DEPARTMENT OF CIVIL ENGINEERING

PROSPECTUS

FOR UNDERGRADUATE STUDIES

2017 - 2018

UNIVERSITY OF ASIA PACIFIC

Chief Editor
Dr. M. R. Kabir

Editorial Board
UAP-CE faculty members

First Edition	Sep 2000
Second Edition	Oct 2001
Third Edition	Mar 2004
Fourth Edition	Mar 2006
Fifth Edition	Jun 2008
Sixth Edition	Apr 2010
Seventh Edition	Apr 2012
Eighth Edition	May 2014
Ninth Edition	April 2017

Cover Design
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Photography
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Published by
Department of Civil Engineering
University of Asia Pacific
April 2017

PREFACE

It is a great pleasure to publish the ninth edition of the prospectus for Undergraduate Studies of the Department of Civil Engineering of University of Asia Pacific (UAP).

The focus of this prospectus is basically on the outlines of the undergraduate curriculum, degree requirements, detail course contents and other essential academic features of the department. A complete list of faculty members of the department along with brief description of the well equipped laboratories, examination rules, collaborative programs with other institutions and industries, co-curricular activities arranged by the department are presented in the prospectus.

The department of Civil Engineering started its journey in 1997 with a vision for creating quality civil engineers. Stepping into the twentieth year since its inception, the continuous updating of the prospectus shows the dynamism, sustained effort and commitment to improvement that the department has demonstrated over the years. It has always earned a special place of respect and dignity at UAP, symbolizing the excellence in education through the quality of its faculty members, unique development and completeness of its laboratories, the strength of its innovative research and by providing research opportunities for its students, who have established their positions in the job market at home and abroad. Several graduates have completed postgraduate studies (Masters/Ph.D.) in Bangladesh as well as at universities in Malaysia, Thailand, Korea, Japan, Australia, South Africa, Belgium, Switzerland, Italy, UK, France, Sweden, Germany, Canada and USA. Some of them have also returned to UAP as faculty members.

Through a continuous development process, the department prioritized the necessity to furnish all laboratories with modern equipment to conduct undergraduate classes as well as to do undergraduate and graduate research works. Some of its laboratory equipments are the first of their kind to be built in Bangladesh, and have set trends that have been followed by several other universities. Its current faculty members include specialists in various areas of national interest, including integrated water resources management, traffic engineering, wastewater treatment, foundations in problematic soils, concrete technology and earthquake resistant design. The department received several national and international research grants for doing research on various civil engineering issues, such as advanced seismic analysis, earthquake retrofitting of structures, structural assessment, surface water pollution, recycling and sustainable development of concrete construction works in Bangladesh. The research results of the faculties were published in different national and international reputed journals and conference proceedings. Collaborative research activities of the departmental faculty members established close relationships with universities outside Bangladesh. In addition to the academic and research activities, the faculties of the department are actively engaged in consultancy services related to civil engineering problems and are also directly participating in testing of materials using the laboratories of the department. The UAP campus has recently shifted to its permanent City Campus, which has increased the capacity and efficiency of its administration manifold. In the new environment at its own campus, UAP has vowed to take a leadership role to educate the students through Outcome Based Education method and ensure a student-centered learning environment.

The department's efforts have been recognized outside the borders of the university when it became the first Civil Engineering program to be accredited by the Board of Accreditation for Engineering and Technical Education (BAETE) in 2007. In 2008, the University Grants Commission (UGC) granted approval to the Department of CE to commence its Masters' program, thus making it the first CE program among private universities to obtain such approval. This milestone indicates the commitment of the department for continuous development.

The CE department has kept itself and UAP in the news frequently by arranging seminars, workshops, sports and cultural programs, by pursuing collaborative research works with other departments, foreign research partners and bringing out regular research publications. In the national context, the department has assumed leadership roles in various fields of Civil Engineering. Its innovative ways of encouraging local technological development is being followed by other academic institutions.

On behalf of the Department of Civil Engineering, I would like to thank the members of the editorial board for their utmost efforts to bring out this prospectus. I strongly hope that it will be an important reference book for the students, guardians and the faculties.

April, 2017

Dr. M. Mizanur Rahaman
Professor and Head
Department of Civil Engineering

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University of Asia Pacific

1.1 Introduction

University of Asia Pacific (UAP) was established in 1996 as a private university under the Private University Act 1992, with a vision to enhance the opportunities for higher education in Bangladesh. Its curriculum has been approved by the University Grants Commission of the Government of the People's Republic of Bangladesh. Late Hedayet Ahmed, former Secretary of Education of the People's Republic of Bangladesh was the founder Vice-Chancellor of the university. The university started by offering four years bachelor degree programs in Computer Science & Technology and Business Administration only. Now UAP offers undergraduate programs in nine disciplines and postgraduate programs in six disciplines.

UAP is a social business project conceived off by the UAP Foundation, a non-profit, non-commercial foundation based in Dhaka. The principal aim of the foundation is to promote human and social development through inter alia, improved educational opportunities, innovative educational programs relevant to the needs of an emerging society and to develop skills, expertise and awareness of the youth through appropriate institutional means.

The main objective of University of Asia Pacific is to provide high quality education at undergraduate and graduate levels relevant to the needs of a dynamic society. The courses and curricula are so designed as to enable a student to enter the practical world or pursue higher academic and professional goals with a solid academic foundation. The academic goal of the university is to go beyond the boundary of the class rooms and equip the students with the means to become productive members of the community and continue the practice of lifelong learning.

1.2 Vision and Mission

University of Asia Pacific is dedicated to quality education. The university supports its students through its commitment to excellence and demonstrates it through the quality of its academic services.

1.3 Schools and Departments

At present, UAP has five schools comprising relevant departments

School of Business

Department of Business Administration

School of Engineering

Department of Civil Engineering

Department of Computer Science and Engineering

Department of Electrical and Electronic Engineering

School of Environmental Sciences and Engineering

Department of Architecture

School of Humanities and Social Science

Department of English

School of Law

Department of Law and Human Rights

School of Medicine

Department of Pharmacy

School of Science

Department of Basic Science and Humanities

Department of Mathematics

At the moment, these departments are running undergraduate degree programs in nine disciplines and post graduate degree programs in six disciplines.

1.4 Board of Trustees

The Board of Trustees representing the UAP foundation was established by a group of eminent educationists, industrialists and administrators who share the same vision and social commitments. University of Asia Pacific was the first project of the foundation aimed at realizing these noble goals. Mr. Qayum Reza Chowdhury, (Managing Director of Knit & Fashion Ltd. and President of Bangladesh Garment Buying House Association) is the current Chairperson of the Board of Trustees.

1.5 Central Administration

Md. Abdul Hamid, Honorable President of the People's Republic of Bangladesh is the Chancellor of the University of Asia Pacific. Eminent educationist and renowned engineer Professor Dr. Jamilur Reza Choudhury is the current Vice Chancellor of UAP, while Professor Dr. M. R. Kabir is the Pro-Vice Chancellor. The Central Administration also includes Air Commodore Ishfaq Ilahi Choudhury, ndc, psc (Retd.) as Treasurer and Associate Professor Sarwar Razzaq Chowdhury as Registrar.

2.1 Academic Programs

2.1.1 Undergraduate Studies

UAP currently offers the following undergraduate programs

- B. Arch.
- BBA
- B. Sc. in Civil Engineering
- B. Sc. in Computer Science and Engineering
- B. Sc. in Electrical and Electronic Engineering
- LL.B. (Hons)
- B. Sc. in Mathematics
- BA (Hons) in English

All these are four-year programs except B. Arch., which is a five-year program.
Academic programs are conducted on semester basis; i.e. two semesters per year.
At present the university has more than 4,000 students, with a large number of faculty members engaged in different departments on full time basis. The faculty is a blend of senior teachers with wide experience both at home and abroad and young teachers with fresh ideas. A number of renowned educationists of different disciplines are involved in teaching (as guest faculty) on part time basis.

2.1.2 Postgraduate Studies

UAP currently offers postgraduate programs in six disciplines. The department of Business Administration offers the MBA degree which is a 60 credit hour program over two-year duration, including professional internship and Executive MBA degree, a 42 credit hour program over one and a half years.

The department of Pharmacy offers Masters in Pharmaceutical Technology (M. Pharm.) which is a twenty four credit hour program over one-year duration.

Two Masters degrees, Master of Science in Computer Science and Master of Science in Computer Science and Engineering are offered by the department of Computer Science and Engineering, both of which are 36-credit hour program.

The department of Law and Human Rights offers LLM (regular) degree which is a full time program of 26 credit hour having one-year duration.

The department of Civil Engineering offers Master of Science in Civil Engineering and Master of Civil Engineering. Both are 36 credit hour programs of two-year duration.
Two Masters Programs in English are offered by Department of English. MA in English (1 year) is a 36 credit hour program while MA in English (2 years) is a 72-credit hour program.

2.2 Academic Council

Academic council is the highest academic body of the university. It is chaired by the Vice-Chancellor of UAP and comprises the departmental Heads and various senior faculty members of the university as well as eminent academicians of the country.

2.3 The Campus

The university completed the construction and moved to its City Campus at 74/A Green Road in May 2016. Office of various academic departments of UAP are arranged at various floors in the following order

Department of English	3rd Floor
Department of Basic Science & Humanities	3rd Floor
Department of Pharmacy	4th Floor
Department of Electrical & Electronic Engg.	5th Floor
Department of Civil Engg.	6th Floor
Department of Computer Science & Engg.	7th Floor
Department of Architecture	8th Floor
Department of Law & Human Rights	9th Floor

In addition to the academic departments, UAP campus consists of the following departments and other facilities.

Board of Trustees	2nd Floor
Central Administration	2nd Floor
Examinations Section	2nd Floor
Account Section	2nd Floor
Admission Office	1st Floor
Medical Center	Ground Floor
Central Cafeteria	1st Floor
Central Library	9th Floor

2.4 Resources

2.4.1 Library

The university has a fairly well stocked central library located on the 9th floor of the city campus. Adequate facilities exist with a large number of textbooks, reference books, journals, and periodicals for study in the air conditioned reading room in a quiet and congenial environment. A number of local daily newspapers and international news magazines are also subscribed for the benefit of students. The library remains open from 9.00 am to till 9.00 pm on all working days and 9.00 am to 5.00 pm on Saturday.

In addition to the central library each department has its own library and reading room, which consists of books, technical journals and other publications relevant to the respective disciplines.

2.4.2 Laboratory

UAP is a pioneer among the private universities of Bangladesh in providing adequate laboratory facilities for the students of respective departments. The laboratories are self-sufficient and rich in instruments and other facilities to carry out practical classes. Other than practical classes, the students and faculty of UAP can carry out their research work in these laboratories also. Several quality research works culminating in national and international awards and publications for UAP students and faculty members have been conducted in the laboratories of the departments of Civil Engineering, Computer Science & Engineering, Electrical & Electronic Engineering and Pharmacy.

2.4.3 Other Facilities

The university runs a well-equipped Medical Center for medical consultation, free of cost for students. Other than treatment, medication and first aid, the Medical Center arranges seminars and lectures to build health awareness within the campus and encourage various preventive health measures like immunization and develop healthy food habits.

The university has its own Central Cafeteria, which provides hygienic food at reasonable cost for the students, faculty and staff.

2.5 The Campus Environment

University of Asia Pacific is proud to nurture a healthy and fully non-political academic atmosphere within the campus, where the students, faculty and staff can enjoy a peaceful and happy working environment and visitors feel welcome. It enjoys growth of an open-minded, friendly and disciplined fraternity, always developing in wisdom and virtue.

2.5.1 Academic Rules and Discipline

The academic environment of UAP is guided at every step by its academic rules, which is based on discipline and conforms to the norms and values of the society. UAP students are expected to conform to the highest standard of discipline and conduct her/himself within and outside the premises of the university in a manner befitting the student of a university of national importance. S/he must show due courtesy and considerations to the teachers and other fellow employees of the university and render sincere co-operation to her/his fellow students. The students must also pay due attention and courtesy to the visitors.

This standard of discipline is applied even more stringently within the classes and particularly during the examination hours. The examination rules of UAP define the duties of all concerned to hold the examinations in the fairest manner possible. They are applied to ensure that the students can take their examinations peacefully and are evaluated fairly to reflect their intelligence, depth of knowledge, understanding and presentation skills. Deviations from the defined rules may result in strict punishment, possibly resulting in expulsion from the university.

2.5.2 Teacher-Student Relationship and Academic Advising

UAP enjoys exemplary teacher-student relationship built on mutual trust, with an unconditional respect for the teacher reciprocated by giving topmost priority to the best interest of the students.

In order to help in planning her/his academic activities, each student is assigned an Academic Adviser (from the faculty members of the student's department) who advises the student on the courses s/he should take each semester and keeps in touch to monitor her/his academic performance and progress. The Academic Adviser works as a bridge between the student and faculty as well as the university administration.

2.5.3 Co-curricular Activities

Co-curricular activities are recognized as an integral component of a modern education system. Recognizing this imperative, UAP strives to provide facilities for such activities that will help to develop well-groomed, responsible and self-disciplined individuals. UAP undertakes programs with active involvement of students to sharpen intellectual qualities through inter-university debates, cultural and social activities and other creative pursuits. Such informal interaction between the students and faculty is conducive to the growth of balanced personality.

Provisions have been made within UAP campus for sports activities. The university carries out various cultural programs at the campus. Besides, all the departments have formed individual student forums and clubs to carry out regular cultural activities.

2.6 Academic and Technical Collaborations

In this era of revolutionized communication system and free exchange of information, there is a strong compulsion to promote interaction among students and intellectuals for sharing of knowledge, especially with institutions of higher education. Such interaction provides access to ever-changing scenarios of modern education delivery system and the most up-to-date innovative developments in teaching-learning methodology.

Recognizing this imperative, UAP has built a number of collaborative programs with various professional bodies

Several departments of UAP have been accredited by relevant professional bodies of the country; e.g.

Institute of Architects (IAB)	Dept. of Architecture
The Institution of Engineers Bangladesh (IEB)	Dept. of CE, CSE, EEE
Pharmacy Council of Bangladesh	Dept. of Pharmacy

In fact, the Pharmacy and Civil Engineering departments of UAP were the first among private universities to earn such accreditations. UAP graduates are therefore eligible to be members of professional bodies like IAB, IEB, Pharmacy Council, and several of them have already earned their memberships in these prestigious bodies.

2.7 Institute of Energy, Environment, Research and Development (IEERD)

The Institute for Energy, Environment, Research and Development (IEERD) is a multi-disciplinary research and academic institute with a separate administrative structure. The purpose of the 'Institute' is to keep pace with regional and global research of development and education in energy including clean energy, increasing energy efficiency of equipments and appliances, work on quality of materials, environment, water resources and water management and other related fields at the university. A research work on efficiency of electrical appliances with an USA based International Consulting Firm; National Rural Electric Co-operative Association (NRECA) in UAP laboratory has been undertaken. IEERD has organized several seminars on Energy and Environment by nationally and internationally known speakers.

2.8 Present and Future Prospect

The past achievements of UAP have set in motion its plans for the future. The university has constructed its own city campus at Green Road and has also purchased another piece of land (at Purbachal) for its outer campus which will include all kinds of academic and extra-curricular facilities. Several undergraduate and postgraduate programs of UAP are awaiting the final approval of the UGC.

With great zeal, UAP is continuing its commitment to provide quality education for its diverse student body. To improve the moral, intellectual and spiritual condition of the future generation of the country, this institution of higher learning is marching forward with great pace and vigor.

3.1 Brief Description of Undergraduate Course System

UAP has designed the curricula and syllabi of subjects offered in the undergraduate courses to meet the growing technological challenges confronting the nation and the world as a whole. The curricula and syllabi are relevant to the current needs and are responsive to the emerging challenges.

3.1.1 Academic Calendar

The entire undergraduate study is generally (other than B. Arch.) a 4-year program. Each academic year comprises two semesters; i.e., Fall (typically -October to March) and Spring (typically April to September). In addition to these two regular semesters, there may be provision for a short semester in the intervening periods between the two semesters.

3.1.2 Duration of Semesters

Duration of each regular semester (Spring or Fall) is generally 18 weeks, which is organized in the following way

Classes	14 weeks
Mid Semester Examination	1 week
Recess before Final Examination	1 week
Semester Final Examination	2 weeks
Total	18 weeks

Mid Semester examination is held according to the academic calendar, normally after 7 weeks of class. The classes remain suspended for one week during the Mid Semester examination.

Short Semesters have more intensive 8-week duration, with 7 weeks of Class + Mid Semester Examination and 1 week for Final examination.

3.1.3 Credit Structure and Course Pattern

The entire undergraduate program is covered through a set of theoretical and laboratory/sessional courses, fieldwork and project/thesis.

Theoretical Courses

One lecture per week per regular semester is equivalent to one credit hour. Thus, a three credit hour course has three lectures per week throughout a regular semester.

Laboratory Courses/Sessional Courses/Fieldwork/Project/Thesis

Credits for laboratory/sessional/field or design work are usually half of the class hours per week per semester. Thus, a one and half credit hour course has classes for three hours per week throughout the semester. Credits are also assigned to project and thesis work taken by students.

3.1.4 Types of Courses

Core Courses

A number of compulsory courses are identified as core courses, which form the nucleus of the Bachelor degree program.

Optional Courses

Apart from the core courses, students will have to complete a number of courses, which are optional in nature. Hence students have some choices in selecting courses from a specified group or a number of courses.

3.1.5 Course Registration

A regular student is normally required to take a minimum of 15 credits and a maximum of 24 credits in a regular semester. The regular period of course registration starts a week before the commencement of semester classes and extends up to two weeks after the semester begins.

3.1.6 Grading System

The grading system is designed to evaluate the performance of a student in a given course based on a scheme of continuous assessment. For theoretical courses this continuous assessment is generally made through class assessment (assignments, attendance and quizzes/reports/presentations), a Mid Semester examination and a Semester Final examination.

The percentile distribution of marks for a theoretical course is as follows:

Class Assessment	30%
Mid Semester Examination	20%
Final Examination	50%
Total	100%

Assessments for Laboratory/ Sessional/Fieldwork courses are made by evaluating the attendance and performance of students in class, oral examinations during laboratory hours and quizzes. Assessment in design courses is done through evaluation of performance during class hours, home assignments/reports and quizzes.

The eventual performance of a student in each course is based on the numerical grade obtained in the course and is evaluated by a letter grade equivalent to certain grade points. Letter grades and the corresponding grade points are as follows:

Numerical Grade	Letter Grade	Grade Point
80% and above	A+	4.00
75% to less than 80%	A	3.75
70% to less than 75%	A-	3.50
65% to less than 70%	B+	3.25
60% to less than 65%	B	3.00
55% to less than 60%	B-	2.75
50% to less than 55%	C+	2.50
45% to less than 50%	C	2.25
40% to less than 45%	D	2.00
Less than 40%	F	0.00
Exemption	E	---
Incomplete Work	I	---
Satisfactory	S	---

Grade ‘F’: If a student fails to achieve at least 40% mark in a course, s/he will get ‘F’ grade in that course. Besides, absence in Final Examination at the end of each academic semester will also result in ‘F’ grade.

Grade ‘E’: A student transferred to UAP from another university/academic institution will earn ‘E’ grades in the courses exempted at UAP.

Grade ‘I’: Grade ‘I’ may be given to a candidate when s/he fails to appear at the Semester Final examinations only for reasons beyond her/his control. Grade ‘I’ shall be converted to the actual grade obtained by the student when available by the following semester. Otherwise grade ‘I’ shall be converted to an ‘F’ grade and the student has to re-register for the particular course.

Grade ‘S’: Grade ‘S’ is given when a course, according to the syllabus, is extended to two consecutive semesters and grade ‘S’ is given in the first semester to mean satisfactory progression.

3.1.7 Calculation of Grade Point Average (GPA)

A student's semester performance is evaluated by Grade Point Average (GPA), which is computed in the following manner:

$$GPA = \frac{\Sigma \text{ (Grade Point} \times \text{Credits)}}{\Sigma \text{ Earned Credits}}$$

The grade points are points against letter grades as shown earlier. Credits are only for those courses registered for at UAP.

3.1.8 Performance Evaluation and Award of Degree

The performance of a student is evaluated in terms of semester GPA and cumulative grade point average (CGPA), which is the weighted GPA for all semesters completed. To be awarded a degree at UAP, a student needs to complete a minimum number of credit hours specified in the curriculum, including the specified core courses. The minimum CGPA requirement for obtaining a Bachelors degree is 2.25. Candidates will be awarded a degree with honors if their CGPA is 3.75 or above.

3% of the total seats are reserved (with 100% Tuition Fee waiver) for children of Freedom Fighters. 3% of the total seats are reserved (with 100% Tuition Fee waiver) for poor and meritorious students from underdeveloped regions of Bangladesh.

3.2 Tuition Waiver Policy

University of Asia Pacific (UAP) provides financial assistance to meritorious students both at the time of admission and in subsequent semesters.

At the entry level, the top 5% students of each department would get 100% tuition fees waiver in the 1st semester. Moreover, students having average GPA of 5.00 (with fourth subject), 5.00 (without fourth subject), 4.50 and 4.00 (out of 5.00) in S.S.C. and H.S.C. (or equivalent) would also get 100%, 75%, 50% and 25% tuition fees waiver in the 1st semester respectively.

In subsequent semesters, the top 5% students of each department would get 100% tuition fees waiver based on their semester GPA. Moreover, regular students upon completing at least one semester at UAP are eligible to avail of the Vice-Chancellor's Special Tuition Fee Waiver facilities as per the criteria shown in the following Table:

Semester GPA	Tuition Waiver %
3.50-3.74	25%
3.75-3.89	50%
3.90-3.99	75%
4.00	100%

Top 3% students of each department will be offered 100% tuition fee waiver, 10~100% VC's tuition fee waiver is available for poor but meritorious students. Besides, special tuition fee waivers are also available for poor but meritorious students as well as siblings studying together at UAP (60% tuition fee waiver for 2nd siblings, 100% tuition fee waiver for 3rd siblings).

However, all the tuition waiver criteria are conditional upon the students' record of good conduct at UAP as recommended by her/his Academic Adviser and Head of the students' department.

3.3 Repeat Examination

Repeat Examinations of a completed semester are held within the first two weeks of the following semester. A student would be allowed to appear at the Repeat Examinations if s/he fails in three theory courses or less but not exceeding 10 credit hours in a regular semester. Candidates willing to appear at these examinations must apply to the Head of the Department through the Academic Adviser stating their willingness to appear at the said examination with the receipt of payment of Tk. 3000 per course within five working days after the semester final results are published.

Repeat Examinations on theory courses would be held on 50 percent of marks for each course and the marks for Class Assessment and Mid Semester Examination would be carried. There are no Repeat Examinations for sessional courses. The maximum grade to be obtained by a student in Repeat Examination would be 'B' (equivalent to 60%). The following grading system would be followed in the Repeat Examinations:

60% and above	B
55% to less than 60%	B-
50% to less than 55%	C+
45% to less than 50%	C
40% to less than 45%	D
Less than 40%	F

Students who appeared in Repeat Examination will not be eligible for merit based waiver/scholarship.

3.4 Improvement of Grades

The provision for improvement of grades applies to those who obtained a grade of C or lower in any course. Such candidates may be allowed to improve their grades by surrendering the earlier grade obtained. The provision is divided into two categories, based on the student's CGPA being above or below 2.25. Certain academic and financial conditions apply for both categories.

For further details of the academic rules, students should consult the university information booklet for Examination Rules and Procedures.

UAP felicitates CE Alumni and faculty Ariful Hasnat on becoming ASCE's New Face of Civil Engineering

BOT Chairman, Vice Chancellor and Pro-Vice Chancellor with students placed in VC's Honor List

CE students placed in VC's Honor List receive certificates from the Vice Chancellor and BOT Chairman

CE students placed in Dean's Honor List receive certificates from the Dean and Pro-Vice Chancellor

New Abode ushers new Aspirations for UAP

and the Department of Civil Engineering (CE)

Department of Civil Engineering (CE)

Nature provides us with plenty of resources, at the same time subjecting us to its hostile behavior. Human beings need to tame this nature to support development activities and utilize the natural resources properly. Throughout the history of modern civilization, Civil Engineers have been doing this work and have always been at the forefront of the drive for the improvement of our standard of living. In every modern society, Civil Engineers always play the key roles in the planning, design and construction of the infrastructure that improve the modern life.

From the buildings that we live in to the offices and industries we wok in, the roads and bridges that we travel on, from the skyscrapers and historic buildings that symbolize cities and define the skylines to the towers that provide electricity and telecommunication, the shelters that protect populations to the dams that generate power, Civil Engineers have always been the essential torch bearers of human civilization. From flood mitigation to riverbank protection, design against earthquake to protection for cyclones, planning for traffic control to environmental pollution control, they strive to mitigate human sufferings on a huge range of problems.

4.1 Civil Engineering from Bangladesh's Point of View

Like any other developing country, Bangladesh needs an enormous amount of work to build its infrastructure. Many government and non-government development projects have been implemented since the independence of the country. For the four decades, these projects have always involved a large number of Civil Engineers. Still a lot of development work has to be accomplished to build the infrastructure in the years to come.

These development activities are impossible to undertake without the direct involvement of Civil Engineers. So, there is an excellent opportunity for the Civil Engineers, especially in Bangladesh, to participate in these development projects, to serve the nation as well as to build their own careers.

Once the infrastructure is built, constant maintenance of the system at a standard level is also a big task. Be it real estate development or construction and maintenance of telecommunication towers, water quality improvement or noise pollution control, flood control or river training, rainfall prediction or traffic planning, tunnel excavation or road construction, seismic retrofitting or repair of structural damage, there is hardly any aspect of infrastructural development in Bangladesh that is possible without Civil Engineers.

4.2 Civil Engineering at UAP

The department of CE at UAP started its journey in the Fall 1997 semester. At the moment, the department offers a 4-year undergraduate program and 2-year graduate in Civil Engineering. As per academic calendar, the first batch of students graduated in Spring 2001. Since then, 32 batches have graduated on schedule, one in each semester. The course outline covers all the fields within the Civil Engineering discipline and it eventually leads the students to decide their field of choice for specialization. The program starts with foundation courses in basic sciences, mathematics, humanities, social sciences and management with basic courses in Civil Engineering.

Subsequently, specialization takes place in the fields of Structural, Environmental, Geotechnical, Transportation and Water Resources Engineering. These include studies on the properties of building materials, soil, irrigation and flood control, seismic analysis and design, waste management, environmental impact assessment, traffic management and safety studies, to name only a few. Construction management, another specialization considered, takes interdisciplinary approach between engineering and management aspect.

The curriculum is designed to give the students a strong theoretical background coordinated with laboratory experiences, projects and practical work which will provide them necessary impetus to work in their fields of specialization with expertise and ease.

The department of Civil Engineering has started offering Master of Science in Civil Engineering from Fall 2009. It is a full time program of 36 credits having 2 years duration.

5.1 Admission

Department of Civil Engineering admits new students in two semesters within a year; i.e., Fall and Spring, to work towards a full-time four-year B. Sc. Engineering degree and two-year M.Sc./M.Engg. degree in Civil Engineering.

5.1.1 Eligibility

The department enrolls students in undergraduate program who have passed their H.S.C. or equivalent degree based on the following minimum acceptable criteria:

Students must have a combined SSC + HSC (or equivalent) GPA of at least 7.5 out of 10.0 (with at least 3.0 out of 5.0 in HSC or equivalent). For students with Diploma Engineering background, the minimum combined GPA requirement for SSC + Diploma is 7.0 out of 9.0, with at least 2.5 out of 4.0 in Diploma Engineering. In addition, students must have Mathematics and Physics in HSC (or equivalent), and Chemistry in at least SSC or HSC (or equivalent).

All the candidates are required to appear at a written Admission Test. Admission at based on a weighted average of her/his CGPA in SSC (20%), HSC (30%) and marks obtained in the Admission Test (50%).

A student transferred to UAP from another recognized university or academic institution may be exempted from certain courses based on satisfactory performance (a grade of C or better) in courses considered equivalent to corresponding courses at UAP, as decided by the Course Equivalence Committee. A transfer student pursuing a Civil Engineering degree at UAP can be exempted from a maximum of 80 credit hours.

In Masters Program, Department enrolls students who have a B.Sc. Engineering degree or equivalent from any recognized university/institution in the relevant field/branch with a CGPA of at least 2.5 in the scale of 4.0 or its equivalent.

Detailed information about the admission requirements and procedure is available at the Admission Office of UAP, which is located at the First Floor of the campus
Phone: +8802-9126812, PABX: +8802-58157091~4, +8802-58157096 (Ext 0, 120)
FAX: +8802-58157097, E-mail: admission@uap-bd.edu

6.1 Brief Description of the CE Course System

At present, the CE department offers B. Sc. Engineering degree at the completion of 161 credit hours. The course structure has been designed to provide the graduates with adequate theoretical and experimental backgrounds in Basic Science, Mathematics, Basic Engineering, Humanities, Civil Engineering Practice as well as the major branches of Civil Engineering; i.e., Environmental, Geotechnical, Structural, Transportation and Water Resources Engineering.

The following Table shows the item wise distribution of the credit hours for the CE curriculum.

Type of Course	Credit Hour		
	Theoretical	Sessional	Total
Basic Science	6.0	3.0	9.0
Mathematics	12.0	0.0	12.0
Basic Engineering	34.0	16.5	50.5
Humanities	16.0	0.0	16.0
Civil Engineering Practice	5.0	0.0	5.0
Environmental Engineering	6.0	1.5	7.5
Geotechnical Engineering	6.0	1.5	7.5
Structural Engineering	15.0	4.5	19.5
Transportation Engineering	6.0	1.5	7.5
Water Resources Engineering	9.0	1.5	10.5
Optional Courses	10.0	1.5	11.5
Project & Thesis	0.0	4.5	4.5
Total	125.0	36.0	161.0

6.2 Fees

Every student selected for admission needs to pay Tk. 74,250 for 1st semester fees, and an additional Tk. 21,500 (i.e., Tk. 13,000 as admission fee, Tk. 5,000 as extra-curricular activity fee, Tk. 3,000 as caution money, Tk. 500 for certificate verification and ID card), totaling Tk. 95,750 at the time of admission. Caution Money taken from the students would be refundable at the time of her/his graduation from the university.

For students with H.S.C., 'A' Levels and Diploma Engineering background, the semester fee of Tk. 74,250 consists of Registration fee of Tk, 30,000 and Tuition fee of Tk. 44,250. Therefore, the total cost for 8 (= 4 × 2) semesters is Tk. 5,94,000 (= 8 × 74,250) in addition to the 21,500 mentioned before. In her/his final year at UAP, a student also needs to pay Tk. 6,000 as convocation fee.

As mentioned in section 3.2, UAP offers tuition waiver/scholarship to eligible students based on their academic background (i.e., S.S.C. and H.S.C./equivalent results) and performance at UAP.

7.1 Faculty Members

7.1.1 Full Time Faculty Members

CE Departmental

M. R. Kabir, Ph.D.
Professor & Head
B. Sc. Engg. (Civil), M. Sc. Engg., Post Graduate Diploma
Ph.D., Catholic University of Leuven, Belgium

Iftekhar Anam, Ph.D.
Professor
B. Sc. Engg. (Civil), M. S.
Ph.D., Texas A&M University, USA

M. Mizanur Rahaman, Ph.D.
Professor
B. Sc. Engg. (Civil), M. Sc. Engg., Lic.Sc.,
D.Sc., Helsinki University of Technology, Finland

Farzana Rahman, Ph.D.
Professor
B. Sc. Engg. (Civil), M. Sc. Engg.
Ph.D., Saitama University, Japan

Emtazul Haque
Associate Professor
B. Sc. Engg. (Civil)
M. Sc. Engg., The University of Oklahoma, USA

Tanveer Ferdous Saeed, Ph.D.
Associate Professor
B. Sc. Engg. (Civil), M. Engg. (EEM)
Ph.D., Monash University, Australia

Sarah Tahsin Noor, Ph.D.
Associate Professor
B. Sc. Engg. (Civil), M. Sc. Engg.
Ph.D., Concordia University, Canada

Nehreen Majed, Ph.D.
Assistant Professor
B. Sc. Engg. (Civil), M. Sc. Engg.
Ph.D., Northeastern University, USA

Syed Jamal Uddin Ahmed
Assistant Professor
B. Sc. Engg. (Civil)
M. Sc., The University of Dundee, Scotland, UK

Md. Mahmudul Hasan, Ph.D.
Assistant Professor
B. Sc. Engg. (Civil), M. Engg.
Ph.D., Ritsumeikan University, Japan

M. Shamim Miah, Ph.D.
Assistant Professor
B. Sc. Engg. (CEE), M. Sc. Engg.
D.Sc. ETH Zurich, Swiss Federal Institute of Technology, Switzerland

Sharmin Nasrin, Ph.D.
Assistant Professor
B. Sc. Engg. (Civil), M. Sc. Engg.
Ph.D., Queensland University of Technology, Australia

Ariful Hasnat
Assistant Professor
B. Sc. Engg. (Civil),
M. Sc. Engg. (Civil & Structural), BUET, Bangladesh

Sheikh Sharif Ahmed
Assistant Professor
B. Sc. in Engg. (Civil)
M. Sc Engg., Memorial University, Canada

Rumman Mowla Chowdhury
Assistant Professor
B. Sc. Engg. (Civil)
M. Sc., University of Stuttgart, Germany

Tanmoy Das
Lecturer
B. Sc. Engg. (Civil), BUET

Md. Nazmul Alam
Lecturer
B. Sc. Engg. (Civil), UAP

Md. Tawhidur Rahman
Lecturer
B. Sc. Engg. (Civil), BUET

Md. Mahbubul Alam
Lecturer
B. Sc. Engg. (Civil), BUET

Sadia Tamanna Khan
Lecturer
B. Sc. Engg. (Civil), BUET

Mansura Sharmin
Lecturer
B. URP
M. Engg. (Civil), University of Toronto, Canada

Mahfuza Tabassum
Lecturer
B. Sc. Engg. (Civil), UAP

Limon Barua
Lecturer
B. Sc. Engg. (Civil), BUET

Troyee Saha
Lecturer
B. Sc. Engg. (Civil), BUET

Interdepartmental Faculty Members offering Courses in the CE Department
Dept. of Basic Science & Humanities

Sultan Mahmood, Ph.D.
Professor, Dept. of Physics
B. Sc. (Physics), M. Sc., M. Phil.
Ph. D., KUET

Layeqa Bashir
Assistant Professor
B. S. S. (Social Science)
M. S. S., DU

A.S.M. Mohsin
Assistant Professor
B. A. (History)
M. A., DU

Samsun Nahar
Lecturer
B. Sc. (Mathematics)
M. Sc. DU

Shirin Provat
Lecturer
B. Sc. (Mathematics)
M. Sc. DU

Shahina Naznin
Lecturer
B. Sc. (Mathematics)
M. Sc. DU

Dept. of Business Administration

Samira Sahel
Lecturer
BBA (Finance)
MBA (Marketing), IBA, DU

Barnali Nandi
Lecturer
BBA (Marketing)
MBA (Marketing), DU

Leena Afroz Mostofa Chowdhury
Assistant Professor
BBA (AIS)
MBA (AIS), DU

Dept. of Electrical & Electronic Engg.

Tanima Tasnim
Lecturer
B. Sc. Engg. (EEE), BUET

Shahinur Rahman
Lecturer
B. Sc. Engg. (EEE), BUET

Dept. of English
Nellufar Yeasmin
Assistant Professor
B. A. (English)
M. A., RU

Bidisha Zaman
Assistant Professor
B. A. (English)
M. A., DU

Sadia Afrin Shorna
Lecturer
B. A. (English)

7.1.2 CE Departmental Full Time Faculty Profiles

Dr. M. R. Kabir, Professor and Head
Ph.D., Catholic University of Leuven, Belgium, 1993
Post Graduate Diploma, Anna University, India, 1985
M. Sc. Engg., BUET, 1984
B. Sc. Engg. (Civil), University of Roorkee, India, 1980

Dr. Kabir has been the Head of the CE department since joining the university in 2001. He has a distinguished academic and professional background spanning over thirty years.

Before joining UAP, he held various respectable academic positions like faculty member of BUET, Visiting Faculty in the University of Alberta, The University of Texas at Austin and The Technical University of Delft. He has also worked as a guest faculty in several public and private universities of Bangladesh.

At UAP, he has held positions of Acting Registrar and Acting Vice Chancellor before becoming the Pro Vice Chancellor in 2003, a position he currently holds. He has taught courses on Open Channel Flow, Hydrology, Irrigation and Flood Control, Introduction to Civil and Environmental Engineering, Hydraulics Lab.

Dr. Kabir has about forty publications in national and international journals and proceedings, including papers in the journals of American Society of Civil Engineers (ASCE), Natural Hazards, Urban Water, Science and Technology and the Institution of Engineers Bangladesh (IEB). His current research interests include hydrology, river engineering, flood control, sediment transport, etc. He supervised the thesis works of several under and post-graduate students at BUET and UAP. He has been a member of the editorial and review board of several technical journals and bulletins, including the IEB Journal of CE, Journal of WRE at BUET.

In addition to teaching and research, he has worked as the principal investigator and main resource person in numerous government and non-government projects and has offered services as a technical expert to organizations like IWM, IUCN, DWASA, LGED, Department of Fisheries, Water Development Board, Roads and Highways Department, etc. He is a Life Fellow of the Institution of Engineers, Bangladesh and Life Member of Bangladesh Earthquake Society and Bangladesh Computer Society.

Dr. Kabir has recently been appointed the Country Chapter Committee Chair of the Association of Universities of Asia and the Pacific (AUAP), which is an association of the university chief executives from higher education institutions in Asia Pacific and around the world.

Dr. Iftekhar Anam, Professor
Ph.D., Texas A&M University, USA, 2000
M.S., The University of Texas at Austin, USA, 1996
B. Sc. Engg. (Civil), BUET, 1993

Dr. Anam joined UAP in 2000 as an Assistant Professor after completing his Ph.D. from Texas A&M University. Prior to that, he had worked as Lecturer at BUET, Teaching and Research Assistant at UT Austin and Texas A&M University.

Dr. Anam's main research interest is based on structural dynamics, including earthquake engineering, vehicular vibration, ocean wave mechanics, offshore structures, dynamic soil-structure interaction, random vibrations, etc. He has developed theoretical and numerical methods for the calculation of nonlinear wave forces, wave kinematics, foundation stiffness and probabilistic modeling. His works have been published in the journals and books published by the American Society of Civil Engineers (ASCE), American Society of Mechanical Engineers (ASME), International Society of Offshore and Polar Engineers (ISOPE) and presented at various international conferences.

At UAP, Dr. Anam has taught several theoretical and sessional courses on Engineering Mechanics, Structural Analysis and Design. He has led the research work on structural dynamics and earthquake engineering at UAP and has supervised undergraduate and postgraduate thesis/project works on the analyses of RC buildings, bridges, pavements, steel towers, skyscrapers, floating houses, low-cost houses, soil-structure interaction, probabilistic structural dynamics, structural control, ductility, seismic detailing and retrofit of RC frames and flat slabs, as well as masonry structures, developing computer programs as well as experimental models on linear and nonlinear structural dynamic analyses for seismic ground motion, impact loading, blast loading, hydrodynamic loading. Results of his research works at UAP (in collaboration with UAP students and faculty members) have been published in the proceedings of international conferences across the world.

He has also developed the Structural Mechanics and Strength of Materials Laboratory at UAP, housing the first Universal Testing Machine (UTM), first Reversible UTM and first seismic shake table developed in Bangladesh.

Dr. Anam has also performed several consultancy services for CRTTC, UAP, including Strengthening RC Structures against Earthquakes using Nonlinear Time History Analysis. He has served as the principal investigator and main resource person in government funded research projects and training course on structural dynamics and earthquake engineering organized by PWD, lectures on earthquake resistant design organized by Bangladesh Earthquake Society, SEL and BSRM. He has served in the Review Board of the updated BNBC as well earthquake-resistant design manuals being developed in the JICA-funded projects CNCRP and SATREPS/TSUIB.

Dr. M. Mizanur Rahaman, Professor

Post graduate Degree in pedagogy,
Helia University of Applied Sciences, Finland, 2012
D.Sc., Helsinki University of Technology, Finland, 2009
Lic.Sc., Helsinki University of Technology, Finland, 2005
M.Sc., Helsinki University of Technology, Finland, 2003
B.Sc. Engg. (Civil), BUET, 2000

Dr. Rahaman joined UAP in 2013 after working as Postdoctoral Researcher in the Department of Civil and Environmental Engineering at Aalto University, Finland and visiting scholar at University of Cambridge, UK. He received formal pedagogy education and training on grading, curriculum design and test evaluation.

Dr. Rahaman is the author of over 55 scientific articles, including 45 peer-reviewed publications. His research findings are published in many reputed journals including Natural Resources Forum, Water Policy, International Journal of Water Resources Development, and Integrated Environmental Assessment and Management among others. He has given oral presentations in numerous national and international scientific conferences including seven as an invited speaker. He has been an invited lecturer in nine universities including the University of Toronto, University of East Anglia (UK), University of Bergen (Norway), Fudan University (China) and OSCE Academy (Kyrgyzstan). Dr. Rahaman has instructed one doctoral thesis, five master's theses and 13 bachelor theses in water resources field.

His current research interests are integrated water resources management, water conflicts and security, transboundary river basin institutions, global water policies and water laws, both nationally and internationally, including South and Central Asia, Myanmar and Europe. He has also experience of working in the field in Bangladesh, Bhutan, Canada, Finland, India, Kyrgyzstan, Nepal and UK.

Dr. Rahaman is an editorial board member of International Journal of Sustainable Society and Journal of Water Resources Engineering and Management. He regularly reviews articles for International Journal of Water Resources Development, Water Resources Management, International Journal of River Basin Management, Natural Hazards, Natural Resources Forum, International Journal of Sustainable Society and Environmental Management. He was interviewed by global news channel Aljazeera on the water conflict between Ethiopia and Egypt associated with Grand Ethiopian Renaissance Dam on Nile river.

Dr. Rahaman is a fellow of IEB, member of Finnish Association of Civil Engineers, International Water Resources Association (France), International Water History Association (Norway), Cambridge Union Society and Cambridge University Scientific Society. He is affiliated with Third World Center for Water Management (Mexico) and with International Water Law Project (Texas, USA).

Dr. Farzana Rahman, Professor

Ph.D. in Civil Engineering, Saitama University, Japan, 2009
M.Sc., Saitama University, Japan, 2005
B.Sc., Engg. (Civil), BUET, 1998

Dr. Farzana Rahman joined UAP in 2013 as an Assistant Professor and currently she is working as a Professor. Before joining UAP, she worked as an Assistant Professor in Presidency University Dhaka. She did her PhD on 'Development of Traffic Calming Prioritization Process', following which she worked as a researcher in the Design and Planning Laboratory of Saitama University. Just completing her B. Sc. Engg., she had also worked at the Institute of Water Management.

At UAP, she has taught various theoretical and sessional courses on Transportation and basic Civil Engineering in undergraduate and graduate programs, including undergraduate courses on Traffic Engineering, Transportation Planning and Management, Highway Materials and Traffic Engineering Laboratory, Introduction to Civil Engineering, Details of Construction, Surveying and Civil Engineering Drawing and graduate courses on Transportation Planning, Traffic Engineering and Transport Modeling. She is the Coordinator of Department's Postgraduate Program.

Her research aims to provide appropriate tools in considering the consequence of decisions related to transportation planning and design. It has been focused within four main areas; i.e. to improve road safety analysis and evaluation techniques, o develop, implement and evaluate traffic calming decision making process and its prioritization system, statistical modeling to improve the level of knowledge associated with transportation planning implications and to evaluate service quality of public transport. She applies statistical methods in the residential street safety analysis, particularly in modeling the relationship between safety and street characteristics. Specific aspects of her research include: formal procedures in deciding when and which improvements such as traffic calming devices are required; improvement of public transport service quality; tools for designing safety for new roads; pedestrian safety facilities; parking management for increasing mobility on arterial roads and tools for traffic management improvements. Her current research is on implementation of bus priority lanes in the context of heterogeneous traffic in developing cities and assessment of ride sharing service based on customer opinion.

Her research plans to improve the knowledge base for using these tools by developing more practical procedures for estimating the repercussions of decisions. She focuses equally on the construction management system in Bangladesh, particularly safety practices in construction sites using statistical models.

Emtazul Haque, Associate Professor
M. Sc. Engg., The University of Oklahoma, USA, 1997
B. Sc. Engg. (Civil), BUET, 1992

Mr. Haque joined UAP in 2006 following an excellent academic career as well as extensive research and professional experience at home and abroad. In addition to specializing on Geotechnical Engineering, he has professional experience in structural engineering and pavements. Before joining UAP, he headed a development company as its Managing Director in Dhaka; worked as a consultant (foundation and structural design) in Dhaka, the Manager Technical Services (Geotechnical Engineering) at Terra-Mar, Inc. in USA and design engineer at Design Associates Ltd. in Dhaka, Bangladesh.

As a Graduate Research Associate at The University of Oklahoma, Mr. Haque performed extensive experimental and numerical analyses on cracking characteristics of Continuously Reinforced Concrete Pavements. He devised a tensile loading arrangement using a Universal Testing Machine to simulate inherent shrinkage cracks in CRC pavements and also developed a two-dimensional model of the CRC slabs using FLAC, a commercial software based on finite difference method.

Mr. Haque had been involved in many industrial, commercial, residential, private housing and public projects in the city of Houston, Beaumont and Austin in Texas, USA. Scope of works under these projects included extensive field and laboratory investigation and geotechnical analyses and engineering recommendations for the design and construction of underreamed drilled pier foundations, pile foundations for single and multi-span bridges, retaining walls, communication towers, pavement thickness design and subgrade preparation, underground utility lines and lift stations. He performed extensive slope stability analyses to evaluate the stability of existing and proposed slopes and provided recommendations regarding geometry, preparation and drainage to construct/maintain safe and stable slopes for numerous landfills, lakes, retention ponds and bayous in Texas.

He has been involved in the geotechnical investigation, foundation and structural design as well as pile load tests of numerous multi-storied residential and commercial projects, shopping complexes, effluent treatment plants in Dhaka Division.

At UAP, Mr. Haque currently teaches courses like Engineering Mechanics, Soil Mechanics, Engineering Geology and Geomorphology, Foundation Engineering and Soil Mechanics Lab. His research includes calculation of bearing capacity of foundations, assessment of geotechnical properties of Dhaka subsoil.

Dr. Tanveer Ferdous Saeed, Associate Professor
Ph. D., Monash University, Australia, 2011
M. Engg. (EEM), AIT, Thailand, 2006
B. Sc. Engg. (Civil), BUET, 2004

Dr. Saeed is currently working as an Associate Professor in the Department of Civil Engineering. Previously he also worked as a faculty member at Presidency University and Ahsanullah University of Science and Technology.

Dr. Saeed is specialized on fate and mathematical modeling of pollutants removal from wastewater employing constructed wetlands. He is the pioneer for implementing constructed wetlands in Bangladesh, to provide treatment of polluted surface waters and wastewaters in Bangladesh.

He has published many peer reviewed international publications on pollutant removal dynamics in constructed wetland systems and is the lead author of the book Environmental Sanitation, Wastewater Treatment and Disposal that is followed by undergraduate and post graduate programs at many national and international universities.

Dr. Saeed received many research and academic awards. These include book author reception award by the University Grants Commission of Bangladesh in 2016, and University Grants Commission (UGC) Award in the year 2013 for best research in Engineering and Technology.

Dr. Sarah Tahsin Noor, Associate Professor
Ph.D., Concordia University, Canada, 2011
M.A.Sc, Concordia University, Canada, 2005
B. Sc. Engg. (Civil), BUET, 2002

Dr. Sarah Tahsin Noor joined at UAP as Assistant Professor in 2011. Earlier, she had worked as Teaching and Research Assistant at Concordia University.

At UAP, Dr. Noor teaches Engineering Mechanics and geotechnical engineering courses in undergraduate and graduate levels. She also offers fundamental and specialized geotechnical courses to the undergraduate students of Military Institute of Science and Technology (MIST) as a part-time faculty. Dr. Noor serves as the Head of Self-Assessment Committee that acts under the direction of IQAC (UAP). She is highly motivated to educate the students through Outcome Based Education method and also to ensure student-centered learning environment.

Dr. Noor has supervised the final year projects of undergraduate program and also some of graduate program. In some of these projects, she has conducted different field tests, namely screw plate load test (SPLT), permeability test, SPT, CSL, PDA-DLT, etc. with collaborative support from Prosoil Foundation Consultant. Her research interest includes pile foundation, shear strength of unsaturated soil, soil improvement, soil bearing capacity, liquefaction, foundations in problematic soils (including sensitive clay and collapsible soil), numerical modeling, permeability through field test etc. The works of her research have been published in reputed journals, and peer-reviewed national and international conferences.

At present, Dr. Noor is the director of Center for Research, Training, Testing and Consultation (CRTTC). She served previously as Test-in-charge, CRTTC (Civil). She has worked as Lead Engineer in the condition assessment of RMG factory buildings. Through CRTTC, she has offered consultancy services to different projects, namely liquefaction analysis, relative compaction at field condition, etc. She also served as resource person in examining the test piles of Moghbazar-Mouchak flyover through CSL test.

Dr. Noor is a member of IEB, IABSE and Golden Key International Honor Society. She is the executive member (Engineering) of Women Architects, Engineers and Planners Association (WAEPA).

Dr. Nehreen Majed, Assistant Professor
Ph.D., Northeastern University, USA, 2011
M.Sc. in Civil and Environmental Engineering, BUET, 2005
B. Sc. Engg. (Civil), BUET, 2003

Dr. Nehreen Majed joined UAP as an Assistant Professor in 2014. Earlier, she worked as an Assistant Professor at the Department of Environmental Science and Management at North South University for one year. She also served as a member in the coordination committee for the establishment of the Department of Civil and Environmental Engineering prior to opening of the department at NSU.

After graduation in 2003, she worked as a research officer at ITN-BUET until 2005 working in close association with professionals in the water supply and sanitation sector in Bangladesh. While performing PhD, she also worked as a graduate teaching assistant in department of Civil and Environmental Engineering for Northeastern University.

Dr. Nehreen Majed has experiences in teaching laboratory courses and supervising undergraduate summer interns in the laboratory based methods. Her fields of expertise encompass water quality assessment and control, water and wastewater treatment, biological nutrient removal and microbial ecology. Apart from looking at phosphorus analyzing techniques and advanced lab-scale configurations for reaching low effluent phosphorus levels, her PhD research introduced a novel technique to evaluate cellular level distribution of storage polymers in the polyphosphate accumulating organisms that are responsible and relevant in enhanced biological phosphorus removal technique.

At UAP, she is working on different issues in Environmental field including spatial and temporal variation of river water quality, evaluation of effluent treatments plants in industries, uptake and bio-accumulation of environmental contaminants through food-chain etc. She has a number of publications in internationally acclaimed peer-reviewed journals like Environmental Science and Technology, Current Opinions in Biotechnology, Water Research, Water Science and Technology, Frontiers in Environmental Science and also in several international conference proceedings.

Syed Jamal Uddin Ahmed, Assistant Professor
M. Sc., The University of Dundee, Scotland, UK, 2010
B. Sc. Engg. (Civil), BUET, 2004

Syed Jamal completed his M.Sc. in Concrete Engineering with dSyed Jamal Uddin Ahmed joined UAP as Assistant Professor in October 2013. Earlier he served as Assistant Professor in the Department of Civil Engineering of the University of Information Technology and Sciences (UITS), Dhaka. After the B.Sc in Civil Engineering from BUET, Syed Jamal worked as Assistant Engineer at Local Government Engineering Department (LGED) for two years and had experience in infrastructural development in Cox's Bazar District. Later he worked as Civil Engineer at a power plant extension project in Tabuk and as Project Engineer for similar projects in Jeddah, Kingdom of Saudi Arabia.

Syed Jamal completed his M.Sc. in Concrete Engineering and Environmental Management with distinction from the University of Dundee, Scotland, UK in 2010. His research dealt with the Rapid Chloride Durability of concrete through electro-chemical test methods which served as a part of standardization of Rapid Chloride test into British Standard.

At UAP, Syed Jamal takes theory and lab courses on Structural Engineering and Engineering Materials in undergraduate and postgraduate levels. In the recent semesters he taught Engineering Mechanics-I, Mechanics of Solids-I, Design of Concrete Structures-II, Concrete Technology, Engineering Materials Lab and Field Surveying. He also supervises thesis of undergraduate and postgraduate students. Syed Jamal is also serving as Assistant Proctor at the Department. He was advisor for Art & Photography Club of CE students.

His main research interests are Cement and Concrete Technology, Concrete Durability and Assessment, novel cementitious materials, Sustainable Construction and Reinforced concrete. His research at UAP dealt with self-compacting concrete, fly ash, concrete mix parameters, effect of epoxy coating on the bond between steel and concrete, study of rice husk ashes, development in compressed earth blocks and so on. His interests also encompass computer programming and development of mobile applications. Syed Jamal is a member of IEB.

Dr. Md. Mahmudul Hasan, Assistant Professor
Ph.D., Ritsumeikan University, Japan, 2014
M. Engg., Ritsumeikan University, Japan, 2010
B.Sc. Engg. (Civil), KUET, 2002

Dr. Hasan joined UAP in 2015 as an Assistant Professor. Before joining UAP, he was Head and Assistant Professor of the Department of Civil Engineering in University of Information Technology & Sciences (UITS), Dhaka. After his graduation from KUET he started his career as an Assistant Engineer at Department of Public Health Engg. (DPHE), Dhaka under the Bangladesh Water Supply Program Project (BWSPP) funded by World Bank. He has international working experiences for instance Tepia Corporation Japan (Asia's leading consulting company providing various analytical and intelligent solutions for cross-border and technology-related business expansions) and Kankyosoken Co. Ltd. (a firm of consultation and Construction of various types of wastewater treatment facilities, design, water quality analysis, maintenance, repairs, etc.). He also worked as Teaching and Research Assistant at Ritsumeikan University, Japan.

At UAP, Dr. Hasan teaches various theoretical and sessional courses on Environment and basic Civil Engineering at both undergraduate and postgraduate level; e.g. Introduction to Civil and Environmental Engineering, Wastewater Engineering, Environmental Pollution and its Control, Environmental Engineering Lab, Theory of Water Treatment. He has also supervised several undergraduate theses at UAP. Apart from his academic assignments, he is the Faculty Adviser of Environment and Disaster Management Club. He is also committee member of Institutional Quality Assessment Cell (IQAC) and Social Awareness Club of UAP.

Dr. Hasan's research mainly focuses on development of low cost technologies for water and wastewater treatment targeting developing countries. During his six years research in Ritsumeikan University, Japan, he developed a Simple Ceramic Filter (SCF) made of clay soil (80%) and rice bran (20%) and investigated its sustainable applications in water and wastewater treatment processes. His innovative research works have been published in several peer-reviewed journals including the publishers Elsevier, IWA, WEF, JSWE. Additionally, he presented his research findings at various national and international conferences and received prestigious awards and honors. His research got recognition through several media coverage in Japan.

Dr. Hasan was involved in internationally funded research projects; e.g. Research and Development for Water Reuse in Tropical Regions (joint collaboration project between Japan and Thailand), Sustainable Technologies for Arsenic Removal from Groundwater of Bangladesh, t collaboration project between Japan and Bangladesh. Dr. Hasan is a fellow of the Institute of Engineers Bangladesh (IEB), Bangladesh.

Dr. M. Shamim Miah, Assistant Professor
D. Sc., ETH Zurich, Switzerland, 2015
M.Sc. Engg., Kunsan National University, South Korea, 2010
B.Sc. Engg. (Civil & Environmental), UAP, 2007

Dr. Shamim Miah joined UAP in October 2015 as Assistant Professor. He has been awarded several international scholarships/fellowships; e.g. ISMA Student Fellowship EC FP7, Leuven, Belgium, FIT4 Campus Project in ETH Zurich, South Korean Government Scholarship Brain Korea 21 to pursue Master's degree, Academic Excellence Scholarship during graduate studies at Kunsan National University. He was also nominated Outstanding Graduate of Fall 2006 and Outstanding Student for Fall 2005 and Fall 2006 during his stay at UAP.

Dr. Miah has taught several theory courses in undergraduate and postgraduate level at UAP in the area of Structural Engineering. Additionally, he is supervising both undergraduate and post-graduate theses in the department.

Prior to joining UAP, he worked as a Scientific Assistant and as a Teaching Assistant in the Institute of Structural Engineering (IBK), Department of Civil, Environmental and Geomatic Engineering (D-BAUG) at Swiss Federal Institute of Technology Zurich. He also worked as a Research Assistant in the Structural System Laboratory (SSL) and as a Teaching Assistant in the Department of Civil and Environmental Engineering at Kunsan National University, South Korea. Furthermore, he worked as a Structural Design Engineer at Synthesis Architects in Bangladesh.

Dr. Miah's main research interest is in the area of Structural Engineering; research focuses on Structural Dynamics and Earthquake Engineering, Structural Health Monitoring, Smart Materials & Structures, System Identification, Vibration Mitigation and Control, Structural Analysis and Design. He has developed new methodology for Real-Time Vibration Mitigation coupled with Magnetorheological damper (MR damper), applicable for real-time vibration mitigation, also able to handle uncertainties. His works have been published in the Journal of Smart Materials and Structures, Structural Control Health Monitoring and International Journal of Civil and Structural Engineering. He also published e-book chapters in the Research and Applications in Structural Engineering, Mechanics and Computation and Insights and Innovations in Structural Engineering, Mechanics and Computation. He presented his research work at various international peer-reviewed conferences across the world (i.e., Switzerland, South Korea, Thailand, Belgium, South Africa, Spain, Malaysia and Bangladesh). Mr. Miah has received best paper awards in different scientific events from South Korea and Malaysia.

Dr. Sharmin Nasrin, Assistant Professor
Ph.D., Queensland University of Technology, Australia, 2015
M. Sc. Engg., University of Melbourne, Australia, 2003
B. Sc. Engg. (Civil), University of Madras, 2000

Dr. Sharmin Nasrin joined UAP as an Assistant Professor in the Department of Civil Engineering in 2016.

She worked at the Department of Main Roads and Transport, Queensland, Australia as a Graduate engineer from 2005 to 2010, following which she joined Queensland University of Technology (QUT) as a Master by Research student.

After completion of articulation since 2011 she studied full time towards Ph.D. She also has been awarded Australian Postgraduate Award for PhD. In her Ph.D., Sharmin translated BRT plans into the operating system and identified the urban area's own specific needs, opportunities and constraints considering Dhaka as a case study. For this purpose, Sharmin conducted extensive travel survey on commuters in Dhaka for the work trip. She identified the acceptability of Bus Rapid Transit to commuters in Dhaka by comparing mode choice model developed with both Revealed Preference and Stated Preference Survey data. Ultimately her research made a substantial contribution by identifying the importance of stability in governance for success of any major mass transit project in a developing country's megacity.

In 2015, Sharmin worked at BCL Associates Ltd. in Bangladesh as a Transport Planner and Environmental Engineer. In BCL, she worked in JICA-funded 'City Governance' project.

Subsequently in 2016, she worked briefly as an Assistant Professor in Presidency University, Bangladesh.

Sharmin is the member of Engineers Australia. Her primary research interest includes travel behavior, transport planning and transport modeling.

Ariful Hasnat, Assistant Professor
M.Sc. Engg. (Civil and Structural), BUET, 2014
B.Sc. Engg. (Civil), UAP, 2008

Ariful Hasnat has been an Assistant Professor in the Department of Civil Engineering, UAP, since 2016, before which he worked as a Lecturer and Senior Lecturer at UAP.

Before joining at UAP as a faculty member, he worked as a Research Fellow at the Housing and Building Research Institute (HBRI) and Research Assistant at UAP. His research focuses on sustainable development of concrete technology, repair and strengthening of bridges and buildings. He has more than 25 peer-reviewed journal papers and conference proceedings. His paper on Recycling of Demolished Concrete as Coarse Aggregate received the best paper award in the Third International Conference on Sustainable Construction Materials and Technologies (SCMT3) in 2013 at Kyoto, Japan. He also participated as a Special Research Student in Saitama University, Japan in the short-term student exchange program between Saitama University and BUET partly supported by Japan Student Service Organization (JASSO).

In 2016, Mr. Hasnat was honored as one of the Ten New Faces of Civil Engineering Professionals by the American Society of Civil Engineers (ASCE). In addition to academic and research responsibilities, he is also actively involved in two technical committees of ASTM (ASTM C01, Cement; ASTM C09, Concrete and Concrete Aggregates) and working as a reviewer for the ACI Materials Journal, ACI Structural Journal and Engineering Journal by Elsevier.

He is a Member of International Association for Bridge and Structural Engineering (IABSE), Associate Member of American Society of Civil Engineers (ASCE), Member of American Concrete Institute (ACI), Member of American Society for Testing and Materials (ASTM) and an Associate Member of Institute of Engineers (IEB).

Sheikh Sharif Ahmed, Assistant Professor
M. Sc. Engg., Memorial University, Canada 2015
B. Sc. Engg. (Civil), BUET, 2011

Mr. Sheikh Sharif Ahmed joined UAP as a Lecturer on October 2015. He got promoted to the post of Assistant Professor on April 2016.

He obtained his Master's degree in Civil Engineering from Memorial University of Newfoundland, Canada specializing on Geotechnical Engineering.

Before that he worked as a Lecturer in Department of Civil Engineering of Chittagong University of Engineering & Technology (CUET) from April 2011 to December 2012.

He completed his Bachelor degree in Civil Engineering from Bangladesh University of Engineering & Technology (BUET) on February 2011. Mr. Ahmed's research interests include numerical modeling of offshore foundations, constitutive behavior of soil, stability of slopes, soil-structure interaction, geotechnical earthquake engineering and liquefaction. He has several publications in peer reviewed international journals (including ASCE International Journal of Geomechanics and International Journal of Offshore and Polar Engineering) and conference proceedings.

At UAP, he is currently teaching courses on Foundation Engineering, Numerical Analysis & Computer Programming and Geotechnical Engineering Lab.

Rumman Mowla Chowdhury, Assistant Professor
M.Sc., University of Stuttgart, Germany, 2014
B. Sc. Engg. (Civil), BUET, 2011

Rumman Mowla Chowdhury has been an Assistant Professor in the Department of Civil Engineering since 2016, after joining UAP in 2015 as Lecturer.

She finished her Masters in Water Resource Engineering and Management (WAREM) from University of Stuttgart, Germany. Her research was related with different electrochemical processes for the separation of powdered activated carbon in semi-technical scale.

Her first research work after her graduation was related to the water quality index analysis of water bodies along the roadsides of Bangladesh. After that she has 18 months of experience at the Institute of Water Modeling (IWM). Over there her major responsibilities was related to research on Hydro-Morphological Characteristics of Mora Modhumoti river, Hydro-Morphological characteristics of Surma river near Sylhet town, Updating of the geomorphologic characteristics of the river Ganges Up to River Brahmaputra, result extraction and post processing from two dimensional model simulation. Along with these she has to work on Arc GIS software.

She also worked briefly as a Lecturer at Stamford University Bangladesh. Besides this she was also appointed for preparing the EIA report for an ADB project. She has taken SAARC training program on river erosion and embankment safety management in south-Asia region. In 2013, she has took GIS training from Köln University, Germany and in Young Water Professionals' Program in Berlin.

Her research interest is on waste water treatment processes, water quality analysis through water quality index, environmental impact assessment, GIS application in hydrological systems.

Tanmoy Das, Lecturer
B.Sc. Engg. (Civil), BUET, 2013

Tanmoy Das joined UAP in 2013 and is currently teaching courses on Engineering Materials, Design of Concrete Structures and Computer Applications in Civil and Environmental Engineering etc. Prior to that, he worked as a Lecturer at Presidency University.

He did his undergraduate thesis on Structural Engineering and his thesis topic was "A comparative Study on Seismic Analysis of Bangladesh National Building Code (BNBC) with Other Codes". His paper on the same topic has been published in the Journal of The Institutions of Engineers (India): Series A. His research interest is in the field of Structural Engineering which includes Structural dynamics and advanced Engineering Materials.

Tanmoy Das is also enrolled in the M.Sc. program in BUET and currently doing his post-graduation thesis on the topic of Ferrocement retrofitting of unreinforced masonry wall under cyclic load.

Md. Nazmul Alam, Lecturer
B.Sc. Engg. (Civil), UAP, 2011

Md. Nazmul Alam joined as a Lecturer at the Department of Civil Engineering in 2015. He completed his B. Sc. Engineering degree (securing 1st position) from UAP in 2011 and was awarded Chancellor's Gold Medal for his academic result. He did his undergraduate thesis on Earthquake Concern for Masonry Building and Soft Soil. He is pursuing M. Sc. on Structural Engineering at BUET. He has completed theory courses and is working on his thesis on Nonlinear Behavior of RC Flat Plate and Shear Wall Joint Interaction and Design.

Before joining UAP, Mr. Alam worked as Lecturer in the department of Civil Engineering at European University, and as Teaching Assistant at UAP.

He also has about two years professional experience as a structural engineer with the consultancy firm Engineering and Research Associates Limited (ERA). His field of experience therein involves Detail Engineering Assessment and Retrofitting of Existing Ready Made Garments Buildings, review of design of RC and steel buildings and research-based-study on RC and Steel related codes, standards and specifications. He has also worked for CRTTC, UAP on Strengthening RC Structures against Earthquakes using Nonlinear Time History Analysis for a proposed new building.

Md. Tawhidur Rahman, Lecturer
B.Sc. Engg. (Civil), BUET, 2015

Md. Tawhidur Rahman obtained his B.Sc. in Civil Engineering from BUET in 2015, with an undergraduate thesis on Transportation Engineering on the topic Prospect of Congestion Road Pricing for Dhaka City and a case study of RFID based Mukterpur Bridge Toll Collection System.

He joined UAP in December 2015 and has taught various theoretical courses on Structural Engineering, Numerical Analysis and Computer Programming, Fluid Mechanics and sessional courses on Transportation Engineering, Engineering Materials and Environmental Engineering.

His research interests include Public Transportation System, Signal Design and Optimization, Sustainable Transport Planning, Transportation Network Modeling and Simulation, Transport Economics.

Md. Mahbubul Alam, Lecturer
B. Sc. Engg. (Civil), BUET, 2016

Md. Mahbubul Alam has been a Lecturer at UAP since August 2016. Before joining at UAP, he was a Lecturer at Daffodil International University.

He completed his B. Sc. in Civil Engineering from BUET in March 2016 with a major in Transportation Engineering. His undergraduate thesis topic was Vehicular Emission Inventory Analysis of a Residential and a Commercial Area of Dhaka City". His research interests pivot around traffic emission control and management, ambient air quality assessments, intelligent transportation systems (ITS) etc.

At UAP, he currently teaches courses on Mechanics of Solids, Fluid Mechanics, Transportation Engineering Sessional and Engineering Drawing.

He is also pursuing his M.Sc. on Transportation Engineering in BUET.

Sadia Tamanna Khan, Lecturer
B. Sc. Engg. (Civil), BUET, 2016

Sadia Tamanna Khan has been a Lecturer at UAP since August 2016. She formerly worked as a Research Associate in Institute of Water and Flood Management (IWFM), BUET.

She completed her B.Sc. in Civil Engineering from BUET in March 2016 with a major in Environmental Engineering.

Her research interests include Water Quality Modeling, Air Pollution, fate and transport, Chemical Contaminant Speciation, Water Pollution and Water Treatment Technologies.

Mansura Sharmin, Lecturer
B. URP, BUET, 2008
M. Engg. (Civil), University of Toronto, Canada, 2013

Mansura Sharmin joined UAP as a Lecturer in October, 2016. She completed her M.Engg. from the Department of Civil Engineering, University of Toronto in 2013, specializing in Transportation Planning and Engineering. Before that, she completed BURP from BUET in 2008.

Before joining in UAP, she worked as a Transportation Planner in AECOM, Canada.

Her research interest includes travel demand modeling, traffic operation studies, network modeling, transportation system analysis, sustainable transportation, public transportation, etc.

Mahfuza Tabassum, Lecturer
B.Sc. Engg. (Civil), UAP, 2014

Mahfuza Tabassum obtained her B.Sc. in Civil Engineering from UAP in 2014. Her undergraduate thesis was on Structural Engineering. Her thesis topic was "Numerical and Shake Table Analysis of Steel Structures". She has one conference paper based on her thesis and also worked for CRTTC, UAP using Nonlinear Time History Analysis for a proposed new building.

She has joined as a Lecturer at UAP in October 2016 and currently teaches courses on Engineering Mechanics, Quantity Surveying and Civil Engineering Drawing.

She had been a Teaching Assistant at UAP from January 2015 to October 2016.

Limon Barua, Lecturer

B.Sc. Engg. (Civil), BUET, 2016

Limon Barua obtained his B.Sc. in Civil Engineering from BUET in 2016.

He completed his undergraduate thesis on Transportation Engineering and his thesis topic was Study on Active Transportation in Improving Traffic Condition in Dhaka City.

He has two international conference papers based on his thesis on IICSD-2015 and ICCESD-2016. His research interest includes transportation planning and management, ITS and connected vehicle.

He joined UAP in October, 2016. Prior to that, he worked as a Transportation Research Engineer in Maks Inc.

At UAP, he is currently teaching courses on Engineering Mechanics, Structural Engineering and Computer Programming.

Troyee Saha, Lecturer
B.Sc. Engg. (Civil), BUET, 2016

Troyee Saha joined UAP in October, 2016. She is currently teaching courses on Design of concrete structures, Structural Engineering and Computer Programming.

She obtained her B.Sc. in Civil Engineering from BUET in 2016, specializing on Transportation Engineering and doing her undergraduate thesis on Problems Associated with the usage of Passenger cars in Dhaka city.

She has three international conference papers based on her thesis on IICSD-2015 and ICCESD-2016. Her research interest includes Public transportation planning, ITS, transportation modeling.

7.1.3 Supporting Office Staff

Tarique Bin Mohammed
Departmental Administrative Officer

Md. Al Amin
Laboratory Assistant

A. T. M. Rashedur Rahman Sarkar
Laboratory Assistant

Hedayetul Islam
Office Assistant

Md. Al-Amin
Library Assistant

Md. Homaun Kabir
Lab Attendant

Shahadat Hossain
Lab Attendant

Md. Ruhul Amin
Lab Attendant

Md. Ujjal
Lab Attendant

Md. Marajul Islam
Lab Attendant

Montu Miah
Messenger

Arifa Khatun
Messenger

7.1.4 Departmental Students

Students of Fall-2016 (Batch 39)

Students of Spring-2016 (Batch 38)



Students of Fall-2015 (Batch 37)


Students of Spring-2015 (Batch 36)

Students of Fall-2014 (Batch 35)

Students of Spring-2014 (Batch 34)

Students of Fall-2013 (Batch 33)

Students of Spring-2013 (Batch 32)

8.1 CE Departmental Resources

8.1.1 Classroom Facilities

The department of CE has spacious, air-conditioned classrooms within its premises. The rooms have maximum sitting capacity varying from 40 to 80 students and are equipped with comfortable sitting arrangements, white boards, multimedia and overhead projectors. These rooms are used mainly for theoretical classes, while the engineering laboratories are used for practical classes. Departmental computer laboratory is used for classes requiring computer usage.

Students in Class Room and Drafting Room

8.1.2 Laboratory Facilities

Ever since its inception, the CE department has realized the importance of in-house laboratories and has given priority to develop the necessary facilities. As a result, UAP became the first private university in Bangladesh to provide complete in-house laboratory facilities in all branches of Civil Engineering. Some of the experiments performed in these laboratories have been developed within the department itself, and are not offered by any other CE program in Bangladesh.

Structural Mechanics and Strength of Materials Laboratory

The Strength of Materials laboratory (commonly known as the SM lab) is among the largest labs set up in the CE department. Established in Spring 2003, the lab is used for the purposes of teaching, research and testing by departmental faculty and students. The experiments performed in this lab are based on concepts learnt in theoretical courses on Strength of Materials.

At present, the experiments in this lab include tension test of mild steel, compression tests of timber, metallic spring, direct shear test of timber and metal specimens, test of beam bending, biaxial bending, non-destructive tests, impact test of metal specimens, buckling and torsion tests, the tension and hardness test of metal specimens.

Torsion Test of Open Section

Buckling Test of Slender Column

Loading in Beam-Frame Testing Apparatus

Biaxial Bending Test

Hardness Test of Metals

Impact Test of Metals

The Universal Testing Machine (UTM) and earthquake shake table of this lab were the first of their kind built in Bangladesh and have produced accurate results for academic and research purposes for more than ten years.

The experimental research performed in this lab includes works on model beams, columns, skyscrapers, masonry buildings.

Tension Test of Mild Steel using the digitized UTM

Hydraulics Laboratory

Operating since Spring 2002, the Hydraulics Laboratory offers more than ten experiments on Fluid Mechanics and Hydraulic Engineering to 2nd and 3rd year students.

The Hydraulics lab is equipped with adequate facilities to offer experiments on Fluid Mechanics and Open Channel Flow. Two of its major apparatus are the Hydraulic Bench and the Flume, both offering testing options and quality comparable to the highest standards.

Locating the Center of Pressure

Verification of Bernoulli's Theorem

Collecting data from Hydraulic Bench

Measuring flow data using Glass Sided Flume

At present, the experiments performed using the Hydraulic Bench include flow measurements through orifice, mouthpiece, V-notch and Venturimeter as well as the determination of the coefficient of velocity by coordinate method.

The experiments using the Flume are the flow measurements through a broad-crested weir, sharp-crested weir, sluice gate and Parshall flume. Besides it is used for the demonstration of hydraulic jumps.

In addition to the two major apparatus, the lab also has the apparatus for determining the Center of Pressure and for verifying Bernoulli's theorem.

Engineering Materials Laboratory

The Engineering Materials lab, operating since Spring 2001 was one of the earliest labs set up in the CE department. Over the years, it has grown significantly in size, scope and apparatus. Currently, the lab is being used for offering sessional courses to 2nd year students, as well as for research by final year students and the departmental faculty.

Structural construction in Bangladesh as well as in many parts the world is still largely dependent on concrete. Despite the use of steel, masonry, timber etc., concrete is still the most widely used construction material for building structures in our country and is used worldwide. Therefore the materials primarily tested in the Engineering Materials Laboratory in the Department of Civil Engineering (CE) of UAP are concrete itself or its constituents (i.e., cement, fine aggregate and coarse aggregate).

The experiments on cement performed in this lab include the normal consistency, initial setting time of cement and test for compressive and tensile strength of cement mortar.

The tests on aggregate include the sieve analysis, specific gravity, absorption capacity of fine and coarse aggregate, unit weight and void test as well as Los Angeles abrasion test of aggregates.

Concrete cylinder and cube specimens are also used for tests of strength (compression and tension) as well as workability (slump). The lab is also equipped with adequate curing facilities for the concrete specimens. The stress-strain diagrams of the concrete specimen are also drawn using measurements from the strain gages. In addition to concrete crushing tests, non-destructive tests are also performed by Schmidt Hammer.

The Reversible Universal Testing Machine (RUTM) of this lab was the first of its kind built and used in Bangladesh.

Using the Reversible UTM

Determining Initial Setting Time of Cement

Los Angeles Abrasion Test

Specific Gravity of Aggregates

Transportation and Traffic Engineering Laboratory

The CE department's Transportation and Traffic Engineering Laboratory has been operating since the Spring 2003 semester. The primary purpose of this lab was to offer the sessional course on Transportation Engineering to 3rd year students, but it is equipped with research facilities for the students and faculty.

Since Traffic Engineering and materials are parts of the broader field of Transportation Engineering, they have both been included in the lab. In addition to testing of transportation materials like aggregate, sub grade and bitumen, the departmental students and faculty also work on traffic capacity measurements. The sessional course on Transportation Engineering includes about fifteen tests on Traffic Engineering and Transportation materials. The lab tests on Traffic Engineering include the determination of roadway capacity and saturated flow at traffic signals.

The tests on aggregate include the aggregate impact value, aggregate crushing value, ten percent fines value, flakiness index, elongation index and angularity number.

Standard Penetrometer

Impact Test of Aggregates

Using CBR Apparatus

Using Flash and Fire Device

Ductility Device

Electric Oven

Tests on bituminous materials include determination of specific gravity, penetration and solubility. Besides, the Marshall method of mix design and the California Bearing Ratio (CBR) test of sub-grade soils are also performed in the laboratory.

The lab is equipped with adequate instruments like Impact testing apparatus, Marshall method apparatus, CBR apparatus, standard penetrometer, solubility measuring accessories, traffic counter and various necessary accessories.

Geotechnical Engineering Laboratory

The stability and proper functioning of most Civil Engineering structures depend on the foundation and the soil it is built upon. The available variety of soil is so wide and their features are so different that it is essential to know their physical and mechanical properties by a number of tests. These include the physical appearance, texture, density, permeability, strength and other important properties.

The tests in the department's Geotechnical Engineering Lab are aimed at determining these properties. The Geotechnical Engineering lab has been operating since Spring 2001. It offers a sessional course on Soil Mechanics to 3rd year students.

Grain Size Distribution

Consolidation Unit

Specific Gravity Distribution

Using Direct Shear Apparatus

Hydrometer Test

Using Direct Shear Apparatus

Using Triaxial Test Apparatus

The lab tests on general properties of the soil include the field identification tests, Atterberg's Limit tests, specific gravity and relative density tests, compaction test, grain size distribution by sieve analysis and hydrometer analysis of soil sample. Permeability test of soil is also performed using the permeability testing apparatus.

Strength tests performed in the lab include the Direct Shear test, the Unconfined Compression test and the Triaxial Test. All the instruments are equipped with strain gages in order to get the load-deformation or stress-strain curves.

In order to perform these tests properly, the lab has the necessary devices like hydrometer, deflocculating agent, drying oven, desiccator as well as special tools like the consolidation unit, direct shear machine and unconfined compression machine.

Environmental Engineering and Chemistry Laboratory

The Environmental Engineering Laboratory offers sessional courses, as well as research and testing facilities for the students and faculty. This lab was established very early in the department, and has been operating since Fall 1999. The lab currently offers about fifteen experiments on Environmental Engineering.

The experiments on water quality include the comparison of color, measurement of pH, turbidity, carbon-dioxide, total solids, dissolved solids, suspended solids, alkalinity, hardness, chlorine concentration, iron concentration, chemical coagulation, residual chlorine and chlorine demand.

The tests on sound pollution include analysis of the combined effect of noise and analysis of noise protection efficiency. The lab is equipped with apparatus like the pH meter, color comparator, turbidity meter, digital sound level meter, Arsenic measuring kits and other necessary devices.

In addition to offering sessional courses, results from the lab have been used for research works on water quality assessment, sound pollution and Arsenic measurement.

The tests performed in the Chemistry lab include standardization of different solutions (of sodium hydroxide, hydrochloric acid, sodium thiosulphate, potassium permanganate etc.) by standard solutions (of oxalic acid, sodium hydroxide, sodium carbonate, potassium dichromate, sodium oxalate etc.), determination of metal contents (copper, ferrous ion, calcium etc) in various solutions.

Using Digital Turbidity Meter

Hardness Test of Water

pH Determination

BOD Track

Using Arsenic Kit

Research work at the lab

Other tools and apparatus of the lab

Survey Equipment

The CE department has been offering courses on theoretical and practical surveying to 1st year students since its inception. At present, the department offers ten fieldworks on practical survey and is equipped with all the necessary instruments.

The fieldworks performed are on chain survey, traverse survey, plane tabling, leveling and contouring, measurement of height, area calculation, curve setting, house setting and route survey. The major equipments include the theodolite, level, plane table along with the necessary accessories.

Students using Leveling instrument and Total Station

Plane Table Surveying

House Setting

Computer Laboratory

The department has a Computer Laboratory with adequate computer facilities (about fifty computers, printer and internet facilities) for use by the students. The works in this lab include programming, research, report writing, drafting, internet browsing etc.

The department offers an introductory course on computer applications and computer based drawing (AutoCAD) to 1st year students, a computer programming course (C++) to 2nd year students and computer application course in CE to final year students. All these courses are offered in this lab.

The computers in the lab are equipped with softwares useful for Civil Engineering use, particularly for the courses taught in the department as well for research. These include AutoCAD, Fortran, C, SPSS, Microsoft Project and several softwares for structural analysis (e.g., ETABS, SAP, Grasp, SAFE, BATS etc.).

Class in progress and students working at the Computer Laboratory

8.1.3 UAP Central Library and Departmental Study

UAP has a spacious Central Library at the 9th floor of the City Campus. Other than that, the department of CE has established its own library and study space for students at its premise.

It contains departmental text and reference books, thesis papers of the students and faculty members, journal papers, conference papers, software CDs, magazines and newspapers. Students can study in the library between class hours and check out reference items for a brief period.

CE students studying at the Central Library and Departmental Study

8.1.4 UAP Central Cafeteria

The UAP Central Cafeteria provides hygienic food at reasonable cost for the students, faculty and staff. A television is also provided there for recreation.

CE students at the UAP Central Cafeteria

9.1 Other Academic Activities

An educational institution for higher studies cannot confine its activities to classrooms and laboratories only. It should come up with various new ideas, innovations for the society by research, seminars/conferences/workshops for creating public awareness in different relevant issues through publications, training programs for professionals etc. The Department of CE brings out regular research publications including write-ups from national and international authors and organizes various activities that bring it closer to professionals and general public, sharing knowledge in various Civil Engineering issues.

9.1.1 Faculty and Student Research and Publications

The faculty members of the department had been involved in various research works and consultancy for both government and non-government organizations as resource persons, investigators and experts. IUCN, IWM, Department of Fisheries (DOF),

Department of Public Health Engineering, Bangladesh Water Development Board (BWDB), Dhaka Water supply and Sewage Authority (DWASA), Roads Highways Department (RHD), Local Government Engineering Department (LGED), Soil and Water Foundation, EnergyPac Engineering. etc. are to name some of the organizations where the faculty members have worked as consultants.

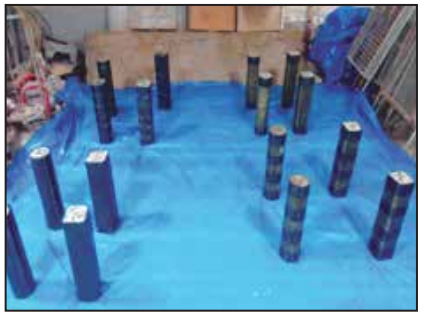
Besides, the departmental faculty worked as resource persons for special trainings for professionals in organizations like IEB, PWD, JICA, Structural Engineers Ltd. (SEL), Holcim Bangladesh, Bio Properties Limited (BPL), Bangladesh Steel Re-rolling Mills (BSRM), Bangladesh Earthquake Society (BES), Bengal Fine Ceramics, IDA (Institute of Diploma Engineers Association of Bangladesh), Bangladesh Institute of Labor Studies etc. They have also received funds for research work from different organizations as well as the Ministry of Science, Information and Communication Technology. The faculty members have a number of publications in reputed national and international journals like the IEB Journal of Civil Engineering, Bangladesh Journal of Water Resources Research, ASCE Journals of Hydraulics, Materials in Civil Engineering, Engineering Mechanics, Geomechanics, Journal of American Concrete Institute (ACI), Journal of the Society of Materials Science, ASME Journal of Offshore Mechanics and Arctic Engineering, International Journal of Offshore and Polar Engineering, International Journal of Sediment Research, Journal of Japan Society of Traffic Engineers (JSTE), Journal of International Association of Traffic and Safety Sciences (IATSS) Research, Journal of the Eastern Asia Society for Transportation Studies, International Journal of Sustainable Society, International Journal of Water Resources Development, Natural Resources Forum, Water Policy, Journal of International & Peace Studies, International Journal of Institutions and Economies, International Journal of Project Management, Journal of Business Economics and Management, Journal of Water Environment Research, etc.

They have also contributed papers in international conferences all over the world, like the International Conference on Environment Science and Engineering, International Conference on Civil Engineering for Sustainable Development, International Conference on Hydroscience and Engineering, Conference on Nonlinear Solid Mechanics, Pacific Conference on Earthquake Engineering, International Conference on Continental Earthquake, International Earthquake Symposium, International Symposium on New Technologies for Urban Safety of Mega Cities in Asia, East Asia Pacific Conference on Structural Engineering and Construction, IABSE International Conference on Role of Structural Engineers towards Reduction of Poverty, International Conference on Structural Engineering, Mechanics & Computation, International Conference on Transportation Systems, Planning & Operation, Proceedings of the Eastern Asia Society for Transportation Studies, Proceedings of Water Policy, Proceedings of South Asia Water Forum, Geophysical Research, Conference on the Human Dimension of the Global Environmental Change, Annual Paper Meet and International Conference of IEB, International Conference on Soil Mechanics and Geotechnical Engineering.

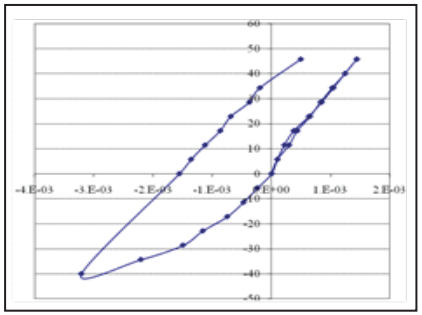
The departmental students are also involved in a number of project/research activities. For graduation from the CE department, submission of a thesis is mandatory for each student of the department. Students are categorized according to their CGPA and field of interests and assigned a supervisor who is expert in that field. Besides, an external expert (a renowned academician or professional working in relevant topics) is included in the Thesis Committee for each student, who must eventually present her/his thesis satisfactorily to the members of the committee. Some of the more recent and significant theses completed by the departmental students are as follows:

Concrete Technology

- Development of Self-Compacting Concrete in Bangladesh
- Investigation of Pore Structures of Pervious Concrete by Using Digital Image Analysis
- Investigation on Pervious Concrete Made with Locally Available Materials
- Development of High Strength Concrete in Bangladesh
- Use of Hard Rock as Coarse Aggregate for Making High Strength Concrete
- Durability of Reinforced Concrete Structures
- Modulus of Rupture of Concrete made of Various Types of Aggregate
- Recycling of Demolished Concrete as Coarse and Fine Aggregate
- Sustainable Concrete Structures in Bangladesh
- Corrosion of Cement Paste Coated Steel Bars in Marine Concrete
- Alkali-Silica-Reaction (ASR) Induced Expansion of Concrete Beams



Research on FRP and Structural Assessment (Ariful Hasnat)



Research on Reversible UTM and Ductile Concrete (Dr. Iftekhar Anam)

Research on Wetland (Dr. Tanveer Ferdous Saeed)

Research on Heavy Metal uptake by Fish and Optimum Coagulant Dosage (Dr. Nehreen Majed)

Research on Cross-hole Testing (CSL) on test pile (Dr. Sarah Tahsin Noor)

Research on Duckweed based waste stabilization pond system (Dr. Mahmudul Hasan)

Video survey for implementing bus priority lanes in major arterials (Shahbag to Bijoy Shorony) in Dhaka (Dr. Farzana Rahman)




Dr. Mizanur Rahaman as keynote speaker at Fudan University (China), OSCE Academy 2016 and Session Chair at World Water Congress 2015


Dr. Iftekhar Anam as SATREPS Workshop 3 (Tokyo) and Daily Star Roundtable


Dr. Shamim Miah as SATREPS Workshop 4 (Tokyo) and ACEE Bangkok

Award winning UAP-CE students at Inter University River Olympiad and Structural Modeling competition

Environmental Engineering

- Environmental Impact Assessment of Siddhirgang-Maniknagar 230KV Transmission Line Project
- Hospitals Waste Management in Bangladesh and Evaluation of Its Environmental Pollution
- Water Quality and pollution Sources of Gulshan Lake
- Surface water quality parameters in Shitalakhya River
- Surface water quality parameters in Buringanga River
- Wastewater Management in the Context of Bangladesh
- The Extent of Sustainable use of Groundwater in Dhaka City: A Case Study on MODS Zone IV
- The Extent of Sustainable use of Groundwater in Dhaka City: A Case Study on MODS Zone III
- Drawing of potential evapo-transpiration using GIS
- Assessment of Noise Pollution in Dhanmondi and Mohammadpur Area
- The Scenario of Arsenic and the Minerals in Ground of Bangladesh Using Arcview Software as GIS Tools
- Assessment of Water Supply, Sanitation and Solid Waste Management of a Slum Area in Dhaka City
- Solid Waste Management and Engineering in Noakhali Pourashava
- Environmental Impact Assessment of a Cement Factory

Geotechnical Engineering

- Drag load induced on single pile in collapsible soil during inundation
- Comprehensive Study on Integrity Tests of Pile
- Negative skin friction induced on single pile in collapsible soil during inundation
- Pile Integrity Test and Ultrasonic Cross hole Test
- Capacity of Pile Group in Cohesive Deposits
- Analytical Capacity of Driven Pile
- Analysis of Ultimate Load Bearing Capacity of Driven Piles
- Computation of Bearing Capacity of Piles by Various Methods for different Soil Profiles
- Ground Water Pumping and Its Impact On Dhaka City
- Importance of Settlement During Foundation Design
- Assessment of Geotechnical Properties of Dhaka Sub Soil
- Evaluation of Design Methodologies to Calculate Bearing Capacity of Shallow and Deep Foundations

Structural Engineering

- Flotation characteristics of Foundation and Multistoried Building
- Nonlinear Dynamic Analysis of Structural Stability
- Numerical Study on Design of Tsunami Resistant Buildings
- Analysis of Optimum Structural Systems for High-Rise Building
- Seismic Analysis of some Historical Masonry Structures in Bangladesh
- Dynamic Response of Railing and Bridge to Impact Load and Seismic Vibration
- Numerical Study on Design of Blast Resistant Buildings
- Dynamic Response of Coastal Structures to Ocean Wave Loading
- Moment Magnification for Columns in Flat Plate Buildings Considering Geometric Nonlinearity
- Seismic Response and Drift Demand of Columns of Multistoried RC Farmed Building with Open Ground Floor as Soft Story
- Effect of Shear and Compression Reinforcement on Ductility of RC Members
- Numerical and Experimental Study of Structures with Soft Stories
- Nonlinear Seismic Analysis and Design Options of RC Flat Slabs
- Improving Earthquake Response of RC Structures by Seismic Detailing

Transportation Engineering

- Present and Future- Simulation Analysis and Evaluation for Traffic Impacts on Highway of Cox's Bazar City in Bangladesh based on VISSIM Simulation System
- Analysis Of Passenger Service Quality of Bangladesh Railway by SPSS
- Possible Causes and Solution of Traffic Congestion In Dhaka City
- An Analysis of Motorcycle and Heavy Vehicle Accident Severity
- Traffic Safety Assessment in Dhaka City based on Roadway Design Elements
- Measures for Systematic Vehicular Movement At a Selected Intersection
- Optimizing Signal Timing- An Efficient Way To Handle Traffic Congestion

Water Resources Engineering

- Micro Hydropower Potential in Bangladesh
- Performance of Rubber Dam Projects in Bangladesh
- Problems of Water Supply in Dhaka City and Possible Solution
- Computation of Local Scour around Bridge

Based on the theses the students of this department have publications in international conferences. Some of the research works done by the students were accepted in international conferences like:

- 3rd International Conference on Construction in Developing Countries, 2012, Thailand
- 1st International Conference on Advances in Civil Engineering, 2012, Chittagong, Bangladesh
- 3rd European Asian Civil Engineering Forum International Conference, 2011, Indonesia
- International Conference on Environmental Technology and Construction Engineering for Sustainable Development, 2011, Sylhet, Bangladesh
- Asian Network for Quality (ANQ) Conference, 2010, India
- 3rd International Earthquake Symposium, 2010, Dhaka, Bangladesh
- 6th International Symposium on New Technologies for Urban Safety of Mega Cities in Asia, 2007, Dhaka, Bangladesh
- 10th East Asia Pacific Conference on Structural Engineering and Construction, 2006, Bangkok, Thailand
- 3rd Annual Paper Meet and International Conference on Civil Engineering, 2005, Dhaka, Bangladesh
- 2nd International Conference on Structural Engineering, Mechanics and Computation, 2004, Capetown, South Africa
- International Conference on Advances in Structures: Steel, Concrete, Composite and Aluminum-2003, Sydney, Australia
- 2nd Canadian Conference on Nonlinear Solid Mechanics, 2002, Vancouver, Canada

9.1.2 Seminars, Conferences and Workshops

The department regularly organizes lectures, seminars, conferences, workshops and training programs on various important issues relevant to the Civil Engineering. They include lectures and papers presented by invited specialists as well as presentations by the faculty members and the students of the university, particularly the department of CE.

Some of the more significant events organized by the department are:

Name of the Event	Year
Lecture on *Research (at UT Austin) on Affordable Filters*	2016
Lecture on *Research (at University of British Columbia)_ on Timber Structures*	
Lecture on *Nanotechnology in Environmental Engineering Research*	2015
Lecture on *Communication and Teaching Methods*	
Seminar on *The Water-Energy-Food Nexus: Development Pressure and Regional Cooperation in South Asia and Myanmar*	2014
Seminar on *Surface Water Treatment Processes in the Context of Saidabad Water Treatment Plant and Its Supply*	2013
Lecture on *Sustainable Development in Cities*	
Lecture on *Software Simulation of Highway Traffic*	
Seminar on *Seismic Design of Steel Structures*	
Seminar on *Seismic Performance Enhancement of Steel Building Beam-Column Connections*	2012
Seminar on *Recycling of Demolished Concrete*	
Seminar on *Design of Water Filters*	
Lecture on *Negative Skin Friction on Piles in Collapsible Soil due to Inundation*	2011
Seminar on *Teaching of Fundamentals of Engineering in an Innovative Way*	
Seminar on *Plumbing Practice in Bangladesh : Problems and Prospective*	
Seminar on *How to Face an Interview*	
Seminar on *Modern Construction of Bridges*	
Seminar on *Sky Water Harvesting*	
Seminar on *Recycling of Demolished Concrete*	
Seminar on *Nano Technology*	2010
Lecture on *Conquering The Mount Everest*	
Seminar on *Cyclone Tracking*	
Lecture on *Analyses of Hazards with Numerical Models*	
Lecture on *Storm Water Management in British Columbia*	2009
Seminar on *Architecture and Auto Cad 2009*	
Lecture on *Water Supply in Dhaka City: Issues and Challenges*	
Lecture entitled *Engineering Education in Bangladesh and Professional Responsibilities of Civil Engineers*	
Seminar entitled *UAP/SEL Seminar on Recycling of Demolished Concrete*	2008
Lecture on *Low Cost Housing and Role of Civil Engineers*	
Lecture on *Vehicle Crash Simulation on Traffic Barriers*	
Lecture on *Waste Disposal from Buildings*	2007
Lecture on *Water Supply in Buildings: Problems and Remedies*	
Seminar on *Recycling of Demolished Concrete*	
Lecture on *Applied Transportation Engineering in California*	

The Department of CE received 'Research Grant' from Ministry of Science, Information, and Communication Technology, Bangladesh for a Research Projects like

Dynamic Elasto-plastic Behavior of Reinforced Concrete and Experimental Investigation of Flexural and Axial Behavior of CFRP Wrapped Reinforced Demolished Concrete Beams and Short Columns for one year research-periods.

The Department of CE published a souvenir on Air Pollution: Threats and Duties of City Life in collaboration with Work for a Better Bangladesh (WBB) Trust. The souvenir was formally launched in a press conference attended by Professor Dr. M. R. Kabir, Head of the Department of CE.

9.1.3 Center for Research, Training, Testing and Consultation (CRTTC)

The Center for Research, Training, Testing and Consultation (CRTTC) was established in 2005 to test building construction materials using the laboratory facilities of the CE department, as well as to provide training and consultancy services on various Civil and Environmental Engineering issues using the expertise available in the department.

The services performed by CRTTC includes a wide range of tests for materials like cement, concrete, aggregate, steel, timber, bitumen, water quality and others. Currently, the CRTTC is providing regular professional service to various design and construction firms interested to test their construction materials and/or needing consultancy in structural analysis, design, repair and maintenance.

9.2 Study Tours

Faculty-guided study tours are arranged for students of various years, particularly Final Year. The tours are arranged to locations that carry technical importance for the students of this department (e.g. Teesta Barrage, Jamuna Multipurpose Bridge, Power Plant, River Research Institute, Cement Factories, Water Treatment Plant, Waste disposal Site).

9.3 The CE Student Forum and Co-curricular Activities

The students of the department participate in different cultural programs, sports activities like cricket, football, table tennis, badminton, chess, carrom, etc., arranged by the department or centrally by the university. They also participate in annual inter-departmental debate competitions as well as cricket, football and badminton tournaments. Besides the department arranges picnic each year, which includes all the faculty members and the students of the department. These activities help the students to relax and improve the teacher-student relationship.

With a pragmatic view to such activities the CE Department of the UAP has formed The CE Student Forum. This club also aims at undertaking activities to enhance awareness on environmental issues. The activities of this club include arranging sports,









Highlights of the CE Festival, Sports competition, Picnic and Farewell program

9.4 BAETE Accreditation

In 2007, the Department of CE became the first Civil Engineering program to get the Award of Accreditation Certificate by the Board of Accreditation of Engineering and Technical Education (BAETE), and celebrated this achievement in a grand ceremony also marking 10 years since its inception.

It may be mentioned here that the BAETE Accreditation earned by the CE department has allowed its graduates to apply for membership of the Institute of Engineers, Bangladesh (IEB) and a large number of CE graduates have already become full Members as well as Associate Members of IEB.

9.5 CE Graduates and Alumni Association

Since the graduation of the first batch of students in Spring 2001, thirty two batches of Civil Engineers have graduated from the department. Almost all the graduates of the department have successfully accommodated themselves in different well known organizations like LGED, RAJUK, Grameen Phone, DDC, Concord Builders Ltd., Building Technology and Ideas (BTI), The Structural Engineers Ltd. (SEL), Rupayan Real Estate, Mir Readymix, Project Builders Ltd. (PBL), Department of Environment, Steelco Limited, Bangladesh Building Systems Limited, China Bangla Ceramic, RAK Ceramic etc. Some of them have also established their own design/construction firms. Besides, many of the CE graduates have been employed in foreign countries like Canada, Australia, UK, Singapore and UAE.

Several UAP graduates are doing post graduate studies in Civil Engineering at BUET, the premier engineering university of the country. Some graduates are also doing post graduate studies (e.g., MBA) at Dhaka University. The department has encouraged its graduates to pursue higher education at reputed institutions abroad by organizing lectures like Opportunities for Students: A Global Perspective and Higher Studies in Europe and Canada. Many of its graduates have also gone for higher studies in foreign countries like USA, UK, Japan (on Monbusho Scholarship), South Africa, Thailand, Belgium, Canada, France, Malaysia, Australia, Switzerland etc.

The CE department believes that students are the torchbearers of the department and university and maintains a cordial relationship with its graduates. While it encourages the graduates to reach the sky, it always keeps the doors open for them to be home once more. The CE Alumni Association has been established to nurture and carry forward this relationship even further in the years to come.

9.6 Concluding Remarks

Ever since its inception, University of Asia Pacific has dedicated itself to providing quality education, encouraging each academic department, faculty, staff and student to a strong commitment to excellence. The quality of education it offers is primarily dependent on the quality of its faculty members and the students. But for technical education, especially for Civil Engineering, two other factors greatly influence the quality; i.e., laboratory and research facilities.

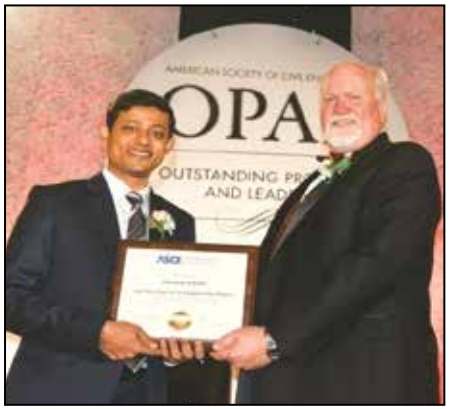
In a standard Civil Engineering curriculum there are numerous theoretical and practical courses directly dependent on modern and sophisticated laboratory equipment. So laboratories rich in necessary equipment play a key role for the improved learning of the students of the department. In the CE department of UAP, the courses dependent on laboratories start from the very first semester and continue up to the graduation. The department provides full-fledged in-house laboratory facilities for its students. In fact this was the first private university in Bangladesh with such complete laboratory facilities for the Department of CE.

Thus the Department of CE has put concerted effort to comply with UAP's mission of providing quality education and uphold its commitment to excellence, demonstrating it through its academic environment and the quality of its academic services. It has always tried to provide complete Civil Engineering education with class lectures, laboratory demonstrations and quality research work.

The faculty and students of this department are already making their mark in various capacities at home and abroad. The department and its well-wishers expect these achievements to grow in the years to come.

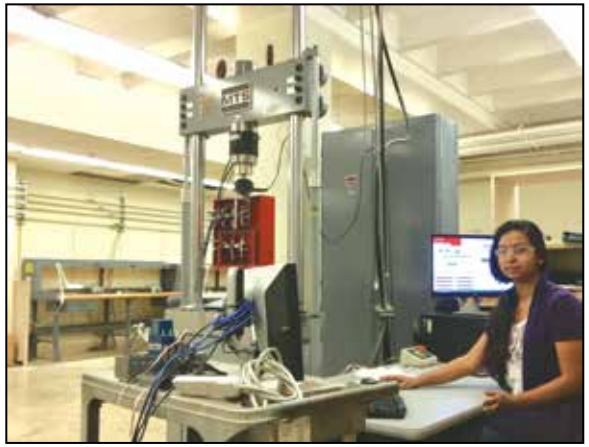
To face the challenge of the twenty first century, the department promises to give its utmost effort. It is committed to continue and improve upon the sincere service, innovative ideas and determined effort to produce quality civil engineers whose scholarly achievements and strong leadership will make it an institution the nation can be proud of.

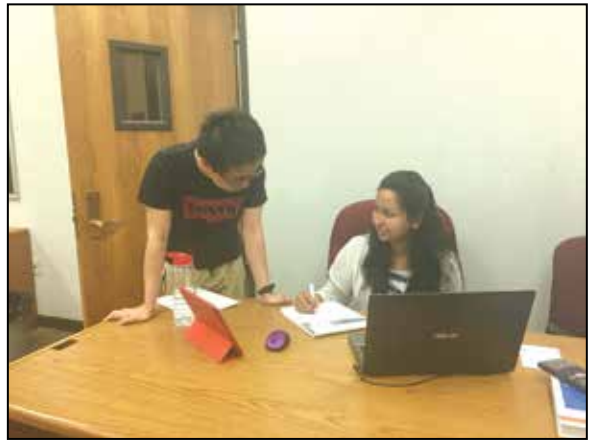
CE Graduates



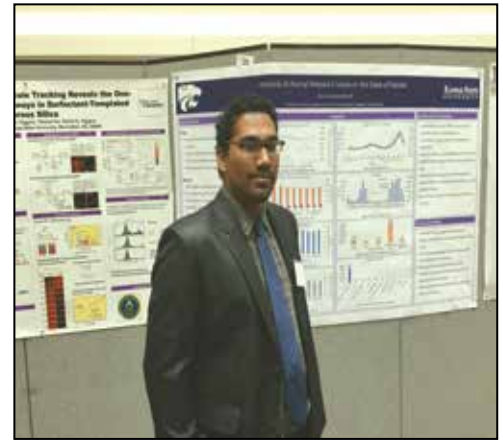
UAP-CE graduate Ariful Hasnat (Batch 15, now Assistant Professor of CE) receiving ASCE 2016 New Face of Civil Engineering Award

UAP-CE graduate Dr. Md. Shamim Miah (Batch 12, now Assistant Professor of CE), while working on his Ph.D. at ETH Zurich





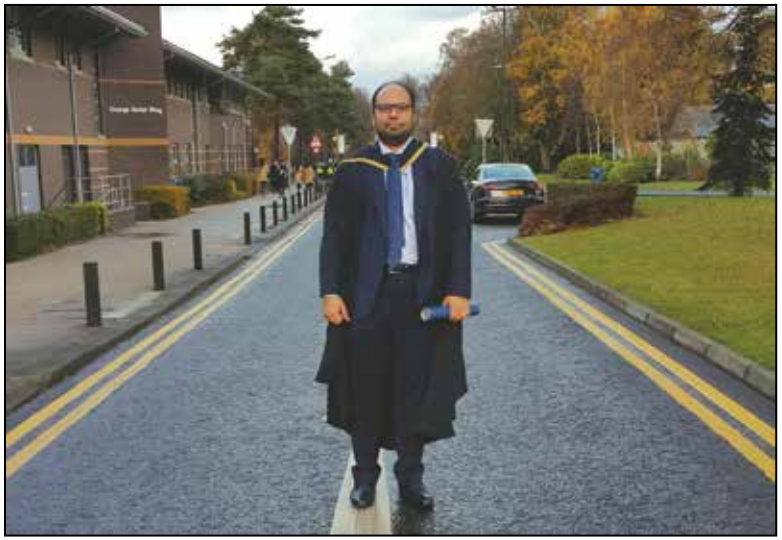
UAP-CE graduate and former UAP-Lecturer Saiqa Mustari Susmita (Batch 23), doing postgraduate studies at Texas Tech University (USA) is doing research work on Glass and also working as Teaching Assistant



UAP-CE graduate and former UAP-Lecturer Mirza Ahammad Sharif (Batch 22) is doing Ph.D. at Kansas State University (USA) on Traffic Engg.

UAP-CE graduate and former UAP-Lecturer Nandita Saha (Batch 25) is doing postgraduate studies at Osaka University (Japan) on Earthquake Engineering after working as Research Assistant at The University of Tokyo (Japan)

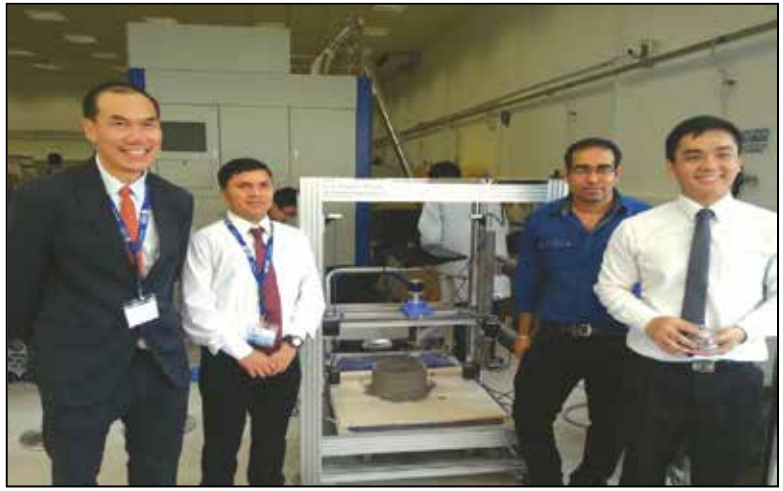
UAP-CE graduate Ramiz Ahmed Raju (Batch 26) is doing postgraduate studies at Wasada University (Japan)



UAP-CE graduate Osamah Kiwan (Batch 17) is doing Ph.D. at Universiti Teknologi Petronas (Malaysia) on construction management

UAP-CE graduate Md. Jihad Miah (Batch 19) is doing Ph.D. at University of Pau and Pays de l'Adour (France) on Structures in Fire

UAP-CE graduate Hassan Said Musse Ali (Batch 26) (standing far left in the picture) is working as Lecturer at East Africa University in Somalia



UAP-CE graduate Dr. Suvash Chandra Paul (Batch 13) (second from left in the picture) is working at the Nanyang Technological University in Singapore

UAP-CE graduates are faculty members of the European University, Bangladesh

UAP-CE graduate A.K.M. Abdullah (Batch 14) is Director of the Structural Engineers Ltd. (SEL)

UAP-CE graduates working for the consulting firm Engineering & Research Associates (ERA)

UAP-CE graduate Forhad Hassan (Batch 23), working for the chemical company FOSROC, on a site visit to Rupsha Railway Bridge

UAP-CE graduate Ayesha Siddiqua (Batch 27) is doing postgraduate studies at BUET

UAP-CE graduate Aminul Islam Sohan (second from the left in the picture) is working as Lecturer at Department of Civil Engineering, Mogadishu University, Somalia.

Vice Chancellor and Pro-Vice Chancellor speaking at the CE Alumni Reunion 2015

CE Faculty and Alumni at the CE Alumni Reunion 2015

CE students and Alumni meeting at a T20 Cricket Match in 2016

10.1 COURSE REQUIREMENTS FOR UNDERGRADUATE STUDENTS (CE)

FIRST YEAR		**First Semester**		**Second Semester**			
Course No.	Theory/Sessional Course Title [Prerequisites]	*Cr.H.	Co.H.	Course No.	Theory/Sessional Course Title [Prerequisites]	Cr.H.	Co.H.
HSS 101	English I: Oral and Written Skills	3.0	3	HSS 103	English II: Language Composition Skill	3.0	3
PHY 101	Physics	3.0	3	CHEM 111	Chemistry	3.0	3
MTH 101	Mathematics I	3.0	3	MTH 103	Mathematics II	3.0	3
CE 101	Engineering Mechanics I	3.0	3	CE 103	Engineering Mechanics II [Pre. CE 101]	3.0	3
CE 107	Introduction to Civil and Environmental Engineering	2.0	2	CE 105	Surveying	4.0	4
CSE 100	Computer Skills	1.5	3	CE 104	Civil Engineering Drawing II [Pre. CE 102]	1.5	3
CE 102	Civil Engineering Drawing I	1.5	3	CE 106	Practical Surveying	1.5	3
PHY 102	Physics Lab	1.5	3	CHEM 112	Chemistry Lab	1.5	3
		18.5	23			20.5	25
SECOND YEAR		**First Semester**		**Second Semester**			
Course No.	Theory/Sessional Course Title [Prerequisites]	Cr.H.	Co.H.	Course No.	Theory/Sessional Course Title [Prerequisites]	Cr.H.	Co.H.
HSS 211(a)	Bangladesh Studies (Society and Culture)	2.0	2	ECN 201	Principles of Economics	2.0	2
HSS 211(b)	Bangladesh Studies (History of Bengal)	2.0	2	MTH 203	Mathematics IV [Pre. MTH 101]	3.0	3
MTH 201	Mathematics III	3.0	3	CE 203	Engineering Geology and Geomorphology	3.0	3
ECE 201	Basic Electrical Engineering	3.0	3	CE 205	Numerical Analysis and Computer Programming	3.0	3
CE 211	Mechanics of Solids I [Pre. CE 101]	3.0	3	CE 213	Mechanics of Solids II [Pre. CE 211]	3.0	3
CE 201	Engineering Materials	4.0	4	CE 221	Fluid Mechanics	3.0	3
CE 200	Details of Construction	1.5	3	CE 204	Quantity Survey Lab	1.5	3
CE 202	Engineering Materials Lab	1.5	3	CE 206	Computer Programming Lab	1.5	3
ECE 202	Basic Electrical Engineering Lab	1.5	3	CE 212	Structural Mechanics and Materials Lab [Pre. CE 211]	1.5	3
		21.5	26			21.5	26

[Prerequisites can be waived subject to approval of Course Teacher]

THIRD YEAR		**First Semester**		**Second Semester**			
Course No.	Theory/Sessional Course Title [Prerequisites]	*Cr.H.	Co.H.	Course No.	Theory/Sessional Course Title [Prerequisites]	Cr.H.	Co.H.
ACN 301	Principles of Accounting	2.0	2	IMG 301	Principles of Management	2.0	2
CE 311	Structural Engineering I [Pre. CE 211]	3.0	3	CE 313	Structural Engineering II [Pre. CE 213, 311]	3.0	3
CE 315	Design of Concrete Structures I [Pre. CE 211]	3.0	3	CE 317	Design of Concrete Structures II [Pre. CE 315]	3.0	3
CE 331	Environmental Engineering I (Water Supply Engineering)	3.0	3	CE 333	Environmental Engineering II (Waste Water Engineering)	3.0	3
CE 341	Geotechnical Engineering I (Soil Mechanics)	3.0	3	CE 351	Transportation Engineering I (Transport and Traffic Design)	3.0	3
CE 361	Open Channel Flow [Pre. CE 221]	3.0	3	CE 363	Engineering Hydrology	3.0	3
CE 312	Structural Engineering Sessional I [Pre. CE 213]	1.5	3	CE 316	Concrete Structures Design Sessional [Pre. CE 311, 315]	1.5	3
CE 332	Environmental Engineering Lab I	1.5	3	CE 342	Geotechnical Engineering Lab [Pre. CE 341]	1.5	3
CE 222	Hydraulics Lab [Pre. CE 221]	1.5	3	CE 354	Transportation Engineering Lab	1.5	3
		21.5	26			21.5	26

Summer (Non-Credit Course) Credit

CE 300 Professional Training 0.0

FOURTH YEAR		**First Semester**		**Second Semester**			
Course No.	Theory/Sessional Course Title [Prerequisites]	Cr.H.	Co.H.	Course No.	Theory/Sessional Course Title [Prerequisites]	Cr.H.	Co.H.
CE 401	Project Planning and Management	3.0	3	CE 403	Professional Practices and Communication	2.0	2
CE 411	Structural Engineering III [Pre. CE 313]	3.0	3	CE 418	Computer Applications in Civil and Environmental Engineering	1.5	3
CE 441	Geotechnical Engineering II (Foundation Engineering) [Pre. CE 341]	3.0	3	----------	Optional Course (Theory)	2.0	2
				----------	Optional Course (Theory)	2.0	2
CE 451	Transportation Engineering II (Highway Design and Railways)	3.0	3	----------	Optional Course (Theory)	2.0	2
				----------	Optional Course (Theory)	2.0	2
CE 461	Irrigation and Flood Control [Pre. CE 361]	3.0	3	----------	Optional Course (Theory)	2.0	2
CE 412	Structural Engineering Sessional II [Pre. CE 317]	1.5	3	----------	Optional Course (Sessional)	1.5	3
CE 400	Project/Thesis	1.5	3	CE 400	Project/Thesis	3.0	6
		18.0	21			18.0	24

[Prerequisites can be waived subject to approval of Course Teacher]

10.2 Outline of Undergraduate Courses

First Year First Semester

HSS 101: English Language I (Oral and Written Skills)
Credits: 3.0

Introduction, Greeting, Personal Details. Biography (Written Assignment). Homophones, Homonyms/Vowel Sounds. Spellings (Anagrams); Confusing Spellings, Words Commonly Misspelled and Wrongly Used. Uses of Definite and Indefinite Articles in Singular and Plural Sentences. Tenses- Present, Past, Future. Pronouns and Possessives. Affirmative, Negative and Interrogative Sentences. Prepositions and Directions (Writing Road Directions). Adjective: Comparative and Superlatives Sentences and Paragraphs (Written Test/Assignment). Transformation of Parts of Speech and Their Uses in Sentences: Noun, Adjective, Verb, Adverb. Punctuation and Capital Letters. Describing Objects (Written Assignment/Test). Note Taking/Summarizing. Translation from Bangla to English. Narrative Writing- Story Writing. Listening Test. Oral Presentation. Continual Oral Presentation of News Summary.

PHY 101: Physics
Credits: 3.0

Mechanics: Measurements, Motion in One Dimension, Motion in a Plane, Particle Dynamics, Work and Energy, Circular Motion, Simple Harmonic Motion, Rotation of Rigid Bodies, Central Force, Structure of Matter, Mechanical Properties of Materials. Properties of Matter: Elasticity, Stresses and Strains, Young's Modulus, Bulk Modulus, Rigidity Modulus, Elastic Limit, Poisson's Ratio, Relation Between Elastic Constants, Bending of Beams. Fluid Motion, Equation of Continuity, Bernoulli's Theorem, Viscosity, Stoke's Law. Surface Energy and Surface Tension, Capillarity, Determination of Surface Tension by Different Methods.

Waves: Wave Motion and Propagation, Simple Harmonic Motion, Vibration Modes, Forced Vibrations, Vibration in Strings and Columns, Sound Wave and its Velocity, Doppler Effect. Elastic Waves, Ultrasonic, Practical Applications.
Optics: Theories of Light, Huygen's Principle, Electromagnetic Waves, Velocity of Light, Reflection, Refraction, Lenses, Interference, Diffraction, Polarization.

Heat and Thermodynamics: Temperature and Zeroth Law of Thermodynamics, Calorimetry, Thermal Equilibrium and Thermal Expansion, First Law of Thermodynamics, Specific Heat, Heat Capacities, Equation of State, Change of Phase, Heat Transfer, Second Law of Thermodynamics, Carnot Cycle, Efficiency, Entropy, Kinetic Theory of Gases.

MTH 101: Mathematics I Credits: 3.0

Differential Calculus: Functions of one variable; Limit, Continuity and Differentiability – Successive Differentiation, Leibnitz's Theorem; Rolle's Theorem, Mean Value Theorem; Taylor's Theorem and Maclaurin's Theorem. Lagrange's and Cauchy's Forms of Remainder; Expansion of Functions in Taylor's and Maclaurin's Series; Evaluation of Indeterminate Forms by L'Hospital's Rule; Determination of Maximum and Minimum Values of Functions; Points of Inflexion; Conic Sections; Tangent and Normal; Applications, Curvature, Radius of Curvature, Center of Curvature. Functions of more than one variable; Limit, Continuity, Differentiability, Directional Derivative, Partial Derivatives, Euler's Theorem, Jacobians, Tangent Plane and Normal to Surfaces.

Integral Calculus: Definition of Integral and its Properties, Primitives, Fundamental Theorem of Integral Calculus, Indefinite Integrals; Integration by Summation of Series, Standard Integrals, Integration by Summation and Integration by Parts, Integration by Successive Reduction, Improper Integrals, Beta and Gamma Functions, Evaluation of Areas and Arc-lengths, Intrinsic Equation, Volumes and Surface Areas of Solids and Surface Areas of Solids of Revolution, Multiple Integration, Iterated Integration and Fubini's Theorem, Change of Variables.

CE 101: Engineering Mechanics I Credits: 3.0

Unit Conversion; Coplanar Concurrent Forces; Moments and Parallel Coplanar Forces; Non-Concurrent Non-Parallel Coplanar Forces; Centroids, Moment of Inertia of Areas, Flexible Cords.

CE 107: Introduction to Civil and Environmental Engineering Credits: 2.0

Importance of Civil and Environmental Engineering; Branches of Civil Engineering; Civil Engineering Structures: Definition of Structures and its Types, Classification of Buildings Based on Occupancy, Different Components of a Building, Discussion on Loads on Structures, Importance of Soil Testing in Construction and Design, Building Regulations; Water and Environment: Man and Environment, Basic Population Dynamics, Water resources, River system in Bangladesh, Water Pollution, Components of Environment, Ecosystem, Flow of Matter and Energy Through an Ecosystem, Biodiversity, Urban Air Pollution, Acid Rain, Global Warming, Renewable and Non-renewable Energy; Transportation System: Mode of Transport, Road Network, Discussion on the National Road Network of Bangladesh.

CSE 100: Computer Skills
Credits: 1.5

Computer Fundamentals: Some Basic Concepts about Computer, DOS: Some useful Commands of DOS and Their Uses. Windows: Concepts, Icon, Toolbar, Windows, File manager, Program Item, Program Run, Control Panel. MS-Word: File Open, Save, Edit and Details of MS-Word, Excel: Calculation, Function, Chart, and Details of Excel. FoxPro: File Creation, Sorting, Reporting, Indexing, Displaying, Antivirus: Functions, Use of Some Antivirus Programs. Hand on Experience with Computer, Utility S/W: NORTON Utility S/W, Internet, e-mail.

CE 102: Civil Engineering Drawing I Credits: 1.5

Introduction - Lettering, Numbering and Heading, Plane Geometry-Pentagon, Hexagon, Octagon, Ellipse, Parabola, Hyperbola. Projection (Solid Geometry)- Cube, Triangular Prism, Square Prism, Pentagonal Prism, Hexagonal Prism, Cone, Cylinder. Development -Cube, Pyramid, Cone, Prism: Section and True Shape-Cube, Pyramid, Cone, Prism, Isometric Drawing: Cube, Pyramid, Cone, Oblique Drawing Cube. Pyramid, Cone Interpretation of Solids-Plan, Elevation and Section of One Storied Buildings.

PHY 102: Physics Lab Credits: 1.5

Laboratory works on Compound Pendulum, Young's Modulus, Modulus of Rigidity, Specific Heat, Refractive Index, Specific Rotation, Radius of Curvature, Focal Length, Resistance, Specific Resistance using Meter Bridge, Half Deflection Method, Post Office Box, Potentiometer.

First Year Second Semester

HSS 103: English II (Language Composition Skills)
Credits: 3.0

Listening and Note Taking; Subject- Verb Agreement; Error Analysis and Correction; Joining Words/Conjunctions; Reported Speech; Active/Passive Sentences; Direct/Indirect Instruction for Operations, Sequencing; Words/Phrases/Flow; Charts; Reading Comprehension and Summarizing; Conditional Sentences; Paragraph Writing; Antonyms/Synonyms; Idiomatic Words/Phrases; Uses of Too/Enough; Uses of Since/For; Letter Writing: Formal/Informal; Applications/Telegraphic Language; Classifications and Charts; Essay Writing; Report Writing; Listening Test; Oral Presentation.

CHEM 111: Chemistry
Credits: 3.0

Atomic Structure; Periodic Table; Chemical Bonds; Physical and Chemical Properties of Water; Different Types of Solution, Concentration Unit; Chemical Equilibrium and Thermochemistry; Reaction Kinetics; Colloid and Colloidal Solution; Chemical Corrosion; Chemistry of Environmental Pollution; Polymers Paint and Varnishes.

MTH 103: Mathematics II
Credits: 3.0

Solid Geometry: The Equations of Plane and Straight Line, Sphere, Conicoids, Elementary Properties, Transformation of Axes. Vector Space, Vector in Three Dimensions.

Vector Analysis: Scalars and Vectors, Equality of Vectors, Addition and subtraction of Vectors. Multiplication of Vectors by Scalars,. Position Vector of a Point, Resolution of Vectors. Scalar and Vector Product of two Vectors and Their Geometrical Interpretation. Triple Products and Multiple Products. Application to Geometry and Mechanics, Linear Dependence and Independence of Vectors, Differentiation and Integration of Vectors together with Elementary Applications, Definition of Line, Surface and Volume Integral. Gradient, Divergence and Curl of Point Functions. Various Formulae. Gauss's Theorem, Stoke's Theorem, Green's Theorem and their Applications.

CE 103: Engineering Mechanics II [Prerequisite CE 101] Credits: 3.0
Friction, Plane motion, Force System that Produces Rectilinear Motion, Work, Kinetic Energy, Power, Impulse and Momentum, Non-Coplanar Forces, Moment of Inertia of Masses.

CE 105: Surveying Credits: 4.0

Reconnaissance Survey; Linear Measurements; Traverse Survey; Leveling and Contouring; Calculation of Areas and Volumes; Problems of Heights and Distances; Curves and Curve Ranging, Transition Curve, Vertical Curves. Tacheometry: Introduction, Principles and Problems on Tacheometry. Astronomical Surveying: Definition, Instruments, Astronomical Corrections, Systems of Time. Photogrammetry Introduction of Terrestrial Photography, Aerial Photography, Reading of Photomossaic, Scale: Project Surveying; Errors in Surveying; Remote Sensing; Introduction to Global Positioning System (GPS).

CE 104: Civil Engineering Drawing II [Prerequisite CE 102] Credits: 1.5

Plan, Elevation and Sections of Multi-Storied Buildings; Reinforcement Details of Beams, Slabs, Stairs etc. Plan and Section of Septic Tank; Detailed Drawing of Roof Truss; Plan, Elevation and Sections of Culverts, Bridges and Other Hydraulic Structures; Buildings; Introduction to Computer Aided Drafting (CAD).

CE 106: Practical Surveying Credits: 1.5

Field works on Chain, Plane Table, Traverse Survey; Calculation of Area, House Setting, Curve Setting; Leveling, Contouring, Calculation of Height.

CHEM 112: Chemistry Lab Credits: 1.5

Standardization of alkali, acid and salt solutions; Detection of Copper, Iron and Calcium in solutions.

Second Year First Semester

HSS 211(a): Bangladesh Studies (Society and Culture)
Credits: 2.0

The Sociological Perspective: Definition, Nature, Sociology as a Scientific Discipline, Relation with Other Social Sciences. Primary Concepts: Society, Community, Association, Institution, Group Culture, Norms and Values. Social Structure & Process: Social Stratification, Social Classes, Caste System, Social Mobility. Social Institutions: Family, Marriage, Economic Institutions- Property, Ownership; Political Institutions: Forms of State & Forms of Government; Local Government; Religious and Cultural Institutions. Culture, Cultural Diffusion and Change, Bengali Culture. Problems of Society, Social Problems of Bangladesh. Social Change, Theories of Social Change, Social Change in Bangladesh. Urbanization Process and Its Impact on Bangladesh Society.

HSS 211(b): Bangladesh Studies (History of Bengal)
Credits: 2.0

The land: Geographical Factors, The People. Historical Perspectives. Ancient Bengali: Sasanka-Rise of the Palas - the Senas. Early Medieval Bengal. Coming of the Muslims. The Independent sultanate of Bengal: Ilyas Shahi and Hossein Shahi Bengal. Development of Bengali Language & Bengali Literature. Late medieval Bengal: The Establishment of Mughal Rule in Bengal Bara Bhuiyans: Subedars and Nawabs, Coming of the Europeans New Approach in Bengal Architecture Beginning of British rule in Bengal: Battles of Plassey & Buzas. Diwani (1765). The Dual government. Permanent Settlement (1793) Nineteenth Century Bengali Renaissance: Areas of Social & Religious Reforms-Raja Rammohan Roy, Ishwar Chandra Vidyasagar, Titu Meer. Partition of Bengal (1905). Language Movement (1952) Movement for Autonomy; 6-point and 11-Point Programs. The 1970 Election-Military Action, Genocide in the East Pakistan. The Liberation War. The Emergence of Bangladesh as a Sovereign Independent State in 1971.

MTH 201: Mathematics III
Credits: 3.0

Matrices: Definition, Algebra of Matrices, Determinants, Adjoint of Square Matrices, Inverse of a Matrix. Elementary Operations; Reduction to Echelon Form; Solution of a System of Linear Equations.

Linear Algebra: Definition of Linear (Vector) Space, Subspace, Linear dependence and independence, Basis and dimension, Singular and non-singular linear Transformation, Rank and Nullity, Representation of Linear Transformation by Matrices, Change Matrix, Determinant and Trace, Eigen Value and Eigen Space, Eigen Vector, Normal and Canonical Form of Matrices, Matrix Polynomials.

Statistics and Probability: Frequency Distribution, Mean, Median, Mode and Other Measures of Central Tendency. Standard Deviation and Other Measures of Dispersion. Moments, Skewness and Kurtosis. Elementary Probability Theory and Discontinuous Probability Distribution, e.g. Binomial, Poison and Negative Binomial. Continuous Probability Distributions, e.g. Normal and Exponential. Characteristics of Distributions. Elementary Sampling Theory. Estimation. Hypothesis Testing and Regressing Analysis.

ECE 201: Basic Electrical Engineering
Credits: 3.0

DC Circuits: Electric Current and Ohm's Law, Network Theorems, Work, Power, Energy, Magnetic Hysteresis. AC Circuits: AC Fundamentals, Phasor Algebra, Series AC Circuits, Parallel AC Circuits.

CE 211: Mechanics of Solids I [Prerequisite CE 101] Credits: 3.0

Fundamental Concepts of Stress and Strain, Mechanical Properties of Materials; Strain Energy, Stresses and Strains in Members Subjected to Tension, Compression, Shear and Temperature Changes; Bending Moment and Shear Force Diagrams of Beams and Frames; Flexural and Shearing Stresses in Beams; Shear Center; Thin Walled Pressure Containers; Riveted and Welded Joints.

CE 201: Engineering Materials Credits: 4.0

Introduction to commonly used Engineering Materials; Mechanical Properties, Crystal and Amorphous Structures; Atomic Structures, and Bonding; Bricks, Cement, Fine Aggregate, Coarse Aggregate, Mortar, Concrete; Salinity problem in Concrete; Corrosion of Steel in Concrete; Prevention of Corrosion of Steel in Concrete; Concrete for Special Purposes; Ferrocement, Properties and uses of Rubber, Plastics and Timber, Metallic Coatings, Paints, Varnishes.

CE 200: Details of Construction Credits: 1.5

Foundations; Different Types of Foundation; Brick Masonry, Framed Structures and Bearing Walls; Arches and Lintels; Details of Floors and Roof; Pointing; Plastering and Interior Finishing; Scaffolding, Staging; Shoring and Underpinning; Thermal Insulation and Acoustics; House Plumbing.

CE 202: Engineering Materials Lab Credits: 1.5

General discussion on Brick, Cement, Fine aggregate, Coarse Aggregate and Concrete; Determination of Normal Consistency of Cement by Vicat's Apparatus; Determination of the Initial Setting Time of Cement with Vicat's Apparatus; Test for Direct Compressive Strength of Cement Mortar; Sieve Analysis of Fine and Coarse Aggregate; Specific Gravity and Absorption Capacity of Fine Aggregate; Specific Gravity and Absorption Capacity of Coarse Aggregate; Unit Weight and Void in Aggregate, Resistance to Degradation of Small Sized Coarse Aggregate by Abrasion and Impact of the Los Angeles Abrasion Machine; Compressive Strength of Cylinder and Cube Concrete Specimens; Tests of Bricks: Shape, Size, Surface Hardness, Absorption, Unit Weight, Efflorescence and Compressive Strength.

ECE 202: Basic Electrical Engineering Lab Credits: 1.5

Construction and Operation of Simple Electrical Circuits; Verification of KVL, KCL and Superposition Theorem; Transmission and Distribution of Electric Power; AC Waves; KVL and KCL for AC Circuits; Verification of Maximum Power Transfer Theorem.

Second Year Second Semester

ECN 201: Principles of Economics Credits: 2.0

Introduction: Definition of Economics. Micro and Macro Economics, Relative Importance in the Formulation of National Economic Policies.

Microeconomics:

Demand Analysis - Law of Diminishing Marginal Utility, Demand Function, Demand Curve, Law of Demand, Elasticity of Demand; Supply Analysis- Supply function, Factors Influencing Supply. Law of Supply, Elasticity of Supply; Market Equilibrium - Equilibrium Price and Quantity; Indifference Curve (I-C)- Construction of I-C. Properties of I-C. Line, Consumer's Equilibrium with the Help of Budget Line, Income Effect, Price Effect, Substitution Effect; Production - Production Function. Factors of Production. Production Possibility Curve; Cost and Revenue - Total, Average, Marginal.

Macroeconomics:

National Income - GNP, GDP and NNP. Income Circular Flow, Diagram, Methods of Measuring National Income; Money: Functions of Money, Value of Money, Inflation; International Trade: Terms of Trade,. Free Trade and Protection; Public Finance: Public Income, Public Expenditure, Public Debt. Direct and Indirect Tax; Planning in Bangladesh.

MTH 203: Mathematics IV [Prerequisite MTH 101] Credits: 3.0

Differential Equation: Definition, Formation of Differential Equations, Solution of First Order Ordinary Differential Equations by Various Methods, Solution of Ordinary Differential Equation of First Order and Higher Degrees, Solution of General Linear Equations of Second and Higher Orders with Constant Coefficient, Solution of Euler's Homogenous Linear Equations.

Fourier Analysis: Real and Complex Form Finite Transform. Fourier Integral Fourier Transforms and Their Uses in Solving Boundary Value Problems.

Laplace Transforms: Definition, Laplace Transforms of Some Elementary Functions. Sufficient Conditions for Existence of Laplace Transforms. Inverse Laplace Transforms. Laplace Transforms of Derivatives. The Unit Step Function Periodic Functions. Some Special Theorems on Laplace Transforms. Partial Fraction. Solutions of Differential Equations by Laplace Transforms. Evaluation of Improper Integral.

CE 203: Engineering Geology and Geomorphology Credits: 3.0

Minerals; Identification of Minerals; Common Rock Forming Minerals, Physical Properties of Minerals, Mineroloids Rocks, Types of Rocks, Cycle of Rock Change; Earthquake and Seismic Map of Bangladesh; Structural Geology; Faults; Types of Faults, Folds and Fold Type; Domes; Basins; Erosional Process; Quantitative Analysis of Erosional Land Form. Channel Development; Channel Widening; Valley Shape; Stream; Terraces; Alluvial Flood Plains; Deltas and Alluvial Fans; Channel; Morphology; Channel Patterns and the River Basin; Geology and geomorphology of Bangladesh.

CE 205: Numerical Analysis and Computer Programming Credits: 3.0

Basic Components of Computer System; Introduction to a Computer Programming Language; Sequential, Selective and Repetitive Structures; Arrays; Subprograms; Numerical Solution of Algebraic and Transcendental Equation; Matrices; Solution of Systems of Linear Equations; Curve Fitting by Least Squares; Finite Differences; Divided Differences; Interpolation; Computer Applications to Civil Engineering Problems; Numerical Differentiation and Integration; Numerical Solution of Differential Equations.

CE 213: Mechanics of Solids II [Prerequisite CE 211] Credits: 3.0

Torsional Stress and Rotation; Compound Stresses; Helical Springs; Transformation of Stresses; Deflection of Beams by Direct Integration, Moment Area and Conjugate Beam Methods; Buckling of Column.

CE 221: Fluid Mechanics Credits: 3.0

Development and Scope of Fluid Mechanics. Fluid Properties. Fluid Statics. Kinematics of Fluid Flow. Fluid Flow Concepts and Basic Equations- Continuity Equation, Bernoulli's Equation, Energy Equation, Momentum Equation and Force in Fluid Flow. Similitude and Dimensional Analysis. Steady Incompressible Flow in Pressure Conduits, Laminar and Turbulent Flow, General Equation for Fluid Friction. Empirical Equations for Pipe Flow. Minor Losses in Pipe Flow. Fluid Measurement: Pitot Tube, Orifice, Mouthpiece, Nozzle, Venturimeter, Weir. Pipe Flow Problems-Pipes in Series and Parallel, Branching Pipes, Pipe Networks.

CE 204: Quantity Survey Lab Credits: 1.5

Different Types of Estimates. Approximate Estimate. Method of Building Estimate. Detailed Itemized Estimate of a Building. Analysis of Rates. Specification of Construction Materials. Method of Measurement of Works. Contracts. Valuation. Estimate of Bridge, Steel Truss, and Highway construction.

CE 206: Computer Programming Lab Credits: 1.5

Introduction to Computer programming; Programming with Sequential, Selective, Repetitive Structures; Arrays, Subprograms; Applications in Civil Engineering and Numerical Analysis.

CE 212: Structural Mechanics and Materials Lab [Prerequisite CE 211]
Credits: 1.5

Verification of Lame's Theorem, Flexible Cord, Center of Gravity; Friction Factors, Simple Harmonic Motion, Coefficient of Restitution; Tension, Direct Shear, Impact Test of Metals; Non-Destructive Tests; Compression and Bending Test of Timber; Test on Biaxial Bending; Torsion, Helical Spring; Buckling Test of Columns.

Third Year First Semester

ACN 301:Principles of Accounting Credits: 2.0

Introduction to Accounting, Generally Accepted Accounting Principles (GAAP), Accounting Cycle, Accounting Information Processing, Information User Groups; Principles of Journal Entries, Ledger, Trial Balance, Adjusting Entries, Rectifying Entries, Financial Statement (Income Statement, Cash Flow Statement, Balance Sheet); Bank Reconciliation Statement, Objectives and Procedure; Managerial and Cost Accounting: Introduction to Cost Concepts, Job Order Costing, Process Costing (Including Contract Costing), Cost Volume - Profit Analysis, Costing for Decision Making and Reporting, Flexible Budget and Standard Costing, Capital Budgeting, Analysis of Financial Statements

CE 311: Structural Engineering I [Prerequisite CE 211]
Credits: 3.0

Stability and Determinacy of Structures; Shear Force and Bending Moment of Frames and Arches; Influence Lines of Beams, Frames, Plate Girders and Trusses; Calculation of Maximum and Minimum Forces; Wheel Loads; Calculation of Wind and Seismic Load; General Cable Theorem; Analysis of Space Trusses.

CE 315: Design of Concrete Structures I [Prerequisite CE 211]
Credits: 3.0

Fundamental Behavior of Reinforced Concrete; Tests, quality control and inspection; Introduction to WSD and USD Method; Analysis and Design of Singly Reinforced, Doubly Reinforced and T-beam by WSD and USD Methods; Design for Shear by WSD and USD; Bar Curtailment; One Way Slabs by WSD and USD.

CE 331: Environmental Engineering I (Water Supply Engineering)
Credits: 3.0

History and Development of Water Supply System, Bangladesh Scenario, Objectives and Elements of Water Supply. Water Demands, Fire Demands, Planning and Design Considerations. Hydrological Cycle, Sources of Water Supply, Surface Water, Ground Water, Rain Water and Grey Water. Surface Water: Conveyance of Water, Water Hammer, Pipe Laying, Valves, Fittings and Taps, Detection and Prevention of Waste and Meters. Ground Water: Groundwater Exploration, Aquifer Properties and Groundwater Flow, Well hydraulics, Water Well Design, Construction and Maintenance, Recharge of Ground Water. Water Treatment: Water Quality and Its Standard, Plain Sedimentation, Coagulation and Flocculation, Filtration, Disinfection,

Arsenic, Iron and Hardness Removal Processes. Analysis and Design of Distribution Systems. Pumps and Pumping Machineries. Water Supply Management: User Community, Water Source Management, Institutional Aspects, Water Ethics and Pricing, Water Use and Reuse, Technological Options for Rural and Low Income Urban Communities.

CE 341: Geotechnical Engineering I Credits: 3.0

Introduction to Geotechnical Engineering; Formation, Type and Identification of Soils, Soil Composition, Soil Structure and Fabric, Index; Properties of Soil; Engineering Classification of Soils Compaction; Principles of Total and Effective Stresses; Permeability and Seepage; Stress-Strain-Strength Characteristics of Soils; Compressibility and Settlement Behavior of Soils; Lateral Earth Pressure; Stress Distribution.

CE 361: Open Channel Flow [Prerequisite CE 221] Credits: 3.0

Properties and Classification of Open-Channel Flow, Velocity and Pressure Distribution. Energy and Momentum Principles, Specific Energy and Transition Problems. Critical Flow and Control Principles of Flow Measurement and Devices. Concept of Uniform Flow, Chezy and Manning Equations, Estimation of Resistance Coefficients and Computation of Uniform Flow. Hydraulic Jump and Its characteristics. Theory and Analysis of Gradually Varied Flow, Computation of flow profile. Design of Channels. Diffusion and Dispersion in Open Channels.

CE 312: Structural Engineering Lab I [Prerequisite CE 213] Credits: 1.5

Design of a Steel Structures; e.g., Industrial Truss/Tower and Multi-Storied Steel Frame; Introduction to Plate Girders.

CE 332: Environmental Engineering Lab I Credits: 1.5

Physical, Chemical and Bacteriological Tests of Water and Waste Water; Design of Water Supply System.

CE 222: Hydraulics Lab [Prerequisite CE 221] Credits: 1.5

Center of Pressure, Proof of Bernoulli's Theorem. Flow Through Venturimeter. Flow Through Orifice. Coefficient of Velocity by Coordinate Method. Flow through Mouth Piece. Flow over V-notch. Flow Over Sharp Crested Weir, Fluid Friction in Pipe.

Third Year Second Semester

IMG 301: Principles of Management Credits: 2.0

Introduction; Management Concept; Evaluation of Management Thoughts; Managerial Constraints/Environment; Managerial Skills; Decision Making; Group Decision Making; Planning Organizational Goals, Basics of Planning, Planning Tools and Techniques, Strategic Planning; Organizing and Staffing: Organization Theory, Foundations of Organizational Design, Authority and Power, Job Design and Staffing, Human Resource Management; Leading Organizational Behavior, Motivating Communicating, Leadership; Controlling Nature of Organizational Control, Control Techniques, Evaluating Organizational Performance, Management Information System; Management in International/Multinational Organizations; Management and Ethics; Time Management.

CE 313: Structural Engineering II [Prerequisite CE 213, 311]
Credits: 3.0

Approximate Analysis of Statically Indeterminate Structures; Calculation of Deflection by the Virtual Work Method; Analysis of Statically Indeterminate Structures by Flexibility Method; Moment Distribution; Influence Lines of Statically Indeterminate Structures.

CE 317: Design of Concrete Structures II [Prerequisite CE 315] Credits: 3.0

Design of Two-Way Slabs, Flat Slabs, Flat Plates, Columns, Footings, Pile Foundations, Retaining Walls by WSD and USD; Introduction of Prestressed Concrete. Analysis and Preliminary Design of Prestressed Beam Section.

CE 333: Environmental Engineering II (Waste Water Engineering)
Credits: 3.0

Introduction to Environmental Sanitation: Sanitation and Health; Objectives and Definition of Sanitation; Classification of Wastes and Sanitation Systems; On-site Sanitation Systems for Rural and Low Income Urban Communities; Simple Pit Technology; Pour-flush Sanitation Technologies; Communal Sanitation System; Wastewater Engineering: Conventional Sewerage System; Wastewater Collection Systems; Estimation of Wastewater Flow; Hydraulic Requirements and Design of Sanitary Sewer System; Construction, Operation and Maintenance; Sewer Appurtenances; Plumbing System; Small Bore Sewerage System; Simplified Sewerage System; Stormwater and Sullage Drainage System Design; Wastewater Treatment and Disposal: Wastewater Characteristics; Preparatory, Primary and Secondary Treatment Methods; Attached Growth System; Suspended Growth System; Waste Stabilization Ponds; Advanced Treatment processes; Wastewater Disinfection; Effluent Disposal; Sludge Treatment and Disposal.

CE 351: Transportation Engineering I (Transport and Traffic Design)
Credits: 3.0

Introduction to Transportation Engineering; Development of Transportation Systems; Elements of Transportation System; Transportation in Bangladesh; Modal Share; Transportation Planning; Concepts Collection, Study and Analysis of Basic Data; Highway; Location and Surveys; Geometric Design of Highways; Elements of Design, Cross - Section Elements, Curves and Sight Distances; Road Intersections; Traffic Engineering: the Road/Traffic System, Vehicle and Traffic Characteristics, Traffic Control Devices, Traffic Studies, Parking and Roadway Lighting, Waterways and Terminals.

CE 363: Engineering Hydrology Credits: 3.0

Hydrologic Cycle, Weather and Hydrology, Precipitation, Evaporation and Transpiration, Infiltration, Stream Flow, Application of Telemetry and Remote Sensing in Hydrologic Data Acquisition, Rainfall-Runoff Relations. Hydrographs, Unit Hydrographs; Hydrologic Routing; Statistical Methods in Hydrology.

CE 316: Concrete Structures Design Sessional [Prerequisite CE 311, 315] Credits: 1.5

Preliminaries of RCC Design; Overview of Concrete Bridges; Design of Slab Bridge, Deck Girder Bridge and Balanced Cantilever Bridge; Design of Connections, Railings and Substructure.

CE 342: Geotechnical Engineering Lab [Prerequisite CE 341]
Credits: 1.5

Field Identification Tests, Grain Size Analysis by Sieve and Hydrometer, Specific Gravity Test, Atterberg Limit Test, Permeability Tests, Unconfined Compression Test, Compaction Test, Relative Density Test, Direct Shear Tests, Consolidation Tests.

CE 354: Transportation Engineering Lab Credits: 1.5

Tests on Bituminous Materials, Tests on Subgrade, Subbase and Base Materials; Mix Design; Roadway Capacity Studies.

Fourth Year First Semester

CE 401: Project Planning and Management Credits: 3.0

Principles of Management, Principles of Construction Management, Construction Contracts and Specifications, Inspection and Quality Control, Construction Safety, Construction Planning and Scheduling, PERT, CPM, Case Studies, Resource Scheduling, PERT A Cost Accounting System, Linear Programming. Psychology in Administration, Materials Management, Demand Forecasting, Inventory Control, Store Management, Procurement. Project Planning and Evaluation, Feasibility Reports, Cash Flow, Pay Back Period, Internal Rate of Return. Benefit-Cost Ratio, Construction Equipment and Plants. Replacement Studies.

CE 411: Structural Engineering III [Prerequisite CE 313]
Credits: 3.0

Analysis of Statically Indeterminate Structures by Stiffness Method; Structural Analysis by Energy Formulation; Geometric Nonlinearity of Beams and Frames; Structural Analysis by Finite Elements.

CE 441: Geotechnical Engineering II [Prerequisite CE 441] (Foundation Engineering)
Credits: 3.0

Soil Investigation Techniques; Settlement Computation; Types of Foundations; Bearing Capacity of Shallow and Deep Foundations Settlement and Distortion of Foundations; Design and Construction of Footings, Rafts and Piles; Slope Stability Analysis.

CE 451: Transportation Engineering II (Highway Design and Railways)
Credits: 3.0

Highway Materials, Sub Grade, Sub Base and Base Courses Soil Stabilization and Soil Aggregates in Road Constructions, Low-Cost Roads, Production, Properties and Uses of Bituminous Materials and Mix Design Methods, Design, Construction and Maintenance of Flexible and Rigid Road Pavements, Equipment, Railways, General Requirements, Alignment, Permanent Way, Station and Yards, Signaling, Points and Crossings, Maintenance.

CE 461: Irrigation and Flood Control [Prerequisite CE 361] Credits: 3.0

Importance of Irrigation. Sources and Quality of Irrigation Water. Soil Water Relationship. Consumptive Use and Estimation of irrigation, Methods of Irrigation, Water Requirements, Design of Irrigation, Canal System. Irrigation Structures. Irrigation Pumps. Problems of Irrigated Land. Flood and Its Control.

CE 412: Structural Engineering Lab II [Prerequisite CE 317] Credits: 1.5

Design of a Low-Rise Reinforced Concrete building (Wall System); Design of a Multi-Storied Reinforced Concrete building (Beam-Column System); Provisions for Earthquake Resistant Design; Design of Shear Walls; Design of Flat Slab and Waffle Slab Systems; Design of underground Reinforced Concrete WaterTank.

CE 400: Project and Thesis
Credits: 1.5

Experimental and Theoretical Investigation of Various Topics in Structural Engineering, Concrete Technology, Environmental Engineering, Transportation Engineering and Geotechnical Engineering Individual or Group Study of One or More Topics from Any of the Above Fields. The Students will be Required to Submit Thesis/Project at the End of the Work.

Fourth Year Second Semester

CE 403: Professional Practices and Communication Credits: 2.0

The Project Cycle; Project Proposal; Contractual Provisions; Techniques of Specification Writing; Evaluation of Bids; Project Evaluation.
Interpretation of Literature, Documents, etc.; Communicating; Preparation of Reports; Industrial and Labor Relations; Professional Ethics in Civil Engineering.

CE 418: Computer Applications in Civil and Environmental Engineering
Credits: 1.5
Computer softwares related to Civil and Environmental Engineering

CE 400: Project and Thesis
Credits: 3.0

Experimental and Theoretical Investigation of Various Topics in Structural Engineering, Concrete Technology, Environmental Engineering, Transportation Engineering and Geotechnical Engineering Individual or Group Study of One or More Topics from Any of the Above Fields. The Students will be Required to Submit Thesis/Project at the End of the Work.

Optional Courses:
(For Structural Division)

CE 413: Structural Engineering IV
(Theory of Elasticity and Elastic Instability of Structures) [Prerequisite CE 213]
Credits: 2.0

Introduction to Theory of Elasticity, Plane Stress and Plane Strain Conditions; Two Dimensional Problems in Rectangular and Polar Coordinates; Torsion of Circular and Non-circular Shafts, Instability of Structures; Stability Functions.

CE 415: Structural Engineering V
(Prestressed Concrete) [Prerequisite CE 213, 315]
Credits: 2.0

Pre-stressed Concrete: Materials; Prestressing System; Loss of Prestress Analysis of Sections for Flexure, Shear, Bond and Bearing; Beam Deflections and Cable Layout, Partial Prestress. Design of Pre-stressed Sections for Flexure, Shear, Bond and Bearing.

CE 417: Structural Engineering VI
(Design of Steel Structures) [Prerequisite CE 213]
Credits: 2.0

Behavior of Structural Steel Members and Steel Frames, Code Requirements; Design of Tension and Compression Members by WSD and LFD Methods; Design of Beam, Beam-Column Joint Design.

CE 419: Structural Engineering VII
(Introduction to Finite Element Method) [Prerequisite CE 411]
Credits: 2.0

Introduction to Finite Element Method as Applied to Civil Engineering Problems. One Dimensional Stress Deformation And Time Dependent Flow Problem, Two Dimensional Plane Stress and Plane Strain Analysis of Stress Deformation Problems.

CE 421: Structural Engineering VIII

(Structural Dynamics and Earthquake Engineering) [Prerequisite CE 411] Credits: 2.0
Fundamentals of structural dynamics; SDOF system: Free vibration and forced vibration, numerical solution of SDOF equation; MDOF system: Eigenvalue problem, modal analysis, numerical solution of MDOF equations; Earthquake Engineering: Fundamentals of earthquake engineering and seismic vibration, building codes, earthquake resistant design of buildings.

CE 423: Structural Engineering IX

(Earthquake Resistant Design and Retrofitting) [Prerequisite CE 411] Credits: 2.0
Review of structural dynamics and earthquake engineering; Control of dynamic response: Active and passive control, base isolation, TMD, TLD, diagonal bracing; Seismic response and design of masonry and RC structures: Seismic detailing for RC structures, repair and retrofitting of existing masonry and RC structures.

CE 425: Structural Engineering X
(Concrete Technology) [Prerequisite CE 201]
Credits: 2.0

Hydration process of blended cements, heat of Hydration; Structures of Hydrated Cement; Properties of Fresh Concrete, Pumped Concrete, Ready-mixed Concrete; Re-tempering; Chemical and Mineral admixtures; Superplasticizer; Microstructure of Hardened Concrete; Properties of Hardened Concrete; Destructive and Non-Destructive Tests; Bond between Steel and Concrete; Autogeneous Healing; Temperature effect; Deterioration of Concrete structures; Causes of Inadequate Durability; Identification of Causes of Deterioration; Carbonation and Chloride-induced Corrosion of Steel Bars in Concrete; Chloride Diffusion into Concrete; Sulfate Attack, Efflorescence, Erosion; High performance Concrete; Lightweight Concrete; No-Fines Concrete; Shotcrete.

CE 416: Structural Engineering Lab III [Prerequisite CE 317]
Credits: 1.5

Design of various RC structures; e.g., underground water tank, overhead water tank, folded plate roof.
(For Environmental Division)

CE 431: Environmental Engineering III
(Solid Waste Management) [Prerequisite CE 333]
Credits: 2.0

Solid Waste Management: Sources and Types of Solid Wastes; Physical and Chemical Properties of Solid Wastes; Solid Wastes Generation; On-Site Handling, Storage and Processing, Collection of Solid Wastes, Transfer Stations and Transport; Ultimate Disposal Methods; Resources and Energy Recovery, Soil Pollution. Industrial Solid Waste Collection and Disposal; Hazardous Waste Management.

CE 433: Environmental Engineering IV
(Environmental Pollution and Its Control) [Prerequisite CE 331]
Credits: 2.0

Environmental Pollution and Its Control: Water Pollution-Sources and Types of Pollutants; Waste Assimilation Capacity of Streams; Dissolved Oxygen Modeling; Ecological Balance of Streams; Industrial Pollution; Heavy Metal Contamination; Detergent Pollution and Eutrophication; Groundwater Pollution; Marine Pollution; Pollution Control Measures, Water Quality Monitoring and Management. Air Pollution - Sources and Types of Pollutants; Effects of Various Pollutants on Human Health, Materials and Plants; Air Pollution Meteorology; Global Warming and Green House Effects; Air Pollution Monitoring and Control Measures.

CE 435: Environmental Engineering V (Environment and Development Projects)
Credits: 2. 0

Development and Environment; Concept of Sustainable Development; Socio-economic Indicators of Development; Human Development; Human Poverty; Development Projects; Environmental Issues and Priorities; Environmental Implication of Sectoral Developments; Characteristics of Environmentally sound, sustainable Development Projects; Environmental Quality Standards; Economic Aspects of Environmental Quality Control; Special Topics.

CE 437: Environmental Engineering VI (Environmental Management)
Credits: 2.0

Introduction to Environment and Ecosystem; Overview of Terrestrial, Aquatic and Wetland Ecosystems; Environmental Management Objectives; Key Concepts of Environmental Management; Environmental Management Approaches; Environmental Principles, Policies and Legislations; Global, Regional and Local Dimensions of Environmental Management; Environmental Assessment; ISO 14000; Environmental Management System; Environmental Pollution Prevention.

CE 439: Environmental Engineering VII (Environmental Impact Assessment)
Credits: 2.0

Historical Background; Definition; Legal Framework; Project Cycle and Environmental Assessment; Screening; Initial Environmental Examination; Environmental Impact Assessment; Impact Characteristics and Functions of EIA; Scoping and Baseline Studies; EIA Methodologies; Impact Mitigation; Environmental Monitoring; Water Quality Impacts; Impacts on Terrestrial and Aquatic Systems; Impact on Socio-economic, Heritage and Culture; People's Participation in EIA; Environmental Auditing; Review of EIA; Resource Requirements and Costs of EIA; Case Studies.

CE 531: Environmental Engineering VIII (GIS and Remote Sensing)
Credits: 2.0

Concepts of Geographic Information Systems (GIS), Definition, Data Structure, Data Processing and Management, Spatial Analysis; GIS Software, Basic Principles of Remote Sensing (RS) and Global Positioning Systems (GPS); Definition, Data Acquisition, Spectral Characteristics of Land Cover, Multi Spectral Analysis, Image Interpretation, Geometric Corrections, Classification Techniques; Integration of RS and GPS with GIS, GIS Application in the Field of Environment.

CE 432: Environmental Engineering Lab II [Prerequisite CE 331] Credits: 1.5

Design of Water Treatment Plants; Design of Sewerage System.




DEPARTMENT OF CIVIL ENGINEERING
UNIVERSITY OF ASIA PACIFIC

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