Library)." In 2022, a total of 2,550 books were issued to 1,113 students. In 2023, the number of books issued increased to 5,040, with 1,506 students utilizing the library management software. In 2024, the total number of books issued further rose to 7,702, with 1,858 distinct students borrowing books.

The library is operating on an extensive schedule from, that is given below.

Day	Library Operating Hour
Sunday – Thursday	08.00 AM - 09.00 PM
Friday	11:00 AM - 01:00 PM and 02:00 PM - 04:00 PM
Saturday	Closed
During Semester Break	09.00 AM - 05.00 PM

The library remains closed on government holidays. However, in emergencies, it may be accessible with prior notification. Moreover, an initiative has been undertaken to extend operating hours during semester final examinations to assist students and teachers in accessing library resources for their academic work. All enrolled students with proper identification cards, as well as faculty, staff, and officers, are afforded full library privileges. The library is accessible exclusively to the AIUB community.

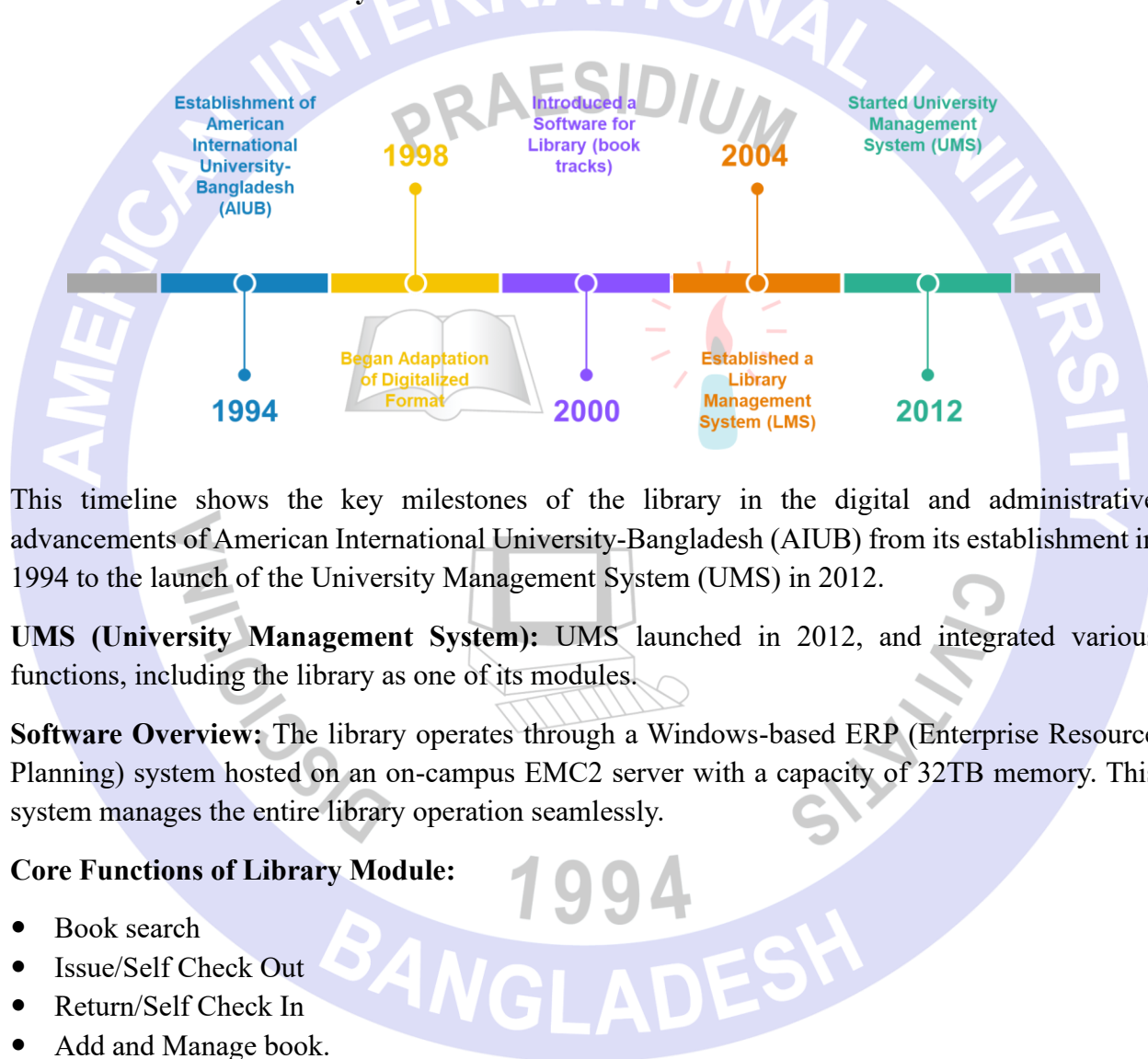
Library resources (books, technical journals, proceedings)

Information on books, journals, proceedings, and other resources are provided below.

Category	No. of titles	No. of copies (if applicable)
Books (Printed)	24,502	44,000
Books (electronic)	Subscription of UGC Digital Library, SAGE, INASP and Research4Life. Accessible from AIUB network.	
Journals (Printed)	392	392

Journals (electronic)	70,000	Not applicable
Proceedings (Printed)	102	102
Proceedings (electronic)	Subscription of UGC Digital Library, SAGE, INASP and Research4Life. Accessible from AIUB network.	
Thesis/Report	38,910	38,910
Others (AV materials)	1337	1343

Modernization of the library



This timeline shows the key milestones of the library in the digital and administrative advancements of American International University-Bangladesh (AIUB) from its establishment in 1994 to the launch of the University Management System (UMS) in 2012.

UMS (University Management System): UMS launched in 2012, and integrated various functions, including the library as one of its modules.

Software Overview: The library operates through a Windows-based ERP (Enterprise Resource Planning) system hosted on an on-campus EMC2 server with a capacity of 32TB memory. This system manages the entire library operation seamlessly.

Core Functions of Library Module:

- Book search
- Issue/Self Check Out
- Return/Self Check In
- Add and Manage book.
- View Borrowers' History
- Import Data
- Spin Tag Generate
- Create Report etc.

- **IT facility (Catalogue, Circulation, OPAC etc.):** For the operations of the whole library, AIUB uses a customized software University Management System- Library (UMS-Library) which follows AACR2 for its cataloging information, with which a user can search for and locate books by author, title, ISBN and subject. The UMS is developed and maintained by AIUB's dedicated Software Development Department, which is responsible for creating, updating, and managing the UMS software.
- **E – Library:** Faculty members and students both are now enjoying e-book/e- journal facility through INASP (Bangladesh Academy of Science) and JSTOR, Emerald, IEEE, online journal (UGC, Bangladesh) etc. Information on the e-resources is provided below.

Classrooms

AIUB's well-equipped classrooms provide an optimal learning environment for the Computer Science program. With 170 classrooms available on campus for taking classes, students have ample space to engage in their studies. These classrooms feature multimedia projectors (HDMI/VGA), audio-visual materials, and reliable Wi-Fi access, enabling interactive lectures, coding exercises, and software demonstrations. Comfortable seating, air conditioning, and fans create a conducive atmosphere for focused learning, while the secure thumb impression lock system ensures a controlled academic space. These modern facilities effectively support the dynamic and evolving needs of Computer Science education, enhancing the overall learning experience. Following table provides a detailed overview of the AIUB infrastructure.

Laboratories and Equipment

Advanced and innovative tools aimed at enriching the learning experience of students in the engineering field have inspired AIUB to equip its students with modern instruments for conducting laboratory experiments. The following table outlines the list of equipment provided.

The institution is equipped with a total of 28 computer laboratories, each comprising 39 to 42 workstations. Each workstation is provided with a keyboard and mouse. Additionally, all laboratories are uniformly outfitted with the same set of equipment, including a network switch, a projector, and a projection screen, necessary cabling, ensuring a consistent environment across all labs. Furthermore, eight new servers have recently been integrated into the infrastructure to enhance the functionality and capacity of the laboratories.

The computer labs and other necessary labs at AIUB are equipped with modern hardware and software. The advantages include adequate space, most computer labs switching to virtual machines, highly configured computers, and software and components. Regular laboratory development planning and initiatives are implemented to provide better teaching and learning facilities in the computer laboratories at AIUB. To guarantee that the requisite advancements are implemented after that to CQI, a laboratory development committee has been established. Laboratory development planning and initiatives are taken regularly to ensure better teaching and

learning facilities in the laboratories at AIUB. In this regard, an IT department has been recruited to ensure the necessary maintenance and improvements. The IT department collects feedback from department teachers and students and implements measures to accommodate the needs. The head of the department assigns a course convenor for every laboratory course at the start of the semester. The course convenor held meetings with the course teachers and took the decision to update the lab manual every semester. They inform the IT department if any new software/equipment is required.

Internet and Computing Facilities

- The campus has 1,664 computers (laptops and desktops) equipped with internet access.
- Internet bandwidth includes 1.5 Gbps for high-speed wired connections and 5Gbps for Wi-Fi, available for faculty and students.
- Wi-Fi covers the entire campus and is accessible during university operating hours.
- A dedicated browsing lab with 40 computers is available for students, and additional MAC and Animation labs are open for students to use outside class hours in specified rooms 2201 and 2203 respectively.
- Library kiosks allow students, faculty, and staff to search and locate required books easily.
- 25 kiosks are set up across campus for internet browsing and printing purposes.

Other facilities:

- All faculty members and officers are provided with laptops or desktops featuring high-speed internet access.
- Printing facilities are available for faculty, officers, and students. Scanning and photocopying services are also accessible on campus.
- FTP services with 2TB of storage are allocated for faculty, officers, and students.
- VDI is implemented on 720 workstations, enabling students to use virtual machines.
- Student entry is monitored through flap barrier systems, which support both face recognition and identification card tap for access.
- UMS and its subsystems manage all student profiles, academic records, course materials, enrollment, and financial accounts, providing web-based services accessible to students.

CONTACT INFORMATION

General Information

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