

Department of Civil Engineering

SELF-ASSESSMENT REPORT



UNIVERSITY OF
ASIA PACIFIC

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CHAPTER 1

Introduction

Self-Assessment (SA) is an assessment conducted by the institution to assess whether programs by the institution meet their educational objectives and outcomes; the purpose of which is to improve the program's quality and enhance students' learning. The process by which SA is done, is quite thorough and comprehensive – information is collected from all different stakeholders and a thorough review of the acquired information is done to identify weaknesses and potential areas for improvement. In doing so SA becomes an evidence based practice. It serves as a tool for continuous improvement and Quality Assurance (QA).

1.1 Significance of Program Self-Assessment

Purposes and scope of Self-Assessment are related with the evolvement of the societal and national needs for good education. With the emerging changes in the pattern in education landscape, it becomes necessary to evaluate the academic programs to address the needs of the stakeholders. As any institution would prepare its horizons, the background motive would revolve around shaping up the degree level education that must be able to satisfy the community needs, address the applicability in the students lifelong learning process and would help them to become a responsible social entity.

The program self-assessment would enable the process of understanding the current state of students learning. Many a times, heavy contents in the curriculum usually results in losing the true perspective of the learning and gauge the extent of the learning outcomes among the students. Accordingly, based on the evaluation of the outcomes, areas and issues that need to be addressed

and identified and eventually improved. Thus quality assurance of an entity requires for the self-assessment to be a continuous process.

Moreover, useful coordination is also required between the stakeholders' interests and the practical achievements. Usually, the quality of education is reflected on the contribution of the graduates in the national and global development which would pave the way towards recognition among the local and global community. Self-assessment process allows the integration of the major stakeholders' opinions for the improvement of students learning.

The SAR which is the ultimate output of the assessment process is actually the direct documentation of the current state of an entity with the identified strength, weakness, opportunities and threats relevant for the entity. This actually forms the basis for external assessment which in turn provides direct guidelines and a detailed roadmap to conceptualize the improvement strategies.

1.2 Process of Assessment

Academic programs are supposed to undergo a self-assessment exercise at a regular interval of four years. The total process should be completed in one year that will comprise various steps such as scheduling the assessment, organizing the self-assessment committee, approval of the improvement plan, preparation of the SA report and external peer review. All these steps should address the following issues in subsequent steps:

Customizing standards to be measured:

There are a set of standards based upon which an entity should be evaluated. The standards were fixated relevant to an academic entity such as governance practices, student admission and achievements, curriculum, physical facilities, teaching and learning assessment, student support

services, staff and facilities, research and extension, process management and continuous improvement and SWOT Analysis.

Designing of assessment plan:

The assessment plan is designed through scheduling of self-assessment, formation of the self-assessment committee and approval of the committee through IQAC by the VC, designing the activity schedule, team building, preparing a survey, conducting the survey and review, sharing the results of survey, preparing the final assessment report, submission of the report, selecting the peer review panel, facilitating the review process, preparing the draft improvement plan and finally submitting the final improvement plan to the department. The details on the members of the self-assessment committee along with their designations and tenure in the committee are mentioned in table 1.1.

Table 1.1: Details of the self-assessment committee (SAC) members

Name	Designation	SAC Designation	Tenure in SAC
Dr. Sarah Tahsin Noor	Associate Professor	Head	December, 2016 – Till date
Dr. Md. Mahmudul Hasan	Assistant Professor	Member	December, 2016 – Till date
Ariful Hasnat	Assistant Professor	Member	December, 2016 – June, 2017
Dr. Nehreen Majed	Associate Professor	Member	July, 2017 – Till date

Customizing survey tools to measure the standards:

With the cooperation of the faculty members, the program self-assessment committee has conducted the opinion survey to collect data and feedback from major five groups of stakeholders using separate questionnaire including the students, alumni, employers, academic staff and non-academic staff. In addition, the Committee has made a critical review of documents related to teaching-learning and research like curriculum, laboratory facilities, student performance assessment tools, students' progresses and achievements etc. A total number of 379 stakeholders' responses were collected including 200 students, 114 alumni, 25 employers, 22 faculty members and 12 non-academic staff. The relative number of respondents are provided in a pie chart distribution in figure 1.1.

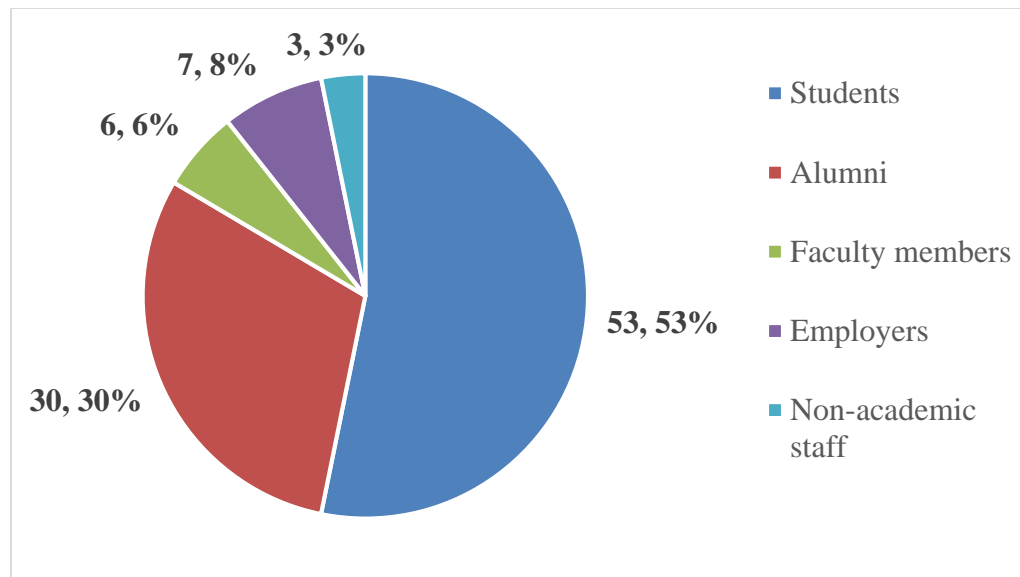


Figure 1.1: Distribution of number of respondents/stakeholders involved in the survey

Data collection process:

Separate workshops and focused group discussion sessions have been arranged with all the stakeholders in order to make them familiar with the survey questions and the rubrics. Then the

questionnaire was made available to the stakeholders either electronically or personally to provide feedbacks through responding to the survey questions. Reaching out to the stakeholders and obtain a fair response was the main challenge in this process.

Data processing and analysis:

The committee has made arrangements for data entry, processing and analysis of information and feedback collected through stakeholder surveys.

Writing of Self-Assessment Report with proper interpretation of data:

Having completed all the necessary steps mentioned above, the self-assessment committee has prepared the final report incorporating the valid suggestions and observations collected through workshops and discussion

1.3 Overview of the University

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 (UGC) of the Government of the People's Republic of Bangladesh. The university started its operation, i.e. the first semester of classes, in 1996, and offered four-year bachelor degree programs in Computer Science and Technology and Business Administration only. Currently UAP offers undergraduate programs in Architecture, Business Administration, Civil Engineering, Computer Science and Engineering, Electrical & Electronic Engineering, English, Law and Pharmacy. Post-graduate programs are also offered in some of the departments including Civil Engineering.

UAP has been sponsored by University of Asia Pacific Foundation, a non-profit, non-commercial organization based in Dhaka, Bangladesh. 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, knowhow and awareness of the youth through appropriate institutional means. The foundation has been established by a group of eminent educationists, industrialists and administrators who share the same vision and social commitments. University of Asia Pacific is the first project of the foundation aimed at realizing these noble goals. Since its inception in June 1996 as the first project of the foundation for human and social development, a group of visionaries and philanthropists, including eminent educationists, industrialists, businessmen, social workers and administrators have been giving their relentless efforts to strengthen the administration.

Ever since it's modest beginning UAP has experienced tremendous growth. To accommodate its rapidly increasing students, UAP foundation hastened the construction of its own permanent 'City Campus' on a previously bought 99 decimals piece of land in the center of the capital at Green Road to shift there as soon as possible. Migration started in September, 2015 by shifting the Administrative office to permanent campus and by April, 2016 all Departments of UAP were shifted to the permanent campus in Green road except Civil Engineering Department which migrated one semester later. City campus is located at House 74/A, Green Road, Dhaka and includes 2449.25 square meters (i.e., 3,88,800 sq. ft.) of space in a 10-storied building with 3 basements (with possible scope of extension of 2 more stories). The campus is designed to meet academic, professional and social requirements of the university to provide a stimulating environment for education having standard class rooms, laboratories, auditorium, library, reading rooms etc. with enriched facilities. However, as the 'City Campus' was not enough to accommodate the growing size of UAP, so, two floors of a large building adjacent to permanent campus have been rented for the Departments of Business Administration and the Directorate of Students' Welfares.

As for future plan, there are still more extension plans within the permanent campus which will include increased facilities for the students within the campus. Besides, UAP Administration is searching for lands adjacent to permanent campus to build new structures. Some potential opportunities are being discussed at this moment and if this is successful then the university can bring all its departments to its own premise leaving two rented floors in the adjacent building.

For further extension plan of UAP, the university has already purchased about 3 Acres (around 12000 square meters) of land in ‘Rajuk Purbachal’ where a big outer campus with residential facilities will be constructed in near future. Now it can rationally envisage an institutional strength of the highest quality for rapid growth of the university in the near future.

The university's policies, programs and activities are in full compliance with the Private University Act, 1992. In order to accommodate the students who are working fulltime in private or public sectors, all postgraduate programs are running during evenings and weekends. Average class size remained at about 30-50 with a student/faculty ratio ranging from 12:1- 24:1.

1.4 Overview of the Program Offering Entity

The department of CE at UAP started its journey with undergraduate program in Fall 1997 semester and later on extended its capacity in 2009 through launching graduate program. The purpose of establishing the department was to produce excellent professionals, who would be able to provide engineering solutions to infrastructure development and be able to manage environment leading to a sustainable socio-economic development. As per academic calendar, the first batch of students graduated in Spring 2001. Since then up to Spring 2017, thirty-three batches have graduated on schedule, one in each semester.

1.4.1 Degrees Offered

The civil engineering department offers following degrees:

- 4 years undergraduate program
 - Bachelor of Science in Civil Engineering, abbreviated as B.Sc. Engg. (Civil)
- 2 years graduate program
 - Master of Science in Civil Engineering, abbreviated as M.Sc. Engg. (Civil)
 - Master of Engineering in Civil Engineering, abbreviated as M. Engg. (Civil)

1.4.2 Curriculum Type: Undergraduate Program

Besides the professional courses pertaining to Civil Engineering, the undergraduate curriculum gives a strong emphasis on acquiring thorough knowledge in the basic sciences of mathematics.

Due importance is also given to the study of several subjects in humanities and social sciences.

The curriculum covers all the fields within the Civil Engineering discipline and it eventually leads the students to decide their field of choice for specialization in their final year project.

The program starts with foundation courses in basic sciences, mathematics, humanities, social sciences and project management with basic courses in Civil Engineering. Subsequently, project work takes place in the fields of Structural Engineering, Environmental Engineering, Geotechnical Engineering, Transportation Engineering and Water Resources Engineering. 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 with expertise and ease. At present, the CE department offers B. Sc. Engineering degree at the completion of 161 credit hours.

1.4.3 Curriculum Type: Postgraduate Program

Commencement of postgraduate program of the department is a milestone achievement of continuous development policy of the department. The postgraduate program is commenced with

several objectives, such as enhancement of knowledge of graduate engineers so that they can make themselves fit for the new challenges in the field of civil engineers, to solve national and international problems and to create new knowledge through research activities of postgraduate students, and disseminate the new knowledge through lecture, seminar, conference, workshop, etc. For the degree of M. Sc. Engg. (Civil), a student must earn a minimum of 36 credit hours including a thesis for which 18 credit hours are assigned.

For the degree of M. Engg. (Civil) a student must earn a minimum of 36 credit hours including a project for which 6 credit hours are assigned.

A project or thesis is mandatory to be carried out for a Masters degree in Civil Engineering. Either of the options requires for a concentration to be chosen by the student among the different divisions in Civil Engineering and choose a supervisor. If the supervisor permits, the research activity is carried out based on the requirements for the relevant degrees. The proposal for the research has to be approved by the Board of Post Graduate Studies and finally the student has to face an oral examination on finishing his/her research.

The courses of study in the department have been recommended by the Board of Post Graduate Studies (BPGS) and the faculty, and approved by the Academic Council (AC). The BPGS may review the curriculum from time to time and recommend any changes as may be considered necessary. The courses to be offered in any semester shall also be as determined by the relevant BPGS. Thesis is evaluated by the Board of examination that has to be formed by choosing an external examiner from outside and another external within the department. The committee includes the supervisor (as the chairman), the head of the department and the two external members. The teaching and assessment strategies, the examination, marks distribution and grading scale of the postgraduate program are similar to those of undergraduate program.

Since its inception in 1997 the Department of Civil Engineering of the University of Asia Pacific (UAP) has awarded undergraduate degree to 924 students. Several UAP graduates have completed postgraduate studies 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. The undergraduate and postgraduate programs see an average intake of 180 students and 20 students each year, respectively. Table 1.2 provides the detailed information on academic staff and students.

Table 1.2: Data on Academic Staffs and Students

Items	Quantity
First year enrollment (recent)	90
Average HSC GPA score of enrolled students (recent) (Fall 2016)	3.98
First year retention rate (recent)	88.15%
Average first year retention rate (recent 5 years)	87.71%
Average transfer rate (recent 5 years)	Not Available
Total number of students at present	760
Average pass rate in first year courses (recent 5 years)	87% (3 years)
Total enrollment in PhD	0
Total number of full time academic staff	25
Total number full time academic staff with PhD	12
Academic staffs on study leave for PhD in home and abroad	5

Number of Graduates passed (average of recent 5 years)	109 students per year Spring 11 -26 Fall 11 -36 Spring 12 -22 Fall 12 -47 Spring 13 -47 Fall 13 -87 Spring 14 -72 Fall 14 - 64 Spring 15 -63 Fall 15 -80
Number of PhD passed (average of recent 5 years)	NA
Total number & amount of external (other than GoB) funded research projects	0
Total number & amount of (GoB) funded research projects	0
Number of theses/research monographs /publications	263
Teacher-student ratio	0.042 or 1 teacher per 24 students approximately

1.5 Objectives and Learning Outcomes of the Program

1.5.1 Vision

The vision of the department is to produce excellent professionals, who will provide engineering solutions to infrastructure development and be able to manage environment Leading to a sustainable socio-economic development.

1.5.2 Mission

The mission of the civil engineering department is to educate students in a student-centered dynamic learning environment, to enhance their skills in line with the program outcomes, to provide advanced facility for conducting forward-looking inter and multi-disciplinary research to meet the challenges of 21st century and to motivate them toward life-long learning process.

1.5.3 Program Educational Objectives

The Department of Civil Engineering forms the foundation for professional and personal development of the graduates that are expected within few years after graduation. The goal of the department is encompassed by the following educational objectives:

PEO 1: The graduates excel in their engineering career in the public and, private sectors or academia by applying the knowledge acquired in mathematical, computing and engineering principles and enhancing their skills.

PEO 2: The graduates engage themselves toward lifelong learning and the pursuit of post graduate or other professional education including continuous professional development.

PEO 3: The graduates are engaged in design and analysis of the civil engineering systems after considering safety, sustainability, economic and social impacts of engineering decisions.

PEO 4: The graduates demonstrate professionalism, ethics, and ability to work in inter and multi-disciplinary team and to adapt to the latest trends and technology.

1.5.4 Mapping between Mission vs PEOs

Table 1.3 shows the mapping between the missions and the program educational objectives of the Department of Civil Engineering at UAP

Table 1.3: Mapping between missions and PEOs

Missions	PEO-1	PEO-2	PEO-3	PEO-4
Mission-1: To educate our students in a student-centered dynamic learning environment	√	√		
Mission-2: To enhance their skills in line with the program outcomes			√	√
Mission-3: To provide advanced facility for conducting forward-looking inter and multi-disciplinary research to meet the challenges of 21 st century		√		
Mission-4: To motivate them toward life-long learning process		√		

1.5.5 Program Outcomes

The department of Civil Engineering is pursuing a continuous effort in aligning its curriculum and the course learning outcomes with the criteria set by both the Washington Accord and ABET accreditation. The criteria are given below:

- 1. Ability to acquire and apply knowledge:** An ability to acquire and apply knowledge of mathematics, science, engineering and technology in the field of Civil Engineering
- 2. Identifying problems and implementing solutions:** An ability to identify, formulate, and solve engineering problems
- 3. Ability to analyze, design and develop civil projects:** An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic,

environmental, social, political, ethical, health and safety, manufacturability, and sustainability

4. **Ability to conduct, evaluate and interpret experiments:** An ability to design and conduct experiments, as well as to analyze and interpret data obtained from such experiments
5. **Ability to use modern tools & techniques:** An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
6. **Ability to understand the impact of engineering decisions:** The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
7. **Knowledge of contemporary issues:** Knowledge of contemporary issues to expand and supplement one's understanding of the technical and non-technical matters
8. **Professional and ethical responsibility:** An understanding of professional, ethical, legal, security and social responsibility
9. **Contribute beyond professional careers:** An ability to function on multidisciplinary teams and contribute effectively beyond their professional careers
10. **Ability to Communicate:** An ability to effectively communicate orally, visually and in writing
11. **Project Management & Finance:** Develop and understanding of Project Management, Planning and Project Financing
12. **Lifelong Learning:** A recognition of the need for an ability to engage in lifelong learning to cope up with contemporary and future/potential challenges

1.6 Brief Summary of the BSc Program under review

- **Course requirement**

In order to fulfill the requirements of a BSc. Degree, 161 Credit hours are required to be completed including both theoretical and sessional courses. Among the total, 21 credit hours comprise courses on basic science and Mathematics, 16 credit hours comprise courses on humanities, 50 credit hours comprise courses on Basic Engineering and the rest on the different divisions in Civil Engineering concentration.

- **Teaching strategy**

Class room teaching involves utilizing multimedia projector for displaying slides and videos; verbal lecturing along with white board/marker talk, disseminating handouts and open discussion. In sessional or practical courses, demonstration is followed up with hands on training.

- **Assessment strategy**

In order to assess the attainment of the program and course learning outcomes, strategies that are commonly used are taking quizzes, exams, project presentations, report writing, open participation etc.

- **Academic calendar**

The academic calendars for both the Spring and the Fall semesters of the year are disseminated to all the students and faculty members in the beginning of the respective semester and followed strictly throughout the semester. The Spring semester begins in April and the Fall semester begins in October.

- Class attendance marks & bases

In order to stress the importance of attending the classes regularly, 70% attendance has been made mandatory for every course for a student to appear in the final examination. The number has been fixated on the basis of the number of classes a student is required to be present for gaining enough and relevant knowledge on a course and obtain passing score.

- Examination (Theoretical & Practical)

Both midterm and final exams are commenced for the theoretical and practical courses with the exception that the mid-term exams are only 1 hour long and final exams are 2-3 hours long depending on the credit hours of the courses.

- Study Tour

Students in the final year get to visit a destination of their choice for study tour every year providing proper rationale and justification of their chosen spot with respect to practical learning opportunities. Visits have been paid to locations such as Rangamati suspension bridge, Bakkhali rubber dam, National Oceanographic Research Institute etc. in the country.

- Field Trip

Field trip is encouraged, but not mandatory as part of the course activities. However, faculty members initiate and mandate field trips relevant to the project/thesis work for students which they frequently perform in a group. In past years, students have visited Sayedabad Water Treatment plant (visual observation) and Shitalakhya River (riverside cleaning and waste accumulation).

- Distribution of Marks

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

Class Assessment	30%
Mid Semester Examination	20%
Final Examination	50%
<hr/>	
Total	100%

- Grading scale

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.

CHAPTER 2

Governance

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. UAP is administered by a number of governing bodies, processes and principles. The system of governance that has evolved through their interaction provides a high degree of consciousness, determination, discipline and transparency. It also draws opinions from a wide range of people, reflecting and serving its constituents.

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

UAP prides itself on being an autonomous community of philanthropists, industrialists, administrators and scholars having governance arrangements consistent with its well-defined vision and mission. The university's system of governance is based both on rules and ideologies. It forms a system that is accountable to members of the Board of Trustees (its governing body) and striving to serve the stakeholders (including students, guardians, society, national and international authorities).

2.1 Program Management

Standard 1-1: Mission and objectives are defined in respect of national relevance in compliance with the legal requirements, QA requirements and external reference standards

2.1.1 Mission and Objectives

As mentioned in Chapter 1, UAP has been established with a mission to offer the best possible education to the young generation to fully realize their potential, develop their personality and build the future of society in this ever-changing world. To this end, UAP strives to ensure a vibrant academic environment with up-to-date curricula, qualified faculty members using state-of-the-art teaching practices, high-tech laboratories, modern libraries and foster quality research in areas of national and international interest in diverse areas like business, engineering, science and technology, law, language and literature.

The main objective of the university is to provide high quality education relevant to the needs of a dynamic society. The courses and curricula are designed to enable a student to enter the practical world or pursue higher academic and professional goals with a strong scholastic and ethical 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.

2.1.2 Legal requirements, QA requirements and external reference standards

UAP's curriculum has been approved and updated periodically by the University Grants Commission (UGC) of the Government of the People's Republic of Bangladesh. The university has consistently maintained a strict adherence to the financial, academic and infrastructural regulations of the UGC. In this respect, UAP has proved itself to be an exception, following, for example, consistently the Bi-semester system suggested by UGC (in contrast to the Tri-semester

system followed by most private universities in Bangladesh), with the exact grading system stipulated by UGC (again in contrast to the grading policy followed by most private universities in Bangladesh).

In compliance with the UGC requirement, UAP has set up a 2,80,000 sq-ft state-of-the-art permanent campus at Green Road and has also purchased another piece of land (nearly 3 acres, at Purbachal) for its outer campus which will include more academic and extra-curricular facilities. With an aspiration to integrate higher education with the process of national development, paramount importance has been given to maintain a high scholastic standard and accredit UAP's academic programs by relevant accreditation bodies. All engineering programs of UAP are accredited by Institute of Engineers Bangladesh (IEB) and Board of Accreditation for Engineering and Technical Education (BAETE), Architecture by Institute of Architects (IAB), Pharmacy by Pharmacy Council of Bangladesh, Law & Human Rights by the Bangladesh Bar Council. In fact, the Pharmacy and Civil Engineering departments of UAP were the first among private universities to earn such accreditations in respective areas.

Standard 1-2: Intended Learning Outcomes must satisfy the mission and objectives of the program

2.1.3 Intended Learning Outcomes

‘Intended Learning Outcomes’ are statements of what students are expected to be able to accomplish while engaging in the learning process. They are called ‘Intended Learning Outcomes’ (ILO’s) because students also learn several additional things about the subjects in good learning environments, and develop qualities like teamwork, dealing with complicated personalities and learning skills which are not necessarily included in the ILO’s.

UAP strives to ensure that the course plan provided by each course instructor highlights learning outcomes not only consistent with the approved course outline but also with the proposed long-term purpose of the program. The next chapter (Chapter 3) is more focused on the *Curriculum Content Design and Preview* of the entity and deals with ILO's in more detail.

Standard 1-3: The University must have an organizational structure and organizational units with defined responsibilities in compliance with the legal framework under which the university is established

2.1.4 Organizational Structure and Organizational Units

The organogram, an intrinsic component of UAP, illustrates the structure and relationships among different personnel, departments and responsibilities at different levels. Table 2.1 shows the officers and campus administration of UAP, while Table 2.2 shows its offices and Table 2.3 the authorities of the university. They represent the dynamics of the UAP system and the personnel who make it work.

Table 2.1: Officers and Campus Administration

Position	Description
Vice-chancellor	Appointed by the Chancellor (for four-year term), Vice-Chancellor is the chief executive of the university who is responsible to the Syndicate, the Board of Trustees and the Chancellor
Pro Vice-chancellor	Appointed by the Chancellor (for four-year term) on the recommendation of the Board of Trustees. He discharges responsibilities and duties as determined by the University Statutes and regulations or any other duties assigned to him by the Vice-chancellor
Deans of Schools	UAP's academic structure consists of seven schools (Schools of Business, Engineering, Environment Sciences and Design, Humanities and Social Science, Law, Medicine and Science) each headed by a Dean whose background and skill set must align at the right time and place with the distinct mission and interests of the school, in addition to strong leadership and vision
Treasurer	Appointed by the Chancellor on the recommendation of the Board of Trustees. The Treasurer exercises general supervision over the funds of the University and renders advice in regard to its financial policy.
Heads of Departments	The academic program of UAP consists of the following ten academic departments, offering eight undergraduate and ten postgraduate degrees; i.e., Departments of Architecture, Basic Science & Humanities, Business Administration, Civil Engineering, Computer Science and Engineering,

	<p>Electrical and Electronic Engineering, English, Mathematics, Law and Human Rights, Pharmacy.</p> <p>Each department is led by a Departmental Head, while each postgraduate program has a program Coordinator, each appointment being on a two-year term</p>
Registrar	<p>Secretary of the Syndicate and the Academic Council and acts as the custodian of the records. Registrar maintains liaison with the deans/heads of the departments regarding various academic and administrative issues and as per the delegation of the Vice-chancellor.</p> <p>He maintains a Registrar Office, assisted by the Deputy Registrar</p>

Table 2.2: Offices of the University

Office	Description
Examinations Section	<p>One of the most important offices of the university.</p> <p>The Controller of Examinations would need to ensure that the students obtain their academic results accurately and in time, any Degree or transcript going out.</p> <p>of this institute is genuine and is being issued to a person who fulfills all the legal requirements.</p> <p>Controller is assisted by a Deputy/Assistant Controller of Examinations.</p>
Office of the Proctor	<p>Proctor is the Member-Secretary of university Discipline Committee.</p> <p>He is assisted by Departmental Proctor for each academic department.</p>
Central Library	<p>Librarian is in charge of maintaining the quality and academic environment of UAP Central Library, assisted by Assistant Librarians.</p>
Finance and Accounts Office	<p>Consists of a Director/Deputy Director, Finance and Accounts Officers, Assistant Accounts Officers for smooth administration of university's financial transactions.</p>
Directorate of Students Welfare	<p>Set up to look into the day-to-day welfare of the students, including personal and psychological stress-related problems.</p> <p>The office is headed by Director of Students Welfare (DSW) with Assistant Director, Socio Counselor.</p>
Public Relations Section	<p>This section looks into preserving a positive public image of the university, and maintaining positive coverage in both print and electronic media.</p> <p>The section consists of Assistant Director Public Relations, Assistant Public Relations Officer.</p>
Purchase and Procurement Section	<p>Looks into the university's purchase and procurements approved by the budget for the fiscal year.</p> <p>Officers of the section consist of Director/Deputy Director, Purchase and Procurement Officers.</p>
IT Section	<p>Entrusted with the overall IT management of the university, including its internet and email communications, website update and maintenance.</p> <p>The section officers include IT Manager, Web Administrator, Network Engineer.</p>

Medical Center	The university's Medical Center and its Medical Officers are responsible for taking care of the health of UAP students and other members of the university.
Engineering Office	Through the University Engineer, this office is responsible for all engineering construction and maintenance works of UAP City Campus.
Admission Office	<p>It is one of the most important offices of UAP and is in charge of both undergraduate and postgraduate admissions. Its responsibilities include putting up newspaper advertisements of UAP, talking to admission seekers, providing them necessary information, helping students to fill up admission forms, publishing Admission Test results and complete the admission process.</p> <p>The officers of this office include Assistant Registrar, Admission Officer, Assistant Administrative Officer.</p>

Table 2.3: Authorities of the University

Position	Description
Board of Trustees	Highest authority of the university which formulates policies, gives decisions and monitors implementation of the policies.
Syndicate	Executive body of the university, constituted by the Board of Trustees in accordance with the provisions of the Private University Act, 1992. It is authorized to make, amend and repeal regulations subject to the university ordinance. It consists of 11 Members of the Foundation and 4 representatives of the university. The Chairman of the Board of Trustees is the Chairman of the UAP Syndicate. Vice-Chancellor is an ex-officio member and Co-Chairman of the Syndicate.
Academic Council	It is the supreme academic body of the university. It consists of the Vice-Chancellor, the Pro Vice-chancellor, the Professors, the Deans of Schools, the Heads of the Departments, three professors of other universities and two persons from research bodies to be nominated by the Syndicate, two associate professors and one assistant professor of the University other than the Heads of the Departments to be nominated by the Vice-chancellor.
Schools of Studies	Currently UAP has seven schools comprising related disciplines and fields of study namely School of Humanities and Social Sciences, School of Business, School of Sciences, School of Environmental Sciences & Design, School of Engineering, School of Medicine and School of Law. In each school of study there is a committee of courses which is responsible for preparation of courses and syllabi and such other work as may be assigned to it by the school, the Academic Council or the university statutes.
Committees of Courses and Studies	<p>It is constituted by the Head of the department (Chairman of the Committee), the teachers of the department, two teachers of the related departments (nominated by the Dean of the school/Head of the department), two experts on the subject from other universities or organizations (nominated by the Dean of the school/Head of the department).</p> <p>If a subject teaching department does not exist in the university, the committee is constituted by the Dean of the school/Head of the department and five teachers of the subject from other universities,</p>

	colleges or organizations nominated by the Dean of the school/ Head of the department. The nominated members of the committee hold office for a term of two years.
Finance Committee	The Finance Committee consists of Members of the Foundation to be nominated by the Board of Trustees, the Treasurer of the university and representatives of the Vice-chancellor. The committee is responsible for formulating financial and accounting guidelines and supervises & monitors all matters relating to finance.
Selection Boards	UAP has two selection boards. The Selection Board for Faculty positions is constituted by Vice-chancellor/ Pro-Vice-chancellor (Chairman), Treasurer, three members of the Foundation, two relevant experts, Dean of the school concerned and/or, departmental head (or equivalent). While the Selection Board for positions of Officers/ Staff is constituted by Vice-chancellor/ Pro Vice-chancellor (Chairman), Treasurer, Registrar, one member of the Foundation (nominated by the Syndicate). Appointment to Senior Management Positions and periodical determination of their pay and other personnel matters are, however, dealt with by the Board of Trustees.

2.1.5 Academic Calendar and Results

UAP (and its Department of CE) has maintained its academic calendars for days, weeks, months, semesters, for over twenty years, overcoming possible obstacles like countrywide political impasse, natural disasters, uncertainties and setbacks in the dynamics of the university as well as the department. From the semester classes to academic holidays, semester breaks to study breaks, class schedule to class tests, lecture plans to thesis presentations, midterm examinations to final examinations, UAP can really be proud of adhering to its Academic Calendar. For the record, Table 2.4 shows a few dates in UAP's Academic Calendar of Fall 2017 that have been completed as per schedule, based on which the dates of upcoming events are also expected to be maintained on time.

Table 2.4: Events in the Academic Calendar of Fall 2017

Completed Events of Fall 2017	Upcoming Events of Fall 2017
Students meet Advisor: 15 October 17	Preparatory leave: 4~10 February 18
Registration week: 8~12 October 17	Semester Final Exams: 11~24 February 18
Orientation for 1st Year 1st Semester: 14 October 17	Publishing of results: 6 March 18
Classes start for Fall 2017: 15 October 17	Repeat Exams (RE): 12~15 March 18

Declaration of merit- based waiver list: 23 Oct 17	Publishing of Results after RE: 18 March 18
Last date of Application for VC's Special waiver: 24 Oct 17	
Mid Semester Exams: 3~9 Dec 17	
Publishing of Mid semester Results: 17 December 17	

Standard 1-4: The institution/program offering entity must review and ratify the policies and procedures periodically with an objective of further improvement

2.1.6 Periodic Review and Ratification of Policies

UAP has dedicated itself to providing quality education, encouraging each academic department, faculty, staff and student to a strong commitment to excellence. The university promises to give its utmost effort to face the challenge of the twenty first century. It is committed to continue and improve upon the sincere service, innovative ideas and determined effort to produce quality graduates whose scholarly achievements and strong leadership will make it an institution to be proud of. The university believes that the only ways to do it is to continuously review and ratify its policies and procedure, not only to make it up-to-date with the modern practices, but also with the requirements of the future.

The organogram of UAP administration was outlined earlier, but its academic system is also designed in such a way. The Committee of Courses and Curricula in each school of study prepares course/s and contents, evaluation system, recommends modification in curriculum, syllabus, policies, etc. and sends the proposal to the Registrar Office for forwarding to the Academic Council. Before forwarding to the Academic Council, the proposals should be presented to the Academic Monitoring and Coordination Committee (AMCC). The AMCC, headed by Vice-chancellor and comprising the Pro Vice-Chancellor, Registrar, Heads of Departments, Deans of Schools, holds regular meetings (at least once every month) for apprising all academic issues and

undertaking essential decisions.

It is then presented to the Syndicate for recommendation and applied to UGC for approval.

Standard 1-5: Code of conduct for the students and code of conduct for staff members and disciplinary rules and regulations are well defined and well communicated

2.1.7 Code of Conduct

UAP 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.

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.

UAP has adopted a ‘No Tolerance Policy’ to on-campus misbehavior and has dealt particularly severe punishments for ‘Cyber Crime’, as well as misbehavior with female students (‘Eve Teasing’) and new students (‘Ragging’).

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.

The information booklet provided to the students by the Registrar Office on Orientation Day explicitly narrates the obligatory discipline and disciplinary measures during examination, requisite benchmark of etiquettes at the campus and the UAP rules and regulations.

2.1.8 Discipline Committee

The Discipline Committee of UAP (consisting of the Vice-Chancellor, Pro Vice-Chancellor, Treasurer, Registrar, Proctor, and one member of the Syndicate, as shown in Table 2.5) holds the supreme authority to supervise and control the discipline and conduct or recommend action/s necessary to comply with the disciplinary rules and regulations.

Table 2.5: Members of the Discipline Committee of UAP

Member BOT	Chairman	Nominated by the BOT
Vice Chancellor	Member	
Pro-Vice Chancellor	Member	
Syndicate Member	Member	Nominated by the Syndicate
Registrar	Member	
Proctor	Member-Secretary	

The Proctor, who is a member of Discipline Committee, holds the responsibility to ensure discipline, good conduct and behavior of students during office hours. Any teacher or officer of UAP within the power vested upon him/her has the authority to take action/s as he deems necessary for maintaining the discipline. Every such action, however, must be reported to the Proctor.

UAP holds the right to remove or dismiss any faculty/staff on grounds of neglect of duty, misconduct, moral turpitude and inefficiency. In such case an inquiry committee is required to be constituted by the Syndicate for carrying out inquiry into the charges brought against the alleged faculty/staff.

The rules, appropriate code of conduct and requisite discipline are also communicated during the orientation program arranged for newly recruited faculty members. In addition to statements of rules and regulations, effective teaching method, learning style, quest for quality in education, expected discipline and essence of code of conduct are illustrated extensively at the orientation workshop.

Standard 1-6: The University must have a well-designed website, which will contain all sorts of information of the university and programs with easy access to the stakeholders

2.1.9 Websites of UAP and Department of CE

UAP maintains a website (<http://www.uap-bd.edu>) with updated information useful/necessary for its students, faculty, staff and alumni. The information presented in UAP's website is summarized in Table 2.6.

It demonstrates a large reserve of necessary information like the university's vision, mission, profile, administration, admission, contact, alumni, academic information; e.g. different schools and respective programs, course curricula-syllabus, class schedule, grading system, faculty profiles, resources and academic calendars of different programs and departments.

As represented in the table, the UAP website also contains the admission requirements for various schools and departments, admission test schedule, sample questions from past examinations, admission procedures, fees and waiver at UAP, and all the salient admission information features in different programs.

The website also makes available publications by faculties and provides links to some reputed journals. It has Automation login options for UAP members, leading to semester results, transcripts, advising options and different application forms required by the students. The website disseminates updated information, announcements, news, events, UAP media releases and

newsletters.

Table 2.6: Features of UAP-Website

Items	Features
Home	Past Pictures Admission Notice Announcements News & Events Examination Section Services Automation, Resources, Vacancies, IQAC, Journals, Media Release, News Letter, Advertisement/Tender
About	UAP Vision & Mission UAP Profile UAP Foundation
Admission	Admission Information Tuition Fee & Waiver Admission Requirements Apply Online Admission Test Schedule Admission Results
Academic	School of Engineering School of Business School of Environment Sciences & Design School of Humanities and Social Science School of Medicine and Science School of Law
Authorities	Board of Trustees Member Syndicate Member Academic Council Finance Committee Selection Board Discipline Committee Administration
Contact	Address, PABX, FAX, Email Address of Administration, Departments, Offices
Alumni	Alumni Registration, Registered Alumni

The CE Departmental website (<http://www.uap-bd.edu/ce/index.html>), available as an extension of the UAP-website, highlights the departmental features as shown in Table 2.7, particularly the admission requirements, BAETE Accreditation, semester exam question archive, course descriptions, faculty profiles, departmental resources, various academic (research, thesis, seminars) and co-curricular activities of the department.

In addition, the CE Department also maintains a separate and very popular facebook page (<https://www.facebook.com/uapcenb/>) primarily to post different departmental/UAP notices for its students, but is frequently visited/used by students from other departments as well.

Table 2.7: Features of UAP-CE Website

Items	Features
Home (Department of Civil Engineering)	Admission, Message from Head , BAETE Accreditation, Testing and Consultancy, Question archive
Course (Brief Description of CE Course System)	CE Course System,, Registration and Payment, Course Requirement, Outline of Courses, Fees and Withdrawal
Faculty (Teachers)	Full Time Faculty, Faculty from BSH, Visiting Faculty, Supporting Faculty, Supporting Staff
Resource (Departmental Resources)	Class Room Facility, Laboratory Facility, Library & Study Room, Common Room, Canteen
Academic (Academic Activities)	Research and Publications, Project & Thesis, Seminars & Workshops, Bulletins & Journals, Collaborations
Co-Curricular (Students Co-Curricular Activities)	Forums and Clubs, Publications, Tours and Activities, Participations, Alumni Association

2.2 Academic Documentation

Standard 1-7: A student handbook containing mission, objectives, graduate profile academic calendar, rules, regulations and program related information in details

2.2.1 Student Handbook and CE Prospectus

As mentioned, an Information Booklet is provided by the Registrar Office on Orientation Day to all the UAP students containing all the pertinent/useful information during his/her stay in the university. The booklet contains comprehensive information about the university, its Board of Trustees, administration, undergraduate and postgraduate programs, registration procedure, campus resources (library, e-journal, labs, canteen, medical center, co-curricular activities, admission related information, Collaboration/academic affiliation with foreign universities, professional affiliation, discipline during examination, rules for repeat examination, waiver policy, post admission withdrawal and locations of different departments/sections.

In addition, the Department of CE has been bringing out a separate publication (CE Prospectus) typically for two years since September 2000, for distribution among its students, faculty members, admission seekers and others affiliated to the department. The focus of the 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, status of the alumni working/studying in Bangladesh and outside are presented in the prospectus.

Standard 1-8: Documentation at all levels of university administration from central to individual faculty members

2.2.2 Maintenance of Documents

The university maintains all its documents most carefully and diligently. The minutes of meetings, decisions of different committees, including the minutes of the meetings of the Board of Trustees (BOT), Syndicate, Finance Committee, Purchase and Procurement Committee are maintained by Board Secretary and approved by the convener/s. The minutes of the meetings of Academic Council, AMCC, Selection Committee are prepared by Registrar Office and endorsed by the Vice-chancellor. Following the decisions of the meetings, Office Orders are issued by the Registrar Office.

The registration of the students and publication of results at UAP are carried out by automation software ORBUND. The Office of Registrar and Controller of Exams, with the assistance of IT section generate and preserve the information related to registration and publication of results.

The departments and its faculty members maintain the assessment records of the students, faculties and staff independently and provide or forward to the concerned authority as per requirements. The minutes of departmental meetings are prepared by a faculty and approved by the Head of the Department.

The course instructors are to submit course plans (elaborating course contents, evaluation system, course objectives, learning outcomes), grade-sheets, scripts of different performance levels (i.e. best, moderate, poor) and other relevant documents of the respective courses to the Self-Assessment Committee at the end of the semester for archiving course files.

Standard 1-9: In order to be responsive to the emerging changes and needs universities and the academic units of the university must have effective institutional leadership and sufficient autonomy

2.2.3 Autonomy and Institutional Leadership

As mentioned in the university's organogram and Campus Administration (summarized in Table 2.1, 2.2 and 2.3), UAP has a well-defined organizational structure and a system of organizational units with distinct responsibilities. Credit must be given to the Government of Bangladesh and Chancellor of the universities (Honorable President of Bangladesh) to allow UAP (and all universities in Bangladesh) to be sufficiently autonomous to grow up as a center of freedom of expression and abode of dreams, with liberty of thoughts.

In Professor Dr. Jamilur Reza Choudhry, UAP has a Vice-chancellor of the highest caliber, who keeps abreast with state of the art technology and is fully aware of the emerging changes in the ever-changing world of knowledge. Being a renowned leader at diverse intellectual domains (e.g. engineering design, construction, environment and disaster management, information technology, energy, city planning, academic administration, government service, experience at national and international domains), he uses this autonomy and provide the institutional leadership.

As also mentioned, the university's chain of command flows from the Board of Trustees and Syndicate to the Academic Council, which is the supreme academic body of the university. However, almost all its decisions are actually initiated at the different departments, consisting of qualified faculty members and dedicated working staff. They in turn work tirelessly to uphold the interest of the students. Therefore, the 'chain of command' of UAP and particularly its Department of CE is effectively a 'chain of service' centered around its students.

2.3 Internal Quality Assurance Process

Standard 1-10: The academic leaders and the faculty members must be judicious and guided by the values of quality assurance

2.3.1 Academic Leaders and Faculty Members

UAP is immensely proud and considers itself very fortunate to have a Vice-chancellor of the highest caliber to lead the university in the path of excellence with a vision commensurate with a person of his vast knowledge, extraordinary stature and towering personality. As the academic leader of the university, the Vice-chancellor has the authority to exercise general control over the teachers and maintain academic excellence in the university in accordance with the university statutes; upholding the motto ‘Knowledge is Power’ with its firm conviction to be ‘Committed to Excellence’.

UAP has always laid utmost emphasis in selecting its faculty members with academic excellence, knowledge in specific area as well as general knowledge, communication skills, research aptitude, integrity and strength of character. The Department of Civil engineering has also attracted qualified faculty members, and currently has eleven Ph.D. holders, six with M.Sc. in CE (from outside Bangladesh), and six others with exemplary academic records at undergraduate level.

2.3.2 Developing OBE, Teaching Skills and IQAC

In order to highlight the role of teachers in creating effective learning environments and developing tools for Outcome Based Education (OBE), UAP has initiated a ten-week long faculty development program *Improving Learning and Teaching Skills* (ILTS), led by the UAP Pro Vice-chancellor as a resource person and chief coordinator.

With a view to further institutionalizing quality culture, UAP has started its Institutional Quality Assurance Cell (IQAC) with the support from UGC and World Bank. IQAC has put in unremitting

effort by conducting and arranging series of workshops and seminars through Self-Assessment Committee (SAC) of each department of UAP (including Dept. of CE, whose SAC comprises three highly qualified faculty members, with PhDs in CE and well-trained in OBE).

A strong Quality Assurance Committee (QAC), headed by the Vice-chancellor as Chairperson and comprised of distinguished and dedicated members of UAP, is actively engaged in enhancing and ensuring academic quality at UAP.

2.4 Peer Observation and Feedback Process

Standard 1-11: Management of stakeholder's feedback to get useful insights for the purpose of improvement in all aspects of teaching, learning and research

2.4.1 Faculty Performance and Students' Feedback

UAP designs its courses and curricula to prepare its students to pursue higher academic and professional goals with a solid academic foundation. For this purpose, the university responds to the ever-changing needs of stakeholders with utmost priority. Students, the most important stakeholders, evaluate the respective course teachers at the end of the semester with explicit views regarding their perception of instructors' knowledge and preparation, as well as their regularity, punctuality, fairness, cooperative attitude, organization and presentation of the course materials. For the status of their service, including promotion, salary increment and leave application, faculty members are assessed on their teaching and non-teaching performances. Table 2.8 lists the items in UAP's standard assessment form for instructors (twelve items) and courses (three items).

Table 2.8: Items in Faculty Assessment Form

Assessment of the Instructor						
Serial	Item	Grades (1~5)				
1	Instructor was adequately prepared for the class	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
2	Instructor was able to communicate effectively in the class					
3	Instructor was available and helpful beyond class time					
4	Instructor made effective use of teaching aids					
5	Instructor was able to hold attention of the students throughout the class					
6	The exams, quizzes and assignments covered the contents specified in the syllabus					
7	Instructor motivated me to think more critically and simulated intellectual curiosity					
8	Instructor encouraged participation, discussion and question from the students					
9	Instructor was fair in evaluating and grading the students					
10	Instructor maintained regular class schedule					
11	Feedbacks given on the assignments were effective					
12	The material contained in the syllabus for the course were actually covered					
Assessment of the Course						
13	The course provided an opportunity to develop relevant learning and competence	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
14	The textbook/reading materials used in the course were appropriate					
15	Total time allocated for the course was appropriate to cover all contents					

2.4.2 Program Accreditations and UAP Alumni

As mentioned before, paramount importance has been given to maintain a high scholastic standard and accredit UAP's academic programs by relevant accreditation bodies. In fact, the Pharmacy and Civil Engineering departments of UAP were the first among private universities to earn such accreditations in respective areas. All these endeavors had the objective to make it more convenient for the graduates in the professional arena. In fact, the current effort towards IQAC and Washington Accord accreditation also has the students' future utmost in the mind.

More than thirty batches have graduated from the university since its inception in 1996. Despite

the persisting overall ‘Negative image’ of Private Universities within our society, most graduates of UAP have successfully accommodated themselves in different well known organizations, while some of them have established their own business firms. Besides, many graduates have been employed in foreign countries like USA, Canada, Australia, UK, Singapore, Malaysia, Qatar and UAE. Several UAP graduates are doing post graduate studies at UAP, at BUET, the premier engineering university of the country, at Dhaka University and several other public universities within Bangladesh. UAP has also encouraged its graduates to pursue higher education at reputed institutions abroad. Many of its graduates have also gone for higher studies in foreign countries like USA, Canada, UK, Germany, Italy, France, Sweden, Japan, South Africa, Thailand, Belgium etc.

The university believes that students are its ultimate torchbearers and maintains a cordial relationship with its graduates. While encouraging the graduates to reach the sky, it always keeps the doors open for them to be home once more. In fact, several UAP graduates have returned as faculty members after completing higher studies abroad. The *CE Alumni Association* has been established to nurture and carry forward this relationship even further in the years to come.

In addition to arranging internship placement of students at reputed national and multinational organizations, regular arrangements are made by DSW (Directorate of Students Welfare) with the help of CDCs (Career Development Club) of different departments to organize Career Festival, Campus Recruitment Program, Lecture Series by Luminary Professionals, Signing of MOUs, where employers grace the events and illustrate the essence and experience of the rigors of working in a corporate environment and students get an opportunity to display their employability skills before the experienced managers and the executives of the renowned company.

In addition, each department of UAP has several clubs to nurture the students’ need to showcase

their multi-dimensional talents through various cultural and extra-curricular activities.

2.5 Survey Results

The feedback regarding the governance practices have been obtained from all the stakeholders. 200 students, 114 alumni and 22 faculty members participated in the survey. Figure 2.1 shows the survey responses of all the stakeholders together on governance in order to obtain a comprehensive and comparative assessment.

The single category (bar) of responses are relevant to the questions that were directed towards only the displayed category of the stakeholders.

The three survey-groups alumni, students and academic staff of the CE department were asked to assess the statement “The entity provides comprehensive guidelines in advance by means of a brochure/handbook”. Although all the groups ‘agree’ with the statement, the alumni approved of it the least while the academics ‘agreed’ to it most positively. The reason might be that although the CE departmental prospectus has been published consistently since 2000, the UAP brochure/handbook has been published somewhat intermittently over the years. Therefore, some members of the alumni might have missed the guidelines when they were students. The academics, being directly involved in preparing the guidelines/handbook, were obviously more inclined to support the statement. Evidently, that majority of alumni and students had agreed to the statement.

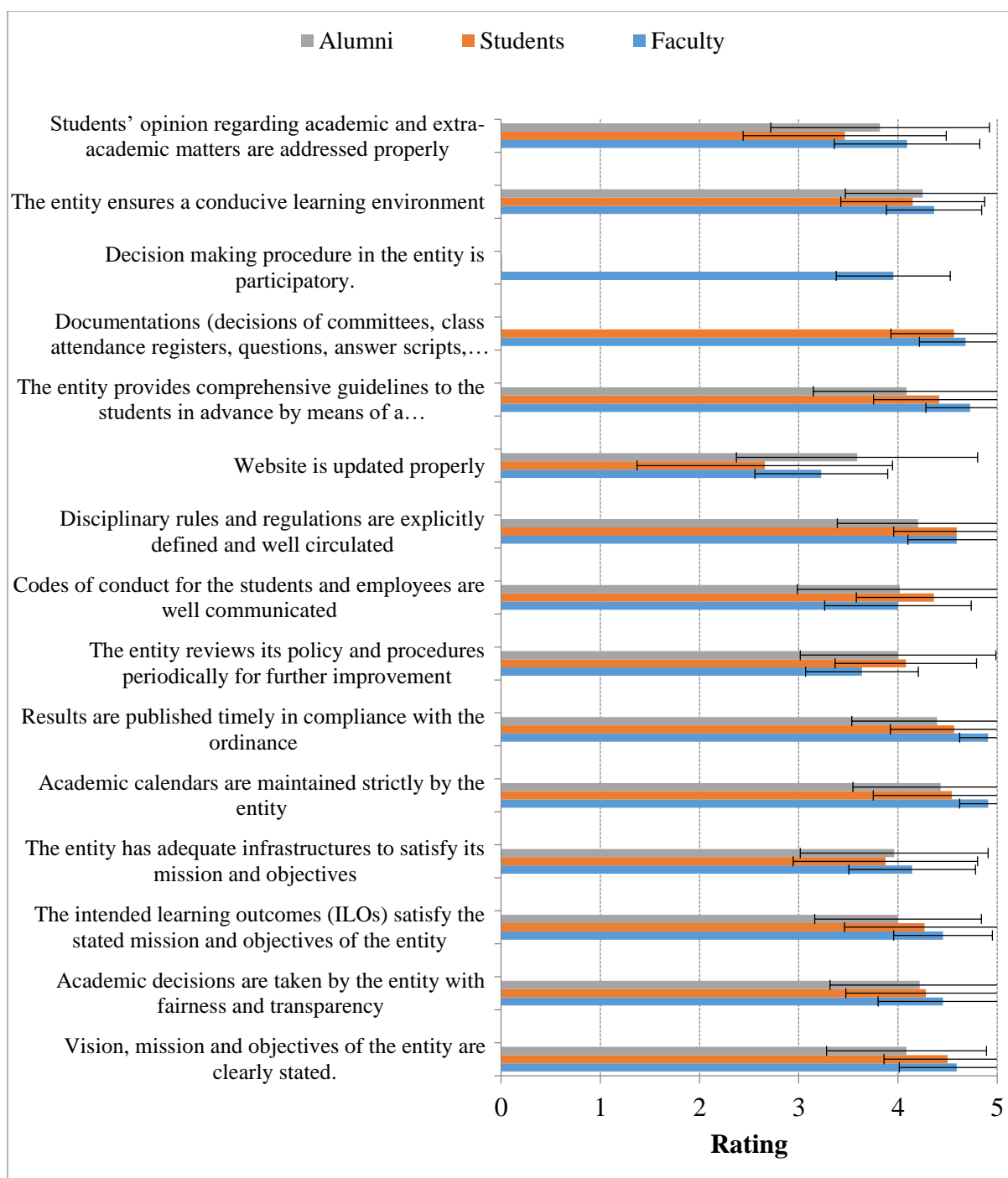


Figure 2.1: Survey Responses (Mean± standard deviation) from students, alumni and faculty members on Governance

All the groups concurred regarding the clarity of the vision, missions and objectives' statement. While the students and faculty members gave particularly high scores, the alumni were less

positive in their response perhaps because some of them were at UAP when the university did not make much effort to communicate its vision, mission and objectives among its students. All the groups concurred regarding fairness and transparency in decisions. The faculty members were slightly more in agreement with the statement perhaps because they are partly responsible for the academic decisions and find it more fair and transparent. However, the alumni and students also clearly ‘agreed’ with the statement, which is quite gratifying because ‘fairness’ and ‘transparency’ are two of the most important features UAP (or any entity) would like to be proud of.

Intended learning outcomes (ILOs) are certified for all the courses with all the groups being in ‘Agreement’ with the statement that those satisfy the missions and objectives. All the groups almost concurred that there is adequate infrastructure to satisfy the mission and objectives, despite with less enthusiasm than to the previous statements regarding fairness, transparency and ILO’s. Academics agreed more perhaps because they are more acquainted with the system, followed by the alumni (who went through four years at UAP) and the students (who may be less aware of UAP’s organogram and how decisions are made at various levels). The well-designed infrastructure, clearly defined responsibilities of UAP could be credited for the ‘affirmative’ scores to this case, but there is definite room for improvement. But the statement “Academic calendars are maintained strictly by the entity” was more readily agreed upon by the three survey-groups. The faculty members seem to be almost unanimous in ‘strongly agreeing’ to the statement, while the alumni and students also gave it scores between ‘agreeing’ and ‘strongly agreeing’ to the statement. The academics are understandably more in agreement, since they work personally and in tandem to ensure a successful implementation of the academic calendar, but the students and alumni also rated this feature of the university very positively. Thus, overall response from the stakeholders was very favorable.

In response to the third question, “Results are published timely in compliance with the ordinance”, the three groups’ scores showed strong agreement. Since publishing results is an essential trait of maintaining the Academic Calendar, positive response to the Academic Calendar is also manifest in this response. The faculty members are again almost unanimous in their strong support of the statement (as they agree to ensure it), but the alumni and students also agree readily to it.

While the alumni and students definitely agreed that the policy and procedures are reviewed periodically, the academic staff did not quite do so but were close to becoming affirmative. The primary reason could be that the faculties perhaps expected more prompt and ready implementation of some ideas and proposals put forward (e.g. more pro-active role from the university to persuade UGC in adopting optional courses proposed, and an earlier visit by the BAETE). However, the stakeholders were in favor of the statement overall. It is evident from the results that all groups (particularly the students) were assenting to the statement that the codes of conduct are well communicated to the students and employees. However, assessment of the academics seemed to be the least affirmative among the three. This may be because some faculty members would like UAP to be more thorough in disseminating the Code of conduct the way it has taken initiatives to update the rules and emphasize Object Based Education (OBE) through a rigorous training course.

The mean scores of stakeholders’ responses on the disciplinary rules and regulations imply that all three groups are adequately informed of the disciplinary rules and regulations.

While evaluating the statement if the website is updated properly or not, the CE students chose a position against the statement as inferred from their response, while the alumni rated it the highest. The academic staff/faculties remained almost ‘undecided’ in their opinion. All three stakeholders are obviously not very impressed by the UAP/CE websites or frequency/quality of their updates.

The relatively higher score from the alumni indicates that the UAP website has improved over the years (i.e. from the time the alumni were students) and perhaps presents better the features the alumni are more interested in; i.e. the ‘permanent’ features of the website (e.g. administration, faculty, campus, laboratories), while passing information and ‘news’ like deadlines, examination dates, tuition fees, etc are less so. The live registration option of the UAP-Alumni may also have a positive impact in the affirmative response. Overall, the results pointed to an ‘indecisive’ or mixed assessment and indicates an avenue UAP as well as the Department of CE should focus on more fervently, preferably in consultation with the stakeholders.

From the results, students and faculty members are shown to evaluate the issue of maintenance of documentation very positively. The similarity between the two scores also shows the consistency of the observations and also of the survey process.

Since the academic staff/faculties avail of the decision making procedures, they feel that the decision making is participatory. However, the CE faculty members feel that there is some room for wider participation in the overall mechanics of UAP’s decision making process. The recent procrastination of BAETE visit to the department as well as delay in implementing the much coveted optional courses seemed disappointing to the CE faculty members. Moreover, although most of them are involved in various committees, work groups and clubs of the university, they perhaps feel UAP’s decision making process could be more participatory if faculty members are allowed more opinion and time in larger forums.

Almost all groups agreed to the conducive learning environment while the academic staff was unreservedly in favor of the same. The basis of their judgments could be established on the fact that all groups are consistently witnessing the thriving of quality culture and department’s

relentless effort in ensuring an effective learning environment. The department has always gone out of the way to encourage excellence, ensure discipline, provide comfortable classrooms, laboratories and reading space/library. The faculty members and non-academic staff are also qualified, honest, dedicated, student-friendly and cooperative. However, the CE department feels that there is still room for improvement in providing the students with more conducive learning environment.

Keeping that in mind, the three survey-groups (of CE) were asked to assess the statement “Students’ opinion regarding academic and extra-academic matters are addressed properly”, the scores imply that the academic staffs were convinced of the statement and the alumni had almost completely agreed but the students graded it the lowest (between ‘Undecided’ and ‘Agreed’). This goes to show that the students feel their opinions deserve more attention and importance which the university is not quite providing. The non-functioning Auditorium, lack of Common Room facilities and ‘hangout places’ could be prime reasons for the students’ lukewarm response. Overall, it signifies that the stakeholders are inclined to agree with the statement but are not convinced enough, so that the university should assign more importance to the students’ opinion in these matters.

CHAPTER 3

Curriculum Design and Review

3.1 Curriculum Structure

The CE department offers B.Sc. Engineering degree in a bi-semester system consisting of 14 calendar weeks of instructional time. The course structure of B.Sc. Civil engineering degree has been designed to prepare graduates to meet the program educational objectives. Table 3.1 gives the item-wise distribution of the credit hours for the B.Sc. CE curriculum.

Table 3.1: Course Structure of B.Sc. Civil engineering program

Type of Course	Credit Hour		
	Theoretical	Sessional	Total
Basic Sciences	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

At present, one semester credit hour (theoretical course) is awarded for 700 minutes of instructional period and the degree is awarded at the completion of 161 credit hours.

Tables 3.2 - 3.4 detail the courses of cognitive domain from basic and other engineering, civil engineering core and technical electives, respectively.

Table 3.2: Courses of cognitive domain: Basic and other engineering courses

Category	Course Title	Course Code	Credit Hrs.
Basic Courses			
Language	English I: Oral and Written Skills	HSS 101	3
	English II: Language and Composition Skill	HSS 103	3
General Education	Bangladesh Studies (society and Culture)	HSS 211(a)	2
	Bangladesh Studies (History of Bengal)	HSS 211(b)	2
	Principles of Economics	ECN 201	2
	Principles of Accounting	ACN301	2
	Principles of Management	IMG 301	2
Basic Sciences	Physics	PHY 101	3
	Chemistry	CHEM 111	3
Mathematics	Mathematics I	MTH 101	3
	Mathematics II	MTH 103	3
	Mathematics III	MTH 201	3
	Mathematics IV	MTH 203	3
Total Credit Hrs. of Basic Courses			34
Other Engineering Courses			
Computer Science and Engineering	Numerical Analysis and Computer Programming	CE 205	3
Electrical Engineering	Basic Electrical Engineering	ECE 201	3
Total Credit Hrs. of Other Engineering Courses			6

Table 3.3: Courses of cognitive domain: Civil engineering core courses

Civil Engineering Core			
Basic	Introduction to Civil and Environmental Engineering	CE 107	2
	Surveying	CE 105	4
	Engineering Mechanics I	CE 101	3
	Engineering Mechanics II	CE 103	3
	Engineering Materials	CE 201	4
	Engineering Geology and geomorphology	CE 203	3
	Fluid Mechanics	CE 221	3
	Mechanics of Solids I	CE 211	3
	Mechanics of Solids II	CE 213	3
Total Cr. Hrs of CE Basic Courses			28
Structural Engineering	Structural Engineering I	CE 311	3
	Structural Engineering II	CE 313	3
	Design of Concrete Structures I	CE 315	3
	Design of Concrete Structures II	CE 317	3
	Structural Engineering III	CE 411	3
Total Cr. Hrs of Struct. Engg. Courses			15
Environmental Engineering	Environmental Engineering I (Water Supply Engg.)	CE 331	3
	Environmental Engineering II (Waste Water Engg.)	CE 333	3
Total Cr. Hrs of Geotech. Engg. Courses			6
Geotechnical Engineering	Geotechnical Engineering I (Soil Mechanics)	CE 341	3
	Geotechnical Engineering II (Foundation Engg.)	CE 441	3
Total Cr. Hrs of Env. Engg. Courses			6
Transportation Engineering	Transportation Engineering I	CE 351	3
	Transportation Engineering II	CE 451	3
Total Cr. Hrs of Transp. Engg. Courses			6
Water Resources Engineering	Open Channel Flow	CE 361	3
	Engineering Hydrology	CE 363	3
	Irrigation and Flood Control	CE 461	3
Total Cr. Hrs of WRE Courses			9
Civil Engineering Practice	Project planning and Management	CE 401	3
	Professional Practices and Communication	CE 403	2
Total Cr. Hrs of CE Practice Courses			5

Table 3.4: Courses of cognitive domain: Technical elective civil engineering courses

Technical Electives			
Options of Electives from Structural Division	Structural Engineering IV: Theory of Elasticity and Elastic Instability of Structures	CE 413	2 credit Hrs. each; Five courses for each student
	Structural Engineering V: Prestressed Concrete	CE 415	
	Structural Engineering VI: Design of Steel Structures	CE 417	
	Structural Engineering VII: Introduction to Finite Element Method	CE 419	
	Structural Engineering VIII: Structural Dynamics and Earthquake Engineering	CE 421	
	Structural Engineering IX: Earthquake Resistant Design and Retrofitting	CE 423	
	Structural Engineering X: Concrete Technology	CE 425	
Options of Electives from Environmental Engineering	Environmental Engineering III: Solid Waste Management	CE 431	
	Environmental Engineering IV: Environmental Pollution and Its Control	CE 433	
	Environmental Engineering V: Environment and Development Projects	CE 435	
	Environmental Engineering VI: Environmental Management	CE 437	
	Environmental Engineering VII: Environmental Impact Assessment	CE 439	
	Environmental Engineering VIII	CE 531	
Total Cr. Hrs of Elective /Optional Courses			10

Tables 3.5-3.6 detail the courses of psychomotor and affective domains from basic sciences and other engineering, and civil engineering disciplines respectively.

Table 3.5: Courses of psychomotor and affective domains: Basic science and other engineering

Category	Course Title	Course Code	Credit Hrs.
Basic Science			
Physics & Chemistry	Physics Lab	PHY 102	1.5
	Chemistry Lab	CHEM 111	1.5
Other Engineering			
Computer Science and Engineering	Computer Skills	CSE 100	1.5
	Computer Programming Lab	CE 206	1.5
Electrical Engineering	Basic Electrical Engg. Lab	ECE 202	1.5
Total			7.5

Table 3.6: Courses of psychomotor and affective domains: Civil Engineering core and electives

Civil Engineering Core			
Basic	Civil Engineering Drawing I	CE 102	1.5
	Civil Engineering Drawing II	CE 104	1.5
Structural Engineering	Structural Engineering Sessional I	CE 312	1.5
	Concrete Structures Design Sessional	CE 316	1.5
	Structural Engineering Sessional II	CE 412	1.5
	Computer Applications in Civil & Env. Engg.	CE 418	1.5
Environmental Engineering	Environmental Engineering Lab I	CE 332	1.5
Geotechnical Engineering	Geotechnical Engineering Lab	CE 342	1.5
Transportation Engineering	Transportation Engineering Lab	CE 354	1.5
Water Resource Engineering	Hydraulic Lab	CE 222	1.5
Other	Practical Surveying	CE 106	1.5
	Details of Construction	CE 200	1.5
	Engineering Materials Lab	CE 202	1.5
	Quantity Surveying	CE 204	1.5
	Structural Mechanics and Materials Lab	CE 212	1.5
Technical Electives			
Structural Division	Structural Engineering Lab III	CE 416	1.5
Environmental Engineering Division	Environmental Engineering Lab II	CE 432	
Project/Thesis			
Project/Thesis	Project/Thesis	CE 400	4.5
Total			28.5

In the present curriculum, about 78% credit hours are allocated for cognitive domain courses and 22% for psychomotor and affective domains courses, as demonstrated in Table 3.7. The students are evidently exposed towards an intensive and heavy curriculum at present which needs to be shifted a little more towards practical oriented content which would essentially develop the psychomotor and affective domains.

Table 3.7: Proportion of cognitive, psychomotor and affective domain courses

Category	No of Courses	Credit Hours*	Converted Credit Hours**	% of Total Credit Hours
Cognitive Domain	45	125	97.2	77.6
Psychomotor & Affective Domains	22	36	28.0	22.4
Total	67	161	125.2	100

* As per UAP CE practice, 50 minutes lecture per week for 1 credit hr theory course; 14 calendar weeks of instructional time

** As per UGC guideline, 60 minutes lecture per week for 1 credit hr theory course; 15 calendar weeks of instructional time

3.2 Curriculum Review Process

Standard 2-1: University must have a well-defined procedure to design and review the curriculum of academic programs periodically.

UAP has a systematic and well-defined process that allows for periodic review of various academic programs. For smooth operation, there is a course and curriculum committee in each of its eight degree awarding departments. The committee is composed of the Head of the department, the full time faculty members and two external subject-matter experts from other institutions. The external members are nominated by the Dean of the school or the Head of the department. Once the department goes through a curriculum review through its committee and proposes any changes to its existing curriculum, it has to present the propositions to the Academic Monitoring and Coordination Committee (AMCC). The AMCC meets every month and discusses any issues

pertaining to academic matters, in general. Once the proposed curriculum is agreed upon by the AMCC, it is forwarded to the Academic Council (AC) for further perusal. After it is approved by AC, it is placed before the University Syndicate. Upon approval of the Syndicate, the proposed and revised curriculum is sent to UGC for further review and final ratification.

Standard 2-2: There must be a program specific body or committee with representation from the major stakeholders to take care of design and redesign of curriculum.

In the Department of Civil Engineering, there is a course and curriculum committee which is composed of the Head of the Department, an external subject-matter expert and the senior full-time faculty members (at and above the level of Assistant Professors) having expertise in different divisions of Civil Engineering. The Head of the Department acts as the convener of the committee that meets once every year for the purpose of curriculum review. Modifications in the curriculum has been proposed in the past through assessment of the need and an account of such modification is provided in appendix I. The appendix details the outcomes of the meeting held back in 2008 along with the suggested modifications in course content, the list of the proposed courses etc.

Since the beginning of the year 2017, the committee, in close association with the Departmental Self-Assessment Committee has been initiating outcome based education (OBE) through implementing the addition of the program outcomes (POs) and learning outcomes (LOs) as explicit statements in the lesson plans or course outlines of all the courses.

3.3 Need Assessment

The present Curriculum of B.Sc. CE program has been assessed with respect to the guideline by UGC for B.Sc. CE program curriculum.

Table 3.8 presents the comparison of cognitive domain courses between UAP CE curriculum and UGC guideline for B.Sc. CE program. Table 3.9 presents the comparison of psychomotor and

affective domains' courses between UAP CE curriculum and UGC guideline for B.Sc. CE program. The comparison was done in terms of both no of courses and credit hours.

Table 3.8: Comparison between UAP CE curriculum and UGC guideline for B.Sc. CE program: Cognitive Domain

Type of Course	No of Theory Courses (Cognitive)		Credit Hrs.	
	CE Dept., UAP	Min. by UGC	CE Dept., UAP	Min. by UGC
Language	2	2	6	6
General Education	5	5	10	15
Basic Sciences	2	3	6	9
Mathematics	4	4	12	12
Other Engineering	2	3	6	9
Civil Engineering	30	20	85	67
Total	45	37	125	118

Table 3.9: Comparison between UAP CE curriculum and UGC guideline for B.Sc. CE program: Psychomotor and Affective Domains

Type of Course	No of Lab/Sessional Courses		Credit Hrs.	
	CE Dept., UAP	UGC Guideline	CE Dept., UAP	UGC Guideline
Basic				
Language	0	1	0	1
Basic Science	2	2	3	2
Other Engineering	3	0	4.5	0
Civil Engineering				
Five major divisions	8	7	12	7
Basic Labs	2	1	3	1
Other Labs	5	7	7.5	7
Technical Electives	1	2	1.5	2
Project/Thesis	3	4	4.5	4
Total	21	24	36	24

3.4 Curriculum and Skill Mapping

Program Outcomes (POs) are defined in terms of knowledge, skills and attitude that students are expected to attain by the time they graduate. The courses in the CE curriculum have been mapped with program outcomes which is provided in appendix II. Program outcomes are based on the

graduate attributes that form a set of individually assessable outcomes indicative of the graduate's (in Engineering) potential in acquiring competence to practice at appropriate level. The twelve Program Outcomes (POs) along with their definitions/explanations are provided in table 3.10.

Table 3.10: Program Outcomes with their definitions/explanations

Number	Program Learning Outcomes	Definition/Explanation
PO 1	Engineering Knowledge	an ability to apply knowledge of mathematics, science, and engineering (Engineering knowledge)
PO 2	Problem Analysis	an ability to identify, formulate, and solve engineering problems
PO 3	Design/Development of solutions	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
PO 4	Investigation	an ability to design and conduct experiments, as well as to analyze and interpret data
PO 5	Modern Tool Usage	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
PO 6	The Engineer and Society	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context (The Engineer and Society)
PO 7	Environment and Sustainability	a knowledge of contemporary issues
PO 8	Ethics	an understanding of professional and ethical responsibility
PO 9	Individual and Team Work	an ability to function on multidisciplinary teams
PO 10	Communication	an ability to communicate effectively
PO 11	Project Management and Finance	Project Management and Finance
PO 12	Lifelong Learning	a recognition of the need for, and an ability to engage in life-long learning

3.5 Gaps in Curriculum: Adequacy to meet the needs

Based on the above analysis of the present curriculum, some gaps in curriculum are identified. The following courses should be included in the curriculum:

- Professional Ethics and Environmental Protection (Compulsory course in UGC guideline)
- Integrated Design Project
- Elective courses also from Geotechnical Engineering, Transportation Engineering and Water Resources Engineering
- One more elective sessional course

Recommendations that were collected through the survey from students, alumni, faculty and employers regarding the program and gaps in curriculum are listed below:

1. To adjust in the competitive market, presentation and communication skills should be improved
2. Real time case studies should be discussed thoroughly.
3. More field based activities are required for linking theory with practice.
4. Writing and presentation skills need to be improved.
5. Further improvement is required in the fields of mathematics, statistics, environmental and social issues, English (both oral and writing). Knowledge on quality control is required.
6. Students should have prior knowledge of engineering projects, minimum know-how of practical works and performance.
7. More practical Site/problem spot visits, more presentation and writing activities and knowledge on Professional Ethics are required.
8. Internship program is required.
9. Etabls must be improved. Updated versions of software should be ensured.

10. Different software should be practically exercised. Practical field work should be acknowledged.
11. Practical learning of various equipment and demonstration of various software are required.
12. Design and analytical software are required to solve problems.
13. Industrial attachment is required to be incorporated in the program.
14. International collaboration should be increased.
15. Larger laboratory space (Materials Lab and Strength of Materials Lab) is required.
16. More practical oriented courses are required to improve learning environment (practical surveying outside of University)
17. Fresh graduates are expected to have internship experience.
18. Students should be asked to submit a real-life project with solution individually at the end of every semester (for 3rd and 4th-year students, very short type, 10-15 pages). - Increase the numbers and Mandatory presentations in each course.

Recommendations from survey related to courses to be included are listed below:

1. Advanced Transportation Engineering, Transportation infrastructure
2. Software practices such as STAAD Pro, SAEF, SAP for design and analysis
3. Construction project management, tunnel construction, construction in deep sea
4. Plumbing related course, Earthquake Engineering related course
5. Building services, Composite Structure design, Wind Engineering
6. Steel Structure design and implementation, Use of modern devices, retrofitting Engineering
7. Professional practice, Research practice

8. Internship related course, practical work/job related courses
9. Design Software, Plumbing design, Bridge design software
10. Internship, Real life job based training, English fluency
11. International Seminars, Hands-on training facilities (i.e. Construction site tour, Industrial Tour at the end of every semester)
12. Proper English, IT classes, and involving coursework with real life scenario.

Table 3.11 shows the perception of the employers regarding their expectations and performances of the graduates in respective job responsibilities.

Table 3.11: Employer's perception

Dimensions of Quality	Requirement for recruitment	Performance
Job knowledge (knowledge on the subject matter)	4.2	3.4
Ability to link theory into practice	3.9	3.1
Presentation Skills	4.2	3.5

The above table is suggestive of the challenging target that the CE graduates are exposed with given the reasonably high expectation of the employers from their recruits in the respective categories of skills. Graduates are being able to satisfy mostly (above 3 in all categories) with the exception of not delivering or performing meeting upto 100% level of satisfaction. This could be attributed to the missing fraction of course requirements leading to achieving real life experiences. The students evidently struggle in their jobs at first in linking theory to practice. The knowledge level of the students need to be reinforced through demonstration of the application of theoretical basis in reality. The lack in confidence in knowledge level and the subsequent lacking in linking

to practice also become obstruction in certain instances during demonstration of presentation skills and communication. The curriculum is currently in the process of addressing these issues.

3.6 Survey Results

The feedbacks regarding the curriculum design and review have been obtained from all the stakeholders. 200 students, 114 alumni and 22 faculty members participated in the survey. Figure 3.1 shows the survey responses of all the stakeholders together on the current practices in curriculum design and review in order to obtain a comprehensive and comparative assessment.

The single category (bar) of responses are relevant to the questions that were directed towards only the displayed category of the stakeholders.

Students, alumni and faculty members are quite in agreement with the fact that the courses in the curriculum are consistently arranged from lower to higher levels. This feedback is self-assuring in the adequacy of course sequence in the existing curriculum. While there is strong agreement from all the stakeholders regarding the clarity of the teaching strategies, however, responses of alumni indicate that the assessment strategies could be communicated a little better in the curriculum. Mainly the alumni and the faculty members are in the same level of agreement that the curriculum load is optimum, however the students agree less indicating that the curriculum exerts pressure to a certain level. It is evident that the acceptability could change across past and current batches of students. The faculty members agree to certain extent, that the curriculum is reviewed and the opinions of the other stakeholders are considered because the committee put effort on a regular basis in the departmental meetings, however the ultimate change in the curriculum might take significant time to ultimately get reflected in reality. That is why agreement level is not at 100% satisfaction.

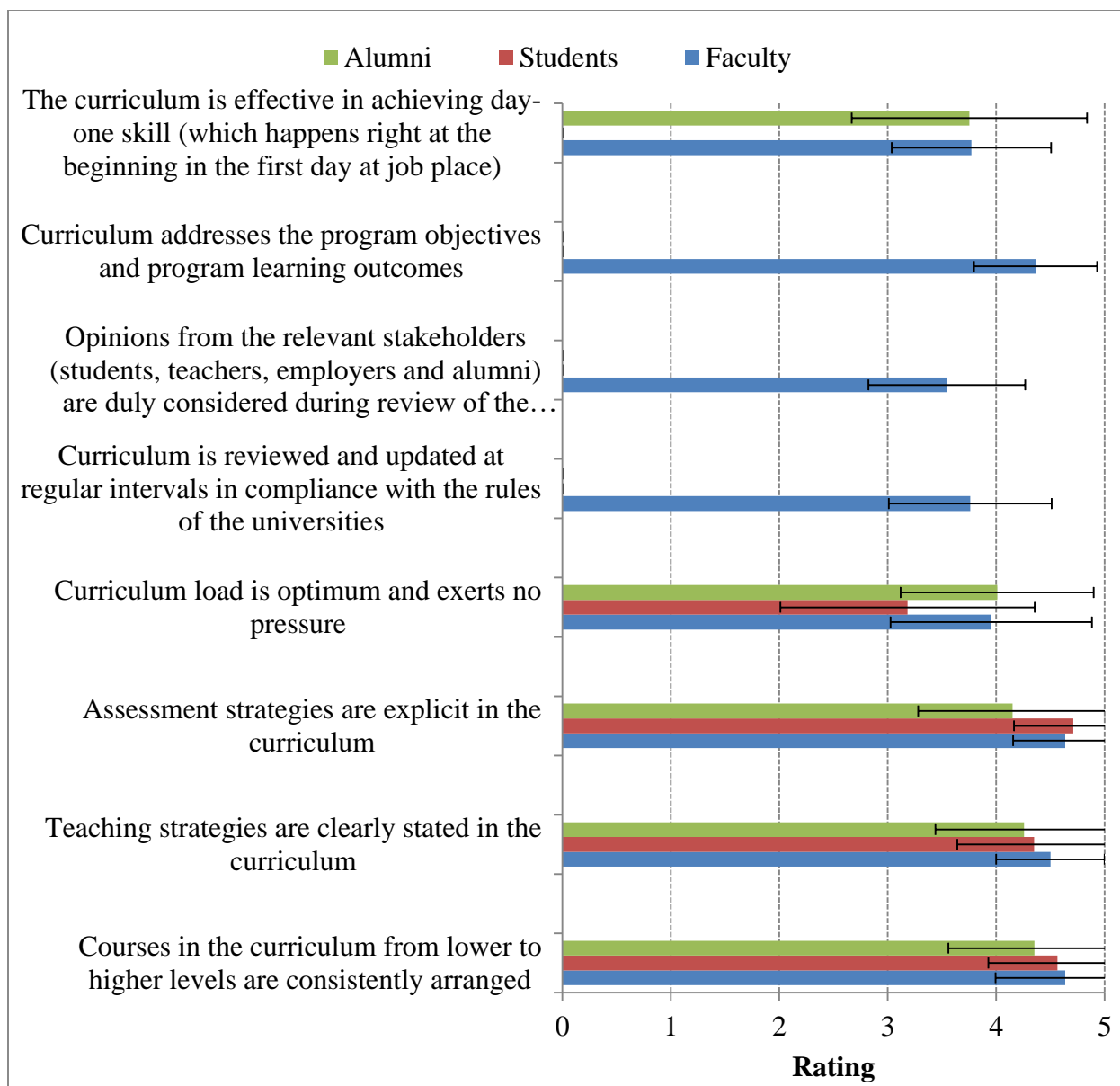


Figure 3.1: Survey Responses (Mean± standard deviation) from students, alumni and faculty members on curriculum design and review

There is very little disagreement that the curriculum addresses the objectives and learning outcomes of the programs, however both the alumni and the faculty members responded that the curriculum could be improved to make it effective in achieving day-one skill.

CHAPTER 4

Student Admission, Progress and Achievements

University admission is the process through which students qualify for tertiary education at Universities and Colleges. The systems vary widely from country to country, and sometimes from institution to institution; but every system ensures that the deserving candidates get selected. This process is of crucial value considering the fact that not all the aspirants are ready to pursue higher education. Many who enter universities fail to cope with the emerging demands of higher education and eventually, perform poorly. Therefore, Universities should put meticulous effort and concentration in devising entry qualifications and admission procedures. Simultaneously, student progress as well as achievement should be constantly monitored and recorded by the concerned entity.

4.1 Entry Qualifications

Entry qualification is a guideline to assess the eligibility of the student for the program. It also demonstrates the level of academic ability necessary for the completion of the program successfully. For this, entry requirements must be quantifiable and it is imperative that prospective students are well communicated with the requirements.

Standard 3-1: Entry Requirements must be well defined, measurable and communicable to the potential candidates for admission

- Registrar office of UAP circulates notice for undergraduate admission test which is available on the website of UAP (<http://www.uap-bd.edu>) from where candidates can get the application form for admission into various undergraduate programs. Registrar office also gives ad in the leading Bengali & English newspapers to inform prospective

candidates. After that, the role of admission office begins, which is very crucial because it is the first point of contact for prospective students. The office of admission at the University of Asia Pacific (UAP) is dedicated to assisting students and communicating with prospective students and their parents/guardians. Department of Civil Engineering (CE) has a set of procedure of admission in Bachelor of Science in Civil Engineering (BSc) program that is admission test. Department of CE circulates advertisements several times in different dailies to inform prospective candidates about admission requirements, how to apply, additional support, application deadlines, admission test date, and venue.

The department of Civil Engineering admits new students in two semesters (i.e. Spring and Fall) in a year in both 4-year B. Sc. Engineering and 2-year M.Sc. in Civil Engineering programs. The entry qualifications are clearly specified. The department considers the candidates who passed H.Sc., A- level, Alim (Madrashah Board) as well as diploma graduates. Furthermore, there are minimum requirements to be considered potential candidates for admission test.

- Entry qualification implies minimum requirements for a student to get admitted into any particular program. The department has some criteria that ensure applicants possess the skills and knowledge to successfully complete the program. These requirements are as follows:
 - The candidate 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). Table 4.1 shows the entry requirements to be considered in the BSc program of Civil Engineering.

Table 4.1: Entry Requirements

Program	Minimum GPA requirement	Subject requirement
B.Sc. Engg. In Civil	SSC & HSC = 7.5 or SSC & Diploma = 7 (min GPA in HSC = 3.0, Diploma = 2.5)	Students must have Physics, Mathematics in HSC (or equivalent) and chemistry either SSC or HSC (or equivalent)

- For candidate 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.
- The candidate 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 in a written Admission Test.
- Candidates with minimum GPA of 2.5 in O level in five subjects and A level in two subjects and total GPA of 6.0 according to UAP scale are eligible to apply for admission.
- 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.
- Candidates successfully completing school abroad are required to submit their applications and verified/attested copies of previous academic

documents/transcripts from their institute/Foreign Ministry & Equivalence Certificate from Secondary & Higher Secondary Education Board, Dhaka.

- Department of CE ensures the competency level of the eligible candidates by conducting admission test in two phases. In the first phase, student appears for written test and in the second phase, the selected candidates in the written test are called for viva-voce.

Standard 3-2: Entry requirements must reflect the level of qualifications required to afford the academic load of a particular program and match with the nature of the discipline

- Admission Office of UAP circulates admission test notice where subjects, contents and allocation of marks of written test of each department are clearly stated.
- GPA 7.50 is the prerequisite for appearing in the admission test. However, meeting this requirement does not guarantee an entry to the program. It will merely ensure the eligibility to sit for written test.
- Since Spring 2011, the Department started taking admission test in present format. For each semester, there are two intakes followed by two separate admission tests. Through a very competitive examination, candidates' eligibility is measured on Physics, Mathematics (Algebra, Geometry, and Calculus), English and Aptitude. The weightage for each subject area is shown in Table 4.2.

Table 4.2. Subject wise weight allocation in CE admission test

Subject	Marks Distribution
Physics Question	30
Mathematics Question (Algebra, Geometry, Calculus)	40
English Question	20
Aptitude Question	10

4.2 Admission Procedure

Every year the rate of students coming for higher education is increased. Moreover, students from all the streams of secondary education are eligible to apply for the program meeting the entry qualification. In these circumstances, to adhere with quality in education, the department develops an admission procedure that facilitates to select the candidates from a pool of diverse applicants who collectively will form the best possible group of students.

Standard 3-3: The admission process ensures fair treatment to all applicants with transparent and good practices and do not discriminate applicants in any way

- Transparency and fairness in admission process are essential. Therefore, UAP pays close attention to standard approach in terms of admission procedure. In compliance with UAP rules, department of Civil engineering conducts admission tests for Spring and Fall Semesters. Dates of the tests are published in newspapers and on the university website. Prospective candidates taking admission to CE program have to collect admission materials from the admission office and return the application forms with necessary documents to the admission office. The entire process of admission goes through a rigorous selection process where applicants are asked to follow the given instructions. To get admitted into the program all candidates must sit for a written admission test and a viva voce. At the time of taking admission, selected candidates must submit attested copy of original certificates, transcripts/mark sheets, testimonials etc.
- Results of SSC, HSC examinations and marks obtained in admission test are assessed for selecting prospective candidates. Marks distribution for admission into the bachelor program is as follows:
 - 20% marks from SSC exam
 - 30% marks from HSC exam and
 - 50% marks from Admission test

- In the CE program, admission test is carried out by the Admission Test Committee in following two phases:
 - Written Test
 - Viva voce

For conducting the written test, the committee divides the total tasks into several duties. Such duties are: question setting, question moderating, seat planning, invigilating, script checking, scrutinizing, preparing result which is published by the admission office. Admission office then posted the date and venue of viva voce on the website.

Admission Committee of CE program organizes viva boards, consisting of two members in four to five panels. These boards are carried out viva-voce for candidates. The committee is responsible for preparing the final result and sending it to the admission office.

<i>Standard 3-4: Everyone has confidence in the integrity of the admissions process</i>
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Department of CE ensures that it maintains integrity in completing the admission process. As mentioned earlier, a separate committee is formed to handle the admission process. The committee consists of three members who are responsible to carry out all the activities regarding admission test. Members of the committee are responsible for preparing the admission test questions, photocopying the questions; seat planning, checking the scripts and preparing the written test results. Admission committee also announces the viva-voce date for the selected students. Except the members of the admission committee, no other faculty member is involved with the process. Confidentiality is strictly maintained in every phase from preparing the question to scrutinizing the script by each of the members of admission committee.

Standard 3-5: The admission process is competent enough to differentiate between apparently equally qualified and non-qualified candidates for courses with competitive entry

- The eligibility to apply for admission in CE program is determined by the students' academic credentials of last 4 years with special emphasis on HSC result or last two years result.
- Standardized questions are designed for ensuring competitive entry which in turn helps to screen out successfully deserving candidates.
- If more than one student gets same marks in written examination, then deserving candidate is selected through the final viva-voce.

Standard 3-6: The admissions procedure enables the institution to select students who have potentials and are able to complete the academic program successfully

CE Program includes technical subjects and advanced courses for specialization. Therefore, at the time of designing the content of admission test admission committee focuses on evaluating the candidates' Quantitative aptitude, English proficiency, Knowledge on Physics and Mathematics (Algebra, Geometry, and Calculus). Questions on Mathematics and quantitative aptitude test candidates' mathematical skill, questions on English measure English proficiency and correct grammatical usage and writing skills. Department believes that each of the above subjects are required to successfully complete the CE Program.

4.3 Progress and Achievement

Progress and achievement present a complete picture of student learning. The progress of the students are monitored by the assigned advisor for every batch to track whether progress of the

students are satisfactory or not. The state of the progress is religiously recorded by the authority. Besides progress, their achievement in case of academic ground is also monitored comprehensively.

Standard 3-7: The quality assurance system of universities should be in place to assure that levels of students' achievements and progress are monitored and recorded duly for the use of reference points, evaluation of achievement and meaningful academic guidance and counseling

Progress is assessed based on evaluation of student's performance in the courses they are enrolled. Evaluation is done based on students' class participation (10%), class assessments (20%), mid-term (20%) and term final examination (50%) marks. At the end of a semester grades of all courses are uploaded to the automation of UAP by respective faculty members and officially it is published by Controller of Examination (CoE).

- The department of CE has always been concerned about quality assurance. The academic progress & achievement of the students are recorded by the controller of exam office. UAP uses automation software named ORBUND for processing the academic results.
- Student's performance is closely monitored by their respective advisors. One advisor is appointed for a group of students who act as a guardian of the students at the department. The advisors meet advisees thrice in a semester. First meeting is held at the beginning of the semester, second meeting after the mid semester examination and the final meeting before final exam of the semester. Through these meetings advisors can identify their advisees' academic progress, emotional and intellectual needs, and provide career counseling. Students communicate to the faculty and department through advisor. Advisors usually perform the following responsibilities:
 - Maintain regularly scheduled office hours (weekly) for academic advising as needed throughout the semester, which clearly stated in front of room.

- Provide mandatory consultation hour for each student for two times in a semester according to the academic calendar.
 - Mentors the students in selection of courses on a short-term and long-term basis, and encourage for good academic performance.
 - Monitoring advisees' academic progress as well as behavior and initiate contact with advisees those are failing to progress satisfactorily.
 - Informing students regarding the changes in academic policy, rules and curriculum in the program.
 - Extra-curricular matters of students must be approved by the advisor.
 - Recommending financial assistance for needy students with/having excellent academic background to the higher authority.
 - Recommend the students for VC's special waiver, Tuition waiver, approval of class absence, requesting for 'I' grade, and reexamination.
- The university has its tuition fee waiver policy which is given on merit basis according to semester GPA result. Top 3% students of each semester are offered 100% tuition waiver based on the result. The Table 4.3 shows the percentage of tuition fee waiver for each semester.

Table 4.3: Tuition Fee Waiver based on GPA

GPA	Percentage of Tuition Fee Waiver
3.50 – 3.74	25%
3.75 – 3.89	50%
3.90 – 3.99	75%
4.00	100%

In addition to the above waiver policy, top 3% students study in CE program is offered 100%

tuition waiver based on semester results. 10% - 100% Vice Chancellor's special tuition fee waiver is offered to poor meritorious students.

- A student is allowed to appear at the Repeat Examination in case he/she fails in theory courses. The maximum grade the student can obtain is 'B'.
- CE program has a provision for grade improvement that applies to those only who obtained a grade C or lower in any course. Such candidates are allowed to improve their grades by surrendering the earlier grade obtained by him/her.
- A CE student can apply for re-examination of any answer script of final examination to the Controller of Examinations through their advisor and the head of the department.
- For the current students, the student's progress is recognized by Dean's Honour List Award. Those who attain a GPA of more than 3.75 in a semester is/are eligible for the Dean's Award. In addition, those who achieve a GPA of more than 3.9 are recognized by VC's Honours' List Award.
- Students' performances in each individual course are assessed through different assessment methods and those assessment records are gathered, collated and analyzed through Automation system (online academic record management tool). In automation system, the students, the administration and the faculty members can follow semester-wise progress of the students online (Orbund) by viewing the transcript as CGPA of each student is provided in transcript. Based on the results that the students attain at each semester, those achieving GPAs greater than 3.9 and 3.75 are listed for VC's List and Dean's Honor list, respectively.

Table 4.4 and 4.5 show the number of students achieving VC's honors awards and Dean's awards from 2013 until 2017. In addition, table 4.6 summarizes the semester wise average GPA of those students who received VC's honors and Dean's awards for the stipulated years.

Table 4.4: Number of students achieving VC's honors award (2013-2017)

Semester	No of Students							
	L-1, T-1	L-1, T-2	L-2, T-1	L-2, T-2	L-3, T-1	L-3, T-2	L-4, T-1	L-4, T-2
Fall-16	0	1	-	-	-	-	-	-
Spring 16	0	2	1	-	-	-	-	-
Fall-15	1	7	3	1	-	-	-	-
Spring-15	1	5	0	2	1	-	-	-
Fall-14	1	1	1	1	1	2	-	-
Spring 14	1	2	2	2	2	1	3	-
Fall-13	1	0	0	6	2	0	1	1
Spring-13	-	1	4	3	10	3	4	1
Fall-12	-	-	-	3	5	2	2	0
Spring 12	-	-	-	7	10	9	7	7
Fall-11	-	-	-	-	1	0	4	0
Spring-11	-	-	-	-	-	3	4	5
Fall-10	-	-	-	-	-	-	6	9
Spring 10	-	-	-	-	-	-	-	-
Total	5	19	11	25	32	20	31	23

Table 4.5: Number of students achieving Dean's award (2013-2017)

Semester	No of Students							
	L-1, T-1	L-1, T-2	L-2, T-1	L-2, T-2	L-3, T-1	L-3, T-2	L-4, T-1	L-4, T-2
Spring - 17	1	-	-					
Fall-16	5	3	-	-	-	-	-	-
Spring 16	3	4	5	-	-	-	-	-
Fall-15	2	10	3	5	-	-	-	-
Spring-15	1	2	3	3	2	-	-	-
Fall-14	2	2	3	7	1	2	-	-
Spring 14	1	5	2	1	0	2	2	-
Fall-13	2	8	5	5	3	0	2	2
Spring-13	-	5	4	6	8	4	6	6
Fall-12	-	-	2	3	3	4	4	0

Spring 12	-	-	-	5	4	3	2	3
Fall-11	-	-	-	-	5	2	2	4
Spring-11	-	-	-	-	-	2	2	5
Fall-10	-	-	-	-	-	-	3	2
Spring 10	-	-	-	-	-	-	-	6
Total	17	39	27	35	26	19	23	28

Table 4.6: Semester wise average GPA of students obtaining VC's Award and Dean's Award (2013-2017)

Level, Term	Average GPA	
	Vice Chancellor's List Award	Dean's List Award
L-1, T-1	3.92	3.81
L-1, T-2	3.95	3.82
L-2, T-1	3.95	3.82
L-2, T-2	3.95	3.81
L-3, T-1	3.96	3.81
L-3, T-3	3.94	3.83
L-4, T-1	3.97	3.82
L-4, T-2	3.94	3.81

There are two categories of awards for the graduating students: Chancellor's Gold Medal and Vice-Chancellor's Gold Medal. Table 4.7 shows presents the names of the students received these awards.

Standard 3-8: The quality assurance system of university maintains a record of the total number of years, semester, and credits, for each student, to be eligible for certification and other credentials

4.3.1 Chancellor's Gold Medal: Criteria

Some criteria for Chancellor's Gold Medal are as follows:

1. Graduate(s) who have obtained the highest CGPA among all the students may be recommended for the Chancellor's Gold Medal award
2. Graduate(s) with CGPA less than 3.9 is/are not eligible for the Chancellor's Gold Medal award
3. Student receiving Chancellor's Gold Medal will not be considered for the Vice Chancellor's Gold Medal
4. If more than one student has same CGPA, then highest CGPA will be determined by counting up to 4 (four) decimal
5. For consideration of the Chancellor's Gold Medal Award a graduate has to be a regular student to be certified by the Controller of Examinations.
6. Student should have good behavior and having no instance of breach of University rules or of discipline during the period of his/her study in the University to be certified by the Head of the Department.

Table 4.7: List of Chancellor's Gold Medal Awardees

SI	Name of Student	Registration No.	Semester	CGPA
1.	Khandkar Mahbubur Rahman	973102031	Spring 2001	3.83
2.	Md. Nazmul Alam	07205004	Spring 2011	3.97
3.	Saiqa Mustari Susmita	08205015	Spring 2012	3.97
4.	Mohammad Sipon Khan	09205026	Spring 2013	3.99

4.3.2 Vice Chancellor's Gold Medal: Criteria

Some criteria for Vice Chancellor's Gold Medal are as follows:

1. Graduate(s) who have obtained the highest CGPA among all the students in the Department may be recommended for the Vice Chancellor's Gold Medal award
2. Graduate(s) with CGPA less than 3.9 is/are not eligible for the Vice Chancellor's Gold Medal award
3. If more than one student has same CGPA, then highest CGPA will be determined by counting up to 4 (four) decimal points
4. For consideration of the Vice Chancellor's Gold Medal Award a graduate has to be a regular student to be certified by the Controller of Examinations.
5. Student should have good behavior and having no instance of breach of University rules or of discipline during the period of his/her study in the University to be certified by the Head of the Department.

Table 4.8 shows the list of CE students received Vice Chancellor's Gold Medal till today.

Table 4.8: List of Vice Chancellor's Gold Medal Awardees

SI	Name of Student	Registration No.	Semester	CGPA
1.	Md. Alamgir Hossain	02105006	Spring 2006	3.82
2.	Mohammad Shamim Miah	03105001	Fall 2006	3.86
3.	Suvash Chandra Paul	03205007	Spring 2007	3.90
4.	Shamima Aktar	05205001	Spring 2009	3.80
5.	Md. Shariful Islam	07205025	Spring 2011	3.94
6.	Mirza Ahammad Sharif	08105044	Fall 2011	3.92
7.	Irin Talukder	09105058	Fall 2012	3.99
8.	Nandita Saha	09205025	Spring 2013	3.91

Controller office maintains the record of the total number of years, semesters, credits and other academic records for each student. All the faculties are responsible for preparing the academic results through automation software and submitting the result within a due date, which is set

by the authority. Based on these results, controller office issues the certificates for successful students.

Standard 3-9: Student progress and achievement monitoring system is comprehensive enough to identify the students, who are showing poor progress, who are not achieving and who are at risk

The performance of a student is evaluated in terms of semester GPA and cumulative grade point average (CGPA), which is the grade point average for the semesters under consideration. A candidate is awarded a degree with honors if his/her CGPA is 3.75 or above. A student is considered making normal progress towards a degree, if his/her CGPA is 2.25 or better. Students, who fail to earn 2.25, will not be awarded the degree.

4.4 Survey Results

The feedback regarding the process and practices about students' admission, progress and achievements have been obtained from all the stakeholders. 200 students, 114 alumni and 22 faculty members participated in the survey. Figure 4.1 show the survey responses of all the stakeholders together on the existing practices of student admission, progress evaluation and achievements in order to obtain a comprehensive and comparative assessment.

In response to the question “ The entity maintain individual student's record properly” the scores imply that the students were highly convinced with the process of maintaining their academic record, alumni and faculty are in good accord with the statement.

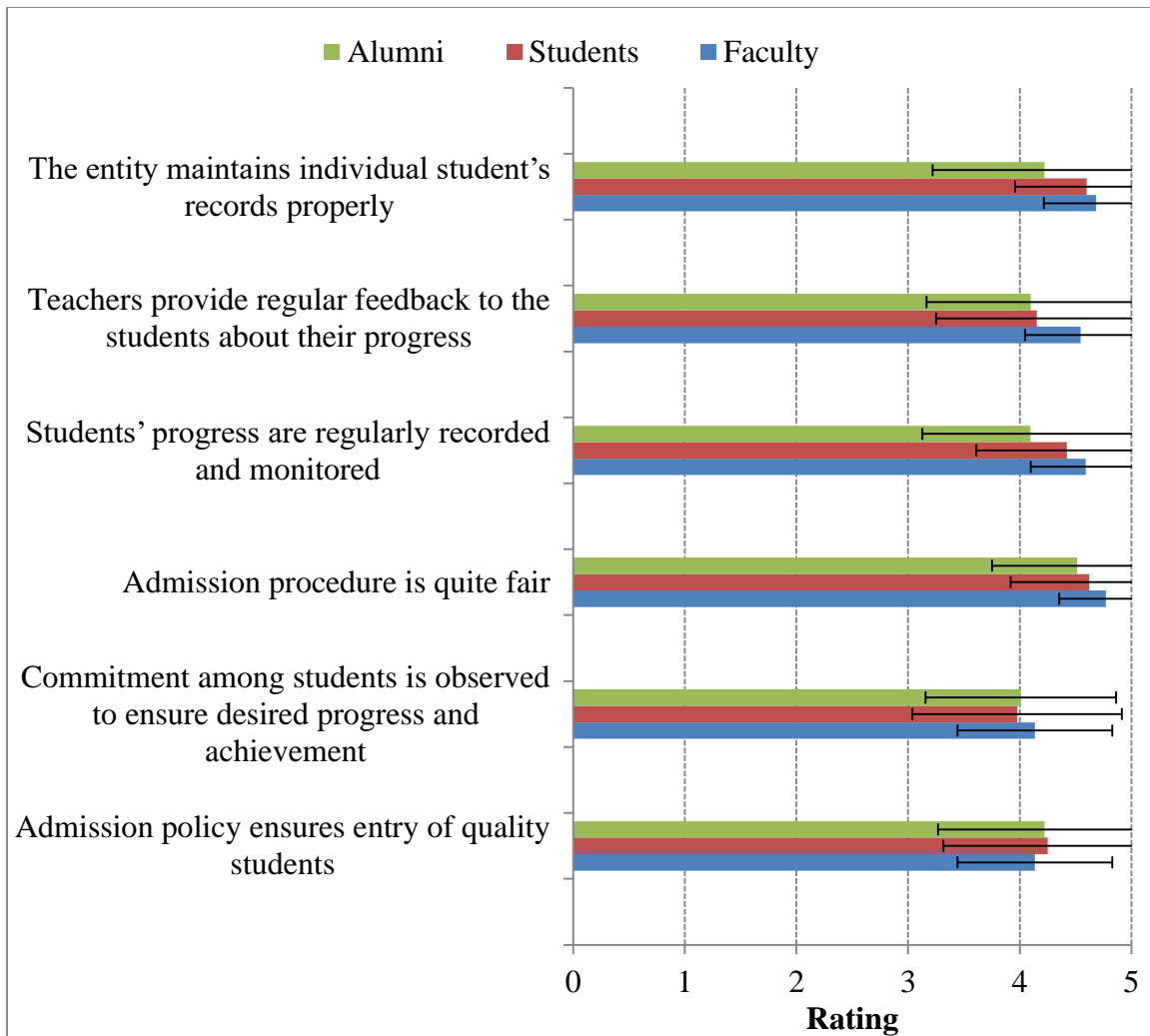


Figure 4.1: Survey Responses (Mean± standard deviation) from students, alumni and faculty members on students' admission, progress and achievements

In response to the question, “Teachers provide regular feedback to the students about their progress” the scores imply that the faculty stands positive in terms of their opinion while students were agreed with the statement. It can be interpreted from the result that students receive regular feedback from their teachers which guide their future improvement. The grand mean signifies that the stakeholders were in favor of the statement. The alumni remained neutral regarding the process of recording and monitoring the student progress whereas the existing students were closed to becoming affirmative.

In the question, “Admission procedure is quite fair”, all the 3 groups namely alumni, students, and faculty were quite agreed as the score as almost above 4.5 whereas the faculty members were unreservedly in favor of the same. The basis of their judgments could be established on the fact that admission committee exert relentless effort in ensuring transparency and fairness in the overall admission process. The overall score indicates the propensity of stakeholders to be in accord with the statement.

The question “Commitment among students is observed to ensure desired progress and achievement” was evaluated by three groups namely alumni, students, and faculty members. The scores received were around 4.00. The results manifest that the alumni fairly agreed with their response while the other two stakeholders responded positively. The score indicates that current admission procedure facilitates to get commitment from the students to ensure desire progress and achievement.

From the survey data, it is evident that admission policy reasonably ensures entry of capable and quality students as the score of grand mean is good enough. It can be interpreted from the findings that while students concurred with the statement, the alumni and the faculty members were also in favor of the claim. The response could be attributed to the fact that if all private universities complied with the policy of UGC in following ‘Semester System’, then admission time for all universities will be uniformed which would accelerate competition and ensures the process of acquiring quality students.

In conclusion, the stakeholders’ rating is consistently in agreement regarding the admission policy which ensures entry of quality students. Thus, faculty members who establish and maintain the standards and the students/alumni who have been through the process of admission and evaluation consider that the system is adequate. There is no doubt regarding the fairness of the admission

policy manifested by a very high rating obtained from all stakeholders. Although not so much drastic, but some degree of variations in responses exist regarding providing regular feedback to students, regular monitoring and maintenance of students' records. General agreement is evidenced regarding commitment among students to achieve desired progress and achievement, however, students need to be motivated to improve the situation so that more commitment is observed among them.

CHAPTER 5

Physical Facilities

Standard 4-1: For the purpose of quality assurance in higher education it is to be ensured that the physical facilities as required for a particular academic program are appropriate, adequate, comfortable, safe, aesthetically pleasing and well managed

5.1 Classroom

Eight classrooms, located in the 6th floor of UAP main building, are solely used by the department of Civil Engineering. Six of these classrooms can accommodate 50 students, while the other two classrooms are for 60 and 75 students. One of these classrooms is used for Civil Engineering Drawing, and also for theory courses. Each classroom is well equipped with overhead and multimedia projectors, projector screen, computer with internet access and white board. In addition, all of the classrooms are well furnished and are facilitated with air conditioning. The classes of undergraduate program, are held between 8 am to 5 pm from Sunday to Thursday. The number of classrooms is sufficient in terms of total number of courses offered, student intake and total lecture hours of the department.

5.2 Library Facilities

All the students and faculty members of UAP have full access to the central library, located in the 9th floor of the main building. The library hosts a vast and diverse collection of books, journals, monograms and periodicals of academic interest. Each book is labeled and arranged in such a manner that any individual can get access to his preferred book, departmental or otherwise, without any inconvenience. For borrowing books, one has to make a library card and can make the book

issued by the librarian. The books in the central library are managed by using ADLIB Library software.

The CE Department has also a small collection of 340 books and 170 other items. The dissertations (both undergraduate and M.Sc.) are available in both central library and department. Figures 5.1 and 5.2 provide snapshots of a class room and the reading area in the CE Department premises along with the collection of books and dissertations.



Figure 5.1: Snapshot of a Classroom



Figure 5.2: Book collections and reading area for students

5.3 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 the branches of Civil Engineering.

5.3.1 Strength of Materials Laboratory

The Strength of Materials Laboratory, located in the basement of the main building, is equipped with some sophisticated apparatus such as Universal Testing Machine (UTM), Johnson Shear Tools Apparatus, Impact Testing Machine, Rockwell Hardness Tester, Torsion Apparatus, Helical Spring, Beam Bending Test Apparatus, and Buckling Testing Apparatus. The students have to take a mandatory course (CE 212: Structural Mechanics and Materials Lab), which covers the fundamental aspects of the basic mechanical properties of materials. The experimental research performed in this lab includes works on model beams, columns, skyscrapers, masonry buildings, etc.

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. In addition to this, this lab also offers students and teachers to perform research activities. Figure 5.3 shows a demonstration of the Strength of Materials laboratory.



Figure 5.3: Strength of Materials Laboratory

5.3.2 Engineering Materials Laboratory

The materials primarily tested in the Engineering Materials Laboratory, located in the basement of the main building, in the Department of Civil Engineering (CE) are concrete itself or its constituents (i.e., cement, fine aggregate and coarse aggregate).

The Concrete Lab provides the students with the opportunity to conduct different tests on cement, aggregate and brick. The lab is facilitated with Vicats Apparatus, Los Angeles Abrasion Machine, Concrete Mixer, and several numbers of concrete molds. The basic tests are covered in a mandatory course (CE 202: Engineering Materials Lab).

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 gages. In addition to concrete crushing tests, non-destructive tests are also performed by Schmidt Hammer. This lab is also equipped with Reversible Universal Testing Machine (RUTM) that was the first of its kind built and used in Bangladesh. Here also, the students get opportunities to conduct research works.

5.3.3 Geotechnical Engineering Laboratory

The Geotechnical Engineering Lab is equipped with equipment such as Unconfined Compression Test Apparatus, Direct Shear Test Apparatus, and Standard US sieve set, Sieve Shaker, Triaxial Test Machine, and Consolidation Test Machine. A mandatory course (CE 342: Geotechnical Engineering Lab) covers the determination of basic properties of soils for foundation design.

Using the facilities of this laboratory, the students can conduct field identification tests, Atterberg's Limits tests, specific gravity and relative density tests, standard and modified Proctor tests, sieve analysis and hydrometer analysis of soil. Permeability test of soil is also performed using the permeability testing apparatus. In addition, Direct Shear test, Unconfined Compression test and the Triaxial Test can be carried out to determine shear strength parameters of soil. All the instruments are equipped with strain gages in order to get the load-deformation or stress-strain curves. The load cells and strain gages are calibrated.

5.3.4 Environmental Engineering Laboratory

The Environmental Engineering Lab provides facilities to students to get accustomed for determining the basic properties of water quality parameters through a mandatory course (CE 332: Environmental Engineering Lab) and is equipped with Spectrophotometer, Digital Titrator, BOD Incubator, COD Reactor, and Arsenic Test Kit.

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 noise 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.

This lab also serves the students for acquiring basic knowledge on performing titration tests through another mandatory course (CHEM 112: Chemistry Lab). Figures 5.4 and 5.5 provide snapshots of the geotechnical and environmental Engineering laboratory respectively.



Figure 5.4: Geotechnical Engineering Laboratory



Figure 5.5: Environmental Engineering Laboratory

5.3.5 Transportation Engineering Laboratory

The transportation Engineering Lab is equipped with AIV Machine, ACV Apparatus, Penetrometer, Ductility Machine, Loss On Heating Machine, CBR Machine, and Traffic Uniform and Measurement Tools etc. it is mandatory for the students to acquire knowledge on the properties of road construction materials and traffic engineering parameters through a mandatory course (CE 354: Transportation Engineering Lab).

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. 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.

5.3.6 Hydraulics Laboratory

The Hydraulics Lab covers the different aspects of fluid mechanics and open channel flow through a mandatory course (CE 222: Hydraulics Lab) and is equipped with a Glass Sided Flume and other apparatus.

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.

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, and 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. Figures 5.6 and 5.7 show the snapshots of Transportation Engineering and Hydraulics Laboratories respectively.



Figure 5.6: Transportation Engineering Laboratory



Figure 5.7: Hydraulics Laboratory

5.3.7 Computer Laboratory

The Computer Lab facilitates the students to get accustomed with Computer Aided Drafting, Basic Programming, and other structural analysis and design software (e.g. ETABs) through some mandatory courses (CE 102: Civil Engineering Drawing I, CE 104: Civil Engineering Drawing II, CE 206: Computer Programming Lab, and CE 418: Computer Applications in Civil and Environmental Engineering). More than 30 students can be accommodated in the computer lab.

5.3.8 Field Surveying Equipment

A mandatory course (CE 106: Practical Surveying) provides the students to acquire field experience on conducting surveying. The CE department has several equipment including a Total Station for field surveying. Figures 5.8 and 5.9 demonstrate on going sessions in computer laboratory and surveying with relevant equipment.



Figure 5.8: Computer Laboratory



Figure 5.9: Surveying in progress with the equipment

5.4 Medical Facilities

UAP provides in-house medical services through a central medical center, located in the 2nd floor of the UAP main building. Here, students can get free medical services including medical consultancy, basic medicine, and primary treatment in case of any injury. The medical center has one certified doctor and one qualified nurse available from 9 am to 5 pm five days a week. Moreover, students and UAP staffs (academics and non-academics) get 30% discount in medical expenses at Medinova Diagnostic Center Services. Figure 5.10 shows the in-house medical facility.



Figure 5.10: In-house medical facility

5.5 Other Facilities

Standard 4-2: The higher education institution provides and ensures access to the necessary information technology resources, computers, internet and other communication equipment for the teachers and students

The other facilities provided by the university are outlined below:

5.5.1 Internet (Wi-Fi)

The CE department provides the students with Internet facilities through Wi-Fi. Several routers are placed at different parts of the CE department. The students can access the internet through their Wi-Fi enabled devices (laptops, smart phones etc.) by inserting the password.

5.5.2 Research facilities

The department is well-equipped for conducting researches on various fields. Students and the faculties can conduct research work on the laboratories.

5.5.3 Female Common Room

There is a dedicated common room with ample space and luster, for the female students at CE department where they can study or rest in between gaps of the classes. Female students and faculties can conveniently make their prayer on that room.

5.5.4 Cafeteria

The university has a central cafeteria which sells breakfast, snacks and lunch items from 8 am to 5 pm every working day. The quality of food is closely monitored and controlled by the authority. There are ample facilities for students to have their meal. Faculty members and staffs also visited cafeteria and have food there. Figures 5.11 and 5.12 show the snapshots of central cafeteria and central mosque respectively.



Figure 5.11: Central cafeteria

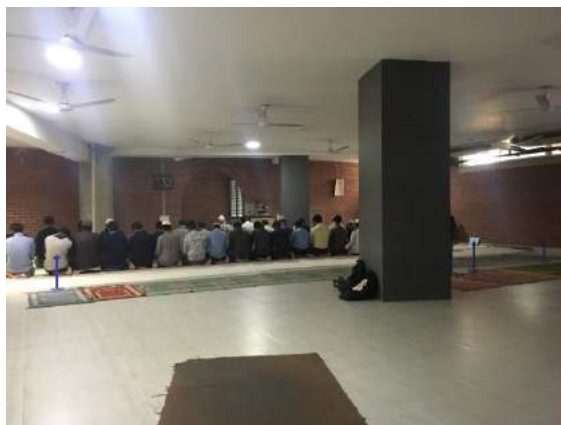


Figure 5.12: Inside central prayer room

5.5.5 Sports Room

The central sports room is a common place for all the students of the university where the facility for indoor games such as table tennis, chess and carom board are provided.

5.5.6 Facilitating Club activities

The department facilitates different club activities, such as workshop, presentation, quiz, debate etc., in the classrooms throughout the semester. The department, not only encourages students to be academically active, but also give enough opportunity to develop their creative side. There are several clubs for to cater their need. They are art and photography club, cultural club, film club and sports club. Students can select any club according to their interest. The members of cultural club practice different cultural activities in the classrooms. In each semester, the department arranges outdoor sports tournament and competitions.

5.5.7 Central Prayer Room

The university has a central prayer room for saying prayers. Both male and female can be accommodated in the place.

5.5.8 Security

The security system in the university is ensured by admitting entry only to those who bears ID card. Guests have to collect a guest ID card prior to entering the campus. The entry points have up-to-date security checking systems installed to restrict any undesirable event.

5.5.9 Fire protection

The building is well-prepared for any fire hazards. There are fire exits in each floor of the main building to escape in case of emergency. Fire extinguishers are installed in different places throughout the department. Safety measures and First Aid Boxes are made available in the all laboratories and also in the department.

5.6 Survey Results

The feedbacks regarding the physical facilities have been obtained from all the stakeholders. 200 students, 114 alumni and 22 faculty members participated in the survey. Figure 5.13 shows the survey responses of all the stakeholders together on the existing physical facilities in order to obtain a comprehensive and comparative assessment.

The single category (bar) of responses are relevant to the questions that were directed towards only the displayed category of the stakeholders.

Although all alumni, students and faculty members agree that the classroom and laboratory facilities are suitable for effective and practical learning, students are agreeing to a lesser extent probably because while being a student of the department, their expectations are a little higher. General agreement exists regarding the facilities for conducting research, however more improvements could be made. Students are not mostly in agreement with the adequacy of the library facilities and reference materials as they are the ones facing the majority of obstructions.

Medical and sports facilities are required to be improved as responded by the stakeholders, especially the lack of gymnasium facility is evident in the low rating provided by the respondents.

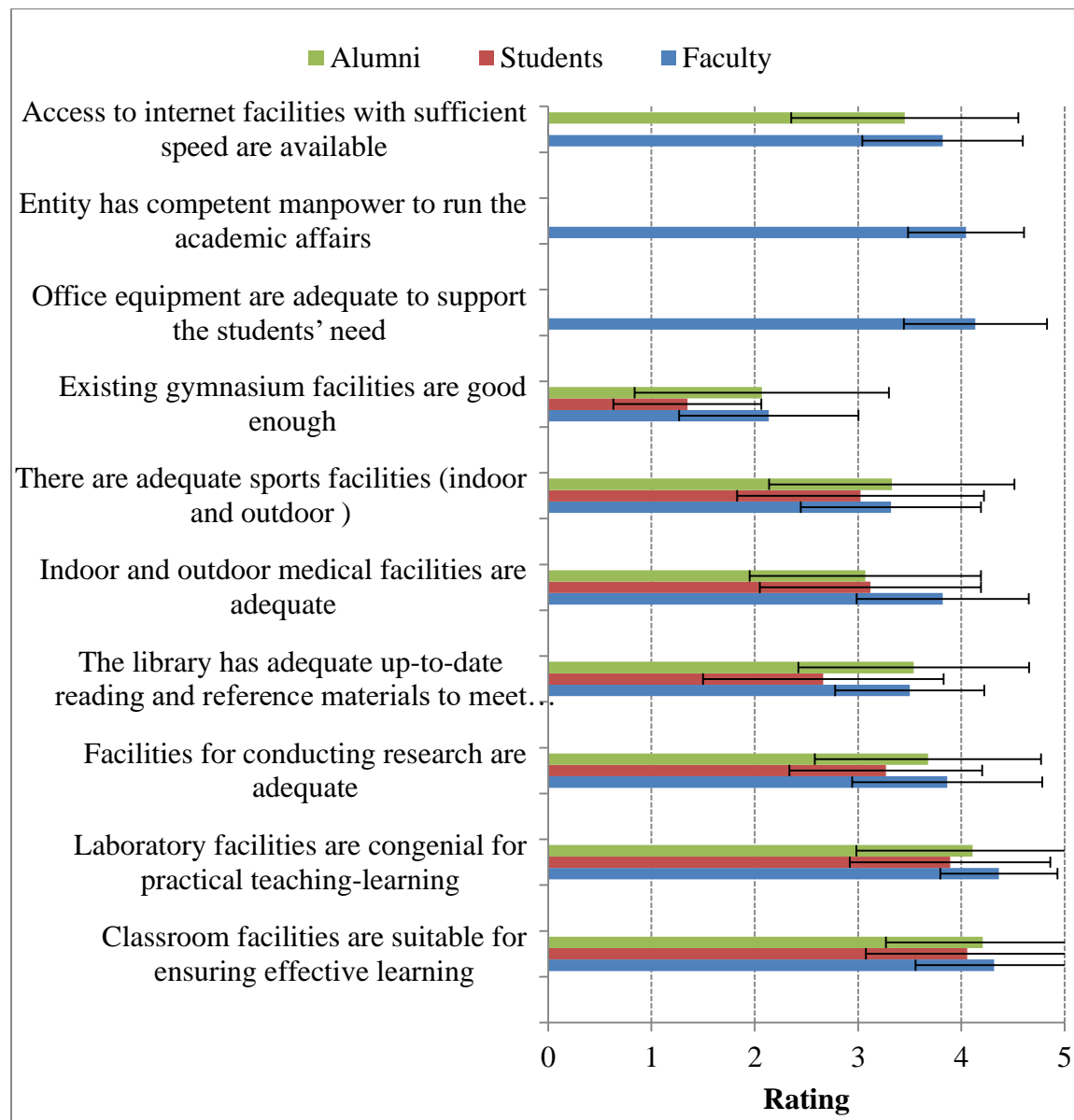


Figure 5.13: Survey Responses (Mean± standard deviation) from students, alumni and faculty members on physical facilities

It is generally agreed among the faculty members that there are competent manpower and office equipment to support the needs and run the department affairs, but there is room for improvement. Internet facilities with sufficient speed will be a continuous factor to upgrade.

CHAPTER 6

Teaching, Learning and Assessment

The department of Civil Engineering ensures practice of standard teaching methods and practices through providing quality staff and conducting learning environment.

6.1 Quality Staff

The Department takes pride in its outstanding and exceptionally rich faculty profile: 12 out of 25 faculty members of the department hold PhD degrees from well-reputed foreign universities in Canada, USA, Australia, Europe, Japan and Korea. The current teacher–student ratio of the department is 1:24. The offering of the specialization fields is currently highly satisfactory in meeting up the demands/expectations of the Civil Engineering students as the faculty pool comprise experts/specialized personnel in all the divisions in Civil Engineering namely Structural, Geotechnical, Transportation, Environmental and Water Resource Engineering. Often, PhD holding faculty members constitute 50% of the faculty strength of the department. Many of the lecturers have acquired Master degree from abroad, and later on promoted to Assistant Professor after acquiring active teaching experience as per UAP policy. The department always encourages its faculty members for pursuing higher education. Therefore, a number of faculty members are on study leave and currently pursuing Masters’ in North America and Japan. Facilitating and collaborating external scholars is also practiced in the department. The department hosted Dr. Kauser Jahan, Professor, Department of Civil and Environmental Engineering, Rowan University, USA during 2015-2016 as a ‘Full Bright Scholar’ who took part in teaching, promoted research and actively volunteered in capacity development activities in the department.

The teaching quality is observed through teacher's evaluation by the students in each semester and for each course. The university provides training to enhance effective teaching, quality and performance of the full time faculty members by a standard course of 42 hours.

Standard 5.1: Teaching Learning Practice is interactive, motivating, promoting a sense of responsibility and commitment

Standard 5.2: Teaching Learning Practice involves practical evidence, initiates critical thinking and inspires students to apply acquired knowledge in the real life situations focusing on higher order of learning

6.2 Teaching learning methods

One of the missions of the civil engineering department is to establish a student-centered dynamic learning environment. The department has set the following program outcomes to motivate the students for learning and enhancing skills:

1. An ability to apply knowledge of mathematics, science, and engineering
2. An ability to identify, formulate, and solve engineering problems
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
4. An ability to design and conduct experiments, as well as to analyze and interpret data
5. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
6. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

7. A knowledge of contemporary issues
8. An understanding of professional and ethical responsibility
9. An ability to function on multidisciplinary teams
10. An ability to communicate effectively
11. Project Management and Finance
12. A recognition of the need for, and an ability to engage in life-long learning

Therefore, diverse teaching methods are practiced to ensure interactive and supportive learning environment.

6.2.1 Classroom Teaching/Lecture

The department highly encourages practice of motivating teaching methods, focusing Outcome Based Education (OBE). The lecture method is just one of several teaching methods and lets professors address the most people at once, in the most general manner, while still conveying the information that he or she feels is most important, according to the lesson plan. In the semester class routine, two and half hour duration per week is assigned for classroom teaching of each three credit hrs theory course. During lectures, professors use modern tools such as power-point slides, white board and videos to motivate students and making them interested for learning. The students are given handouts and lecture slides (both hard and soft copies). For interactive teaching learning, group discussion is also found effective. Each class room is equipped with white board, computer (with internet), multimedia and overhead projectors. In order to engage them in life-long learning, the students are given reading assignments. Based on the learning outcomes, in several courses, they are assigned group projects that they present later in front of the class. By preparing the projects, the students can demonstrate their ability of applying Engineering knowledge, problem analysis, modern tool usage, the connection between the engineer and society, etc., as each course has targeted specific program outcomes.

6.2.2 Field Visit / Study Tour

Study tours are organized every semester for the students to have the deserved respite from the intensive Engineering curriculum. Moreover, field visits give the students an exposure to different civil engineering applications and helps in culminating the learning. Each semester, the students get to select a venue of their choice where they venture through the nature and the ecosystem in addition to utilizing the field specific learning opportunities. During Fall 2015, students of 30th batch went to Kaptai, Rangamati. Students gained practical knowledge on the process of producing electricity by a hydropower station from the Kaptai Hydropower Station. In Rangamati, the students witnessed the structural beauty of low suspension hanging bridge. Figure 6.1 shows snapshots of the study tours in Kaptai and Rangamati.

During Spring 2016, students of batch 31 visited National Oceanographic Research Institute-



(a)



(b)

Figure 6.1: Study tour in (a) Kaptai hydropower station and (b) Rangamati low suspension bridge visited by batch 30 on Fall 2015

NORI, Cox's Bazar. National Oceanographic Research Institute-NORI, Bangladesh in Cox's Bazar provides multidisciplinary research on marine and coastal resources to unveil the potentials for the blue growth (blue economy) while ensuring ecosystem health and sustainability. Our students and faculty members witnessed the system of oceanographic data acquisition and management carried out by NORI. Figure 6.2 provides an account of the visits.



Figure 6.2: Study tour in National Oceanographic Research Institute-NORI, Bangladesh in Cox's Bazar visited by batch 31 on Spring 2016

During Spring 2017, students of 33rd batch visited Bakkhali rubber dam and Rangamati low suspension bridge. Rangamati is a holiday destination because of its landscape, scenic beauty, lake, colorful indigenous groups, (Chakma, Marma etc), its flora and fauna, indigenous museum, hanging bridge etc. Students were specifically interested to learn about the hanging bridge structure with practical details which are usually exemplified during the class lectures. Also Bakkhali has constructed two pilot rubber dams in the Bakkhali River and Idagaon Khal in Cox's Bazar district that would supply irrigation water to 8,000 hectares for rice cultivation. The dam conserves fresh water upstream and prevents saline water intrusion from downstream. These were very useful knowledge for the students regarding proper water management and distribution system. Figure 6.3 shows the snapshots of the dam and the suspension bridge taken by the students.



Figure 6.3: Study tour in (a) Bakkhali rubber dam and (b) Rangamati low suspension bridge visited by batch 33 on Spring 2017

A picnic is attempted during every year in Fall semester for the students and the faculty members for relaxation purpose. Each year, the students get to select a location of their choice where they enjoy the sight of the nature, organizes different competitions, raffle draw, pitha utshob etc. events. Student and faculty members went to Shalban Bihar, Comilla during Fall 2015 for their picnic. The picnic during Fall 2016 was held at Rangamati Waterfront resort, Safipur, Gazipur. Figures 6.4 and 6.5 are shown to provide accounts of the festive events.



Figure 6.4 : Departmental picnic held in Shalban bihar on Fall 2015



Figure 6.5: Departmental picnic Rangamati Waterfront resort, Safipur, Gazipur on Fall 2016

6.2.3 Seminar

The students are exposed to contemporary issues through the seminars that are organized by the department by inviting renowned resource persons. Moreover, day-long Career Festival is organized where the students attend seminars, meet and communicate with professionals, and learn about the civil engineering practices.

Dr. Yasushi Sanada, Associate Professor, Osaka University Japan was an invited speaker of the seminar— “Seismic Assessment and Retrofitting” arranged by the Department of Civil Engineering, University of Asia Pacific Dhaka, Bangladesh on April 2015.

Dr. Navid Bid Saleh, Associate Professor, University of Texas, Austin and ex-faculty of Civil Engineering Department at UAP, provided a seminar on “Harnessing the Art of Pottery” in the Department of Civil Engineering during July 2015.

Dr. Kauser Jahan, Professor, Rowan University, delivered different seminars on effective teaching methods, research methodology, and external funding opportunities during November 2014 – April 2015.

Dr. Mohammad Shahidul Islam, University of Tabuk, Kingdom of Saudi Arabia provided seminars on “Higher Education Abroad” and “Experimental Study and Numerical Modeling on Alkali-Silica Reaction” on July 2016.

Department of Civil Engineering organized its 1st Career Festival on August 5, 2017 for the final year students. The objective of organizing this festival was to provide a new platform where graduating students will be connected with the professionals, learn about their policies, expectations from different organizations on how much effort the students should put forth to obtain a job. On the event, 13 companies were invited to put up stalls and individual seminar was conducted by each company for the students. The companies that participated in the seminars and the fair are Building Technology & Ideas Ltd, The Structural Engineers Ltd, Sheltech (Pvt.) Ltd, LafargeHolcim, BSRM (Bangladesh Steel Re-rolling Mills), Crown Cement, Center for Natural Resource Studies, Engineering and Research Associates Ltd, BBS Group (Bangladesh Building Systems), SMEC Group, Water Aid, IWA (International Water Association and CEGIS (Center for Environmental and Geographic Information Systems).

Scholars are invited from different disciplines to provide a forum to make students well-informed about numerous research projects that are going on all over the world. The seminars (of one-hour duration) are held on every second Thursdays (excluding mid and final exam weeks, details can be viewed at <http://www.uap-bd.edu/ce/seminar/index.html>).

Guest Speaker, Dr. Umme Kulsum Navera, Professor of Department of Water Resources Engineering, BUET provided a seminar titled "Challenges in Water Resources Development in Bangladesh" on November 9, 2017.

Guest Speaker, Nishat Tasneem Oishee, Lecturer, Department of Architecture (winner of Tamayouz International Award), University of Asia Pacific, provided a seminar titled "Through the silts: poem, prayers and promises for Chuknagar" on November 23, 2017.

Guest Speaker, Dr. Kauser Jahan, Professor, Rowan University, New Jersey, USA (Former Fulbright Scholar at UAP), provided a seminar titled "Integrating Humanities with Engineering Fundamentals" on November 30, 2017.

Guest Speakers, Dr. Bidoura Khondaker, Team Lead, Research and Development (R&D) project, ISL Engineering and Land Services Ltd. and University of Calgary, "Comparative

analysis of traffic performance between roundabouts and signalized intersections using microsimulation" on December 18, 2017.

6.2.4 Field work

The students involve in field level activities for sampling and collecting data of real time, while pursuing their design projects and thesis in different divisions of civil engineering. For example, they collect traffic data, quality of river and lake-water, soil, etc. For some studies, they also need to communicate with the target group (e.g., low income people) for obtaining data by conducting survey. When the objectives of some projects are to investigate the quality of industrial effluent of treatment plant, the students need to work with the industry personnel. As the compulsory degree requirement, first year students experience 'Practical Surveying'. Figure 6.6 shows snapshots of practical surveying and figure 6.7 shows snapshots of water sample collection for undergraduate thesis work.



Figure 6.6a: Practical surveying (Total Station) Figure 6.6b: Practical surveying (House-Setting)



Figure 6.7a: Collection of Water sample from Turag River



Figure 6.7b: Collection of Water sample from constructed wetland

6.2.5 Lab work

In the present curriculum, the department has the mechanism for the undergraduate students in different levels to develop the soft skill and enhance the ability to investigate and design. For example, the newcomers are offered a course ‘Computer Skills’ (CSE 100) in the first semester, and ‘Computer Programming Lab’ (CE 206) is offered to the students of level 2. In addition, the curriculum comprises several Lab/Sessional courses (such as Physics lab, Chemistry lab, Basic Electrical Engineering Lab, Engineering Materials Lab, Structural Mechanics and Materials Lab, Environmental Engineering Lab, Hydraulics Lab, Geotechnical Engineering Lab and Transportation Engineering Lab) that develops student’s psychomotor activity. Further, several Design Sessional courses (such as Structural Engineering sessional courses, Concrete Structures Design Sessional and Fourth year Elective Sessionals) are offered to enhance the ability of student to design and solve complex engineering problems.

Furthermore, students are involved in laboratory investigation for Final Year Project/Thesis.

6.2.6 Presentation

In order to develop student's communication skill, the students are asked to deliver lecture on relevant topics. The students present final year project (FYP) for assessment. In order to prepare them, different clubs organize presentation competitions and project presentations in every semester. Figure 6.8 shows the participation of CE students at Smart City Innovation program organized at Bangabandhu Planetarium during November 2017.



Figure 6.8. Participants of students with projects in Smart City Innovation Hub

6.2.7 Academic Counseling

The students are informed about the faculty office hours that are designated as weekly academic counseling hours, depending on the number of classroom teaching hours or credit hours. Officially, teachers allocate 1 hour for counseling per credit hour. Therefore, the students can meet their teachers outside the class room during counseling hours. This practice helps to engage them toward achieving program outcomes effectively.

During registration week, the students meet their advisors for course registration in the coming semester.

6.3 Use of lesson Plan

The students are given lesson plan in the first class of a course in the semester. The lesson plan includes course learning outcome, assessment strategy, lecture schedule, lecture outcomes, program outcomes and grading policy. The format of the lesson plan is unique throughout the university and OBE based.

Standard 5-3: Teaching learning practice integrates the use of technology and also should provide students with opportunities to use these skills in academic preparation both within and outside of the classroom

6.4 Technology integration

The departmental website archives course materials, mid-term and final exam question papers. The students register courses through Orbund and the students' academic advisors also approve his registration in Orbund. The students' profile, assessment records, transcripts, payment details are maintained in Orbund. In order to prevent plagiarism, software specialized for checking plagiarism and similarity is linked through university website. Wifi of adequate speed is ensure in the department. Different softwares are also available to be used by the students and faculty members. Frequent update of the operating systems is regularly performed at the convenience and preference of the students and faculty members.

Most of the classrooms are located in the 6th floor of UAP city campus. The air-conditioned classrooms are equipped with multimedia and overhead projectors, internet access, etc.

Standard 5-4: Teaching learning practices provide enough scope to integrate co-curricular and extra-curricular activities for intended skill development

6.5 Skill development Mechanism

UAP organizes Central Club Fair to introduce new students to different clubs. The department recommends every student to be attached with at least one club but maximum of two. All the clubs organize sets of events, such as quiz competitions, poster presentation competitions, other competitions, trainings, etc. throughout the semester. All the club activities are supervised by Advisor of student Forum. In addition, the department creates a new dimension to connect the students' with the professionals through Career Fair in which practitioners share real life experiences. Figure 6.9 shows the participation of students in a central club fair.



Figure 6.9. Club Fair: Skill Development through Extra and Co-Curricular Activities

Standard 5.6: Use of lesson plan should be formalized in teaching learning practice with proper documentation and access

Standard 5-8: In line with teaching learning student performance assessment approach must be focused on higher order learning

Standard 5-9: Assessment procedure should be comprised of a set of multiple activities to measure the attainment of learning outcomes and skills

6.6 Assessment of Student Performance

Different assessment methods, such as quizzes, midterm exam, final exam, project demonstration, assignments, presentation and report submission, are practiced to evaluate the students' attainments of course outcomes and program outcomes. The students are informed about the assessment methods of each course through lesson plan. The lesson plans are prepared covering the Bloom's cognitive domains with relevance to the learning outcomes of each course. In order to evaluate the cognitive levels of questions, the final exam questions are moderated through checking the six hierarchical (lower to higher) levels of Bloom's taxonomy which are: C1 - Remembering; C2 – Understanding; C3 – Applying; C4 – Analyzing; C5 – Evaluation and C6 - Creation. It is usually assessed whether higher order of learning (e.g., creation, evaluation, synthesis etc.) is attained by using appropriate level in the Taxonomy.

The students are given feedback about their progresses that are monitored through quizzes, class tests, presentation, midterm exam, etc. during the semester. During preparatory leave, the students are informed about their marks that carry 50% weightage of final grading. Table 6.1 provides a summary of the assessment techniques that are used in order to attain the learning objectives that are adopted from Bloom's taxonomy. For students' final year project/thesis course, there is a thesis report that the students have to submit and they have to present their thesis in front of a previously

formed thesis committee after their final exam at the end of the completion of fourth year. The assessment of the thesis course is based on the performance throughout the final year on thesis and the final report and presentation. However, in order to make students active and mobilize their tasks from the beginning of their thesis assignment, a “Research day” is fixed during the first semester of fourth year before the final exam. On this day, all students (in groups) present their progress and plan of the thesis work that they envision to complete by the end of their graduation. This event acts as a preparatory guidance to the students which proves out to be very helpful and useful in shaping up their thought process and making an efficient plan.

Table 6.1: Assessment techniques to attain the relevant learning objectives

Learning Objectives	Examples of Assessments
Remember	Definitions, fill in the gaps, Multiple choice questions
Understand	Derivations, problems, discussions, assignments
Apply	Challenge problems, design projects, presentations, simulations
Analyze	Case studies, open ended problems, conceptual problems
Evaluate	Comparative case studies, critical assessment
Create	Research project, design plan

6.7 Survey Results

The feedback regarding the process and practices about teaching, learning and assessment have been obtained from all the stakeholders. 200 students, 114 alumni and 22 faculty members participated in the survey. Figure 6.10 and 6.11 show the survey responses of all the stakeholders

together on teaching-learning and learning assessments respectively in order to obtain a comprehensive and comparative assessment.

The single category (bar) of responses are relevant to the questions that were directed towards only the displayed category of the stakeholders. Survey outcomes are very positive regarding the fair, transparent, supportive and interactive teaching/learning process and the readily available lesson plans. It is evident from students' perspective that the department needs to incorporate more practical exercises to apply in real life situations which the alumni confirmed as well. This issue is also highlighted in the insufficient fractions of courses to impart and strengthen the psychomotor and affective domains of the students. Faculty members agreeing in general, feel that the class size could be optimized more for efficient interactions. Regarding usage of modern devices, students feel more than the faculty members and alumni that more of such devices would be effective to improve the teaching learning process. Mostly the students and the alumni feel that the methods could be made more diversified to achieve learning objectives. This is obviously due to the fact that in a lot of instances, faculty members consistently use the same methods without variation which unless addressed by the students, is hardly attempted to change.

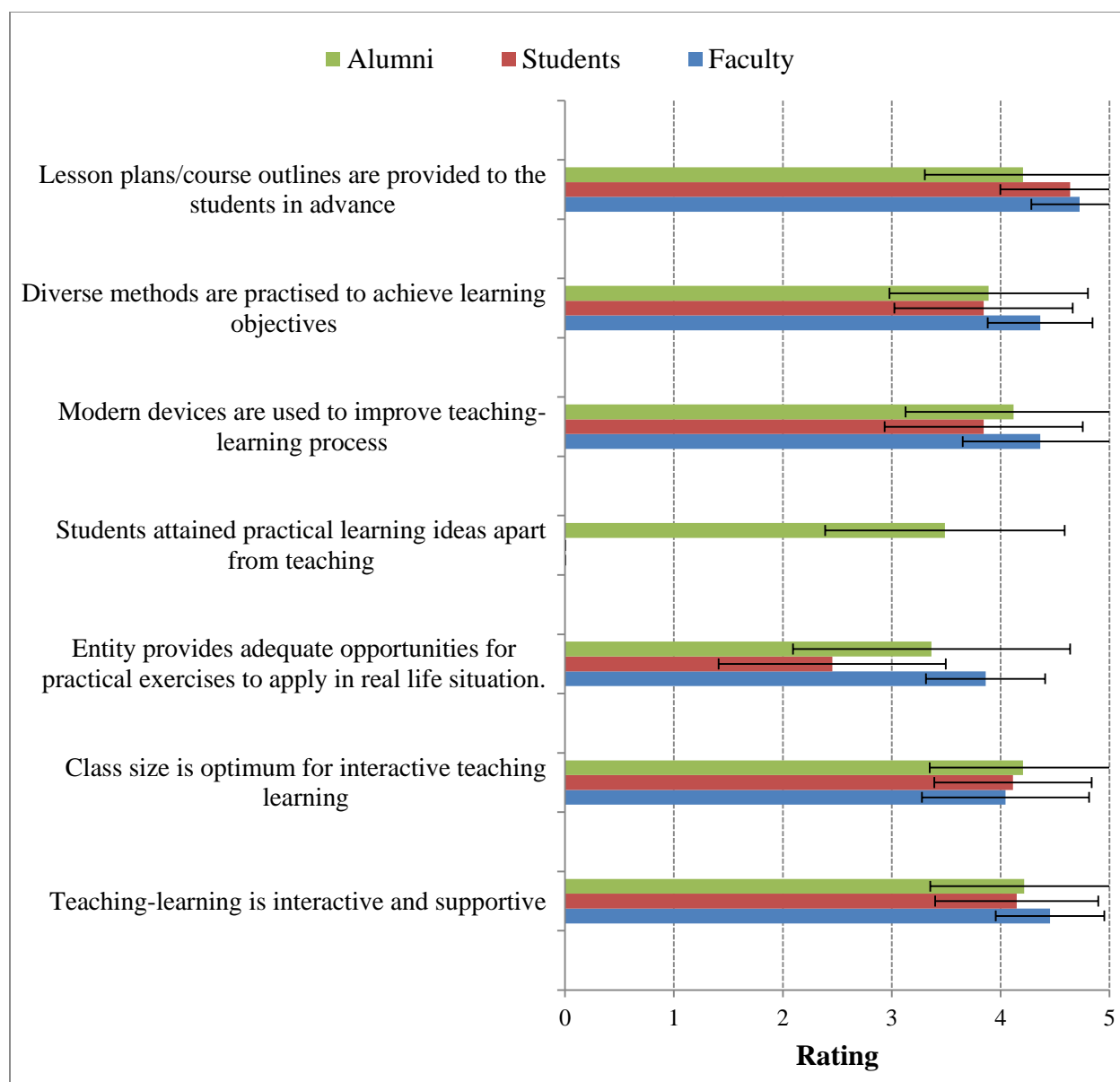


Figure 6.10. Survey Responses (Mean± standard deviation) from students, alumni and faculty members on Teaching-Learning

The assessment systems have obtained very positive feedback from all the stakeholders. However, the systems could be reviewed more frequently to remain updated. The feedbacks on the assessment to the students could be more promptly communicated.

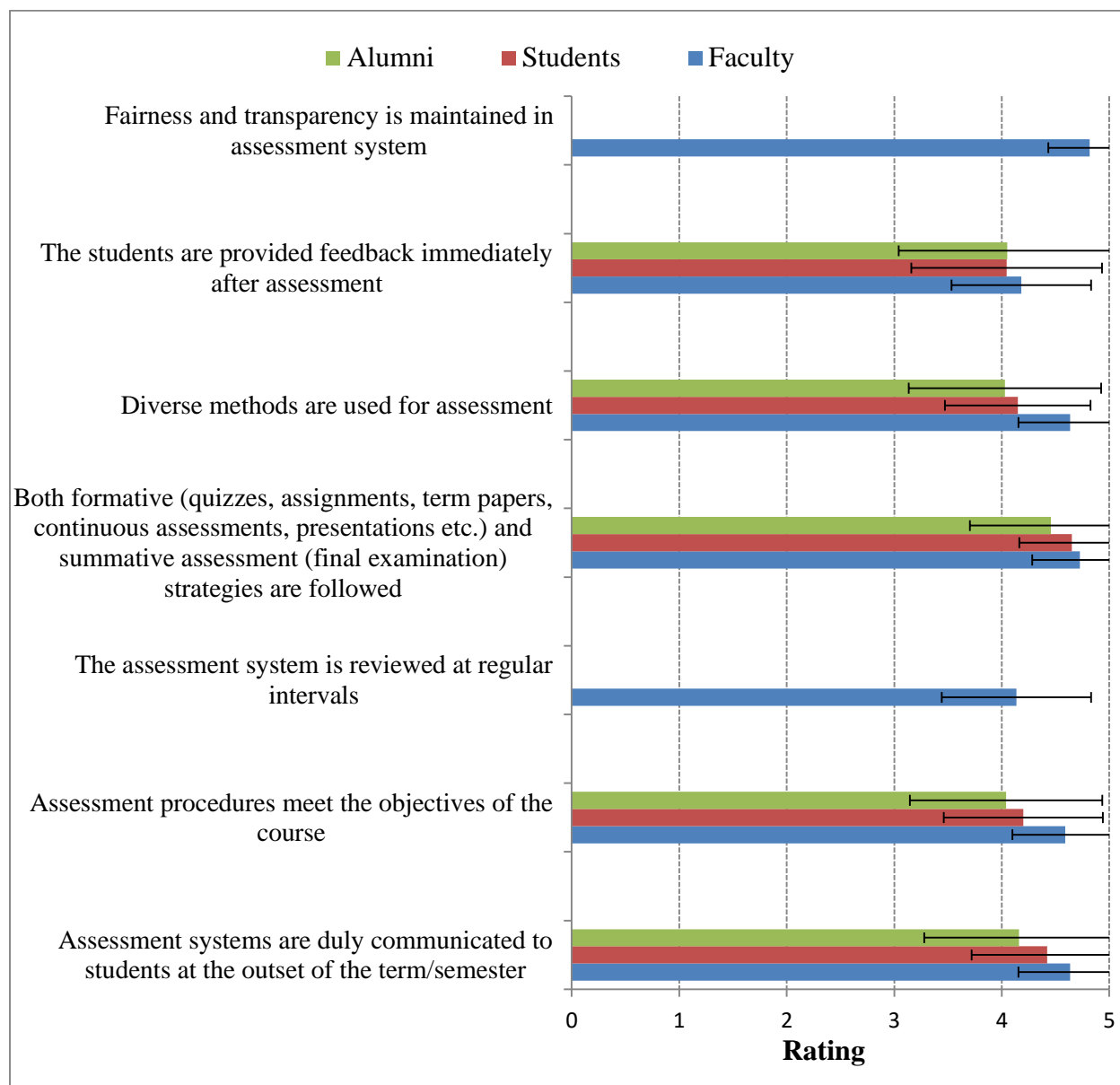


Figure 6.11: Survey Responses (Mean ± standard deviation) from students, alumni and faculty on Learning-Assessment

There is good agreement on the issue that the assessment systems are communicated to the students in the right time as all the faculty members provide lesson plans to the students in the beginning of the semester which carry all the information related to the methods of assessment. However, agreement is a little lesser among the students and even lesser among the alumni regarding the procedure of the assessment. Faculty members might have to be more diverse (case studies, reports, presentations etc.) in attaining the full satisfaction on the assessment procedure. The fact that the assessment system is reviewed at regular intervals is not at 100% satisfaction level for the faculty members referring to the scope for improvement. There is almost perfect agreement among the stakeholders regarding the utilization of both formative and summative assessment strategies. However, students are not provided with the feedbacks on assessment in all cases which should be facilitated from the faculty members' ends. The fact that all the faculty members believe that fairness and transparency is maintained in the assessment systems is reassuring that the faculty members are committed to ensure and maintain the quality.

CHAPTER 7

Student Support Services

University of Asia Pacific continues to improvise in its approaches to address the requirements of the students' academic, mental and physical support. Directorate of Students' Welfare (DSW) office is the dedicated point to address the counseling, career and various non-academic support needs for the students. The department offers and provides the platforms for co and extra-curricular support activities.

Standard 6-1: Academic guidance and counseling should be formalized with proper documentation.

7.1 Academic Guidance and Counseling

The students of the CE department are informed about relevant rules, regulations, policies, procedures and practices to ensure proper academic guidance and counseling in different ways. Before the beginning of each semester, orientation programs are organized centrally and also at the department for newly admitted students. During the central orientation sessions, the students are addressed by Chairman of Board of Trustees, Vice-Chancellor, Pro-Vice Chancellor, Registrar and Directorate of Student Welfares informing about the rules, regulation, codes of conduct, policies, etc. of UAP. Further, the department gives them an orientation in the program (B.Sc. in Civil Engineering) that the students are enrolled in. During orientation sessions, they are also provided with Information booklet and Prospectus, and also informed about different support services available during their stay at UAP. Moreover, the tuition waiver policy of UAP is also informed.

7.1.1 Booklets

‘Information Booklet’ which details all the academic code of conduct and other requirements for a student to maintain his/her continuing status at UAP, is provided to the students during central orientation. Furthermore, the departmental brochure (i.e., Prospectus) is provided to them at the orientation in the department. The prospectus includes the courses and credit requirements for each subsequent year, the details on the facilities of the department, staff and faculty members so that the students can refer to it while they need any kind of guidance.

7.1.2 Faculty Advisor

Every student is assigned to a faculty advisor whom the student can consult regarding course registration, academic problems and even personal difficulties in meeting the requirements of the program. The faculty advisor addresses the problems of the students in light of the universities’ rules and counsels the students in cases of confusions, frustrations and lack of confidence. Each student admitted to the department is assigned an Academic Advisor. Usually the advisor is not changed for the four year program unless s/he leaves for a higher education or so. Thus students are able to discuss their issues and take advice related to any academic phenomena. Students are also responsible to keep regular contact with his/her advisor who will review and eventually approve students’ specific plan of study and monitor subsequent progress of the student.

7.1.3 Directorate of Student Welfares (DSW)

Recently, UAP has formulated a Directorate of Student Welfares (DSW) Office. Although the office is still at its infancy, it certainly is a step towards progressing in addressing the students’ demands and concerns.

7.1.4 Social Counseling Centre (SCC)

A central counseling service is arranged for the students. Therefore, in different instances students can take benefit from such counseling services to overcome frustration from stresses. This central counseling service is immensely helpful to guide and help students in the right direction when they feel lost and helpless.

7.1.5 Students' Academic Support Cell

There is a students' academic support cell/office under the directorate of students' welfares to manage and mobilize the information flow regarding the opportunities of higher education for students in abroad. The cell is also responsible to facilitate the collaborations that have been signed between local/foreign Institutions and UAP to initiate student/faculty exchange and encourage collaborative research endeavors. New collaborations could also be sought through this office. The establishment of this cell was triggered by the gap of knowledge regarding the external funding opportunities among the students and the need to revive the dormant collaborations.

7.2 Co-curricular and Extra-curricular Activities

Standard 6-2: Organization and Participation in co-curricular and extra-curricular activities should be recognized as an integral part of skill development mechanism and quality education

Standard 6-3: Co-curricular and Extra-curricular activities should be encouraged with reasonable time to participate

The enthusiastic and appreciable participation of the students in the co-curricular activities has become a tradition and an integral part of education of the students of Department of Civil Engineering.

7.2.1 Central Clubs

There are certain central clubs under DSW which offer regular extra-curricular activities for the students such as workshops, seminars, competitions, career fairs etc. The central clubs under DSW along with the faculty advisors are listed in table 7.1.

Table 7.1: List of Central Clubs

Index	Name of the Club	Faculty Advisor	Department
1	Cultural club	Ms. Layeqa Bashir	Basic Science and Humanities
2	Drama Club	Dr. Mahmudul Alam	EEE
3	Literary Club	Md Shazed Ul Hoq Khan Abir	English
4	English Language Club	Nellufar Yeasmin	English
5	Football Club	Md. Saleh Akram	Law and Human Rights
6	Cricket Club	A.H.M. Zadidul Karim	EEE
7	Basket Ball Club	Md. Masrur Mamun Hossain	Architecture
8	Indoor Games Club	Molla Rashied Hussein	CSE
9	Public Speaking & Debating Club	Md. Lokman Hussain	Law and Human Rights
10	Social Awareness (Welfare) Club	Ms. Mahjabeen Gazi	Pharmacy
11	Film & Photography Club	Muhtadin Iqbal	Architecture
12	Entrepreneur Club	Ms. Sadia Tangem	DBA

7.2.2 Civil Festival and Club Activities

In order to ensure the full development of the students and to help them build up a well-rounded

personality and intellectual agility Civil Engineering Students' Forum (CESF) arranges Civil Festival each semester, which depicts the club activities of the students. The main purpose of organizing the Civil Festival is to bring out the potential of the students alongside their regular academic performance with the support of their teachers and seniors and create a connection among them through the passing of knowledge and experience. Each club operates under the supervision of a faculty assigned as Club Advisor. Each arranges quiz competition, project and poster presentation, oral presentation, case study, etc. The clubs that are specific to the department of Civil Engineering Department are listed in table 7.2 followed by a brief description of each club.

Table 7.2: List of Departmental Clubs

Index	Name of the Club	Faculty Advisor
1	Environment and Disaster Management Club	Dr. Tanveer Ferdous Saeed
2	Structural Engineering Club	Dr. Md. Jihad Miah
3	Transportation Engineering Club	Mansura Sharmin
4	Geotechnical Engineering Club	Nafeesa Khan
5	Math Club	Md. Nazmul Alam
6	Art and Photography Club	Syed Jamal Uddin Ahmed
7	Film Club	Limon Barua
8	Sports Club	Musawer Ahmad Saqif
9	Cultural Club	Dr. Sharmin Nasrin

objective of the publication was to nurture the writing skills of the students.

The Environment and Disaster Management Club raises awareness by means of workshops, seminars, quiz competitions, youth innovation challenges and celebrating the important

international dates, such as the Earth Day, observed in April by participating (e.g., cleaning own campus). Through the activities of EDMC members and volunteers, all the students of the department are made aware of maintaining clean classroom environment as well as the university campus.

The Structural Engineering Club holds project competitions, presentation competitions and facilitates student participation in external competitions through providing guidance on different structural designs, failures and problems.

The Transportation Engineering Club arranges quiz competition, oral presentation, poster presentation and project competition which enrich the depth and breadth of knowledge of the students in the field of transportation engineering.

The Geotechnical Engineering Club provides platforms for the students to hold discussions, quizzes and projects related to soil properties and foundation of structures.

The Math Club publishes their yearly magazine “Infinity” each year during the festival. Besides this, in 2005, the CE student forum which was established with a pragmatic view to encourage co-curricular activities, published the first issue of the CE students’ publication, “Bhumikampa”. The ‘CE Student Forum’ publishes the subsequent issues of “Bhumikampa” regularly.

The Art and Photography Club arranges art & photography exhibition and competition in each civil festival. Some of the students have achieved national awards in the field of photography.

The Film Club facilitates the making of short films and screening of those within and outside the universities premises.

The Sports Club organizes different indoor and outdoor sports like- Football, Cricket, Carom, Table Tennis, Chess as a part of Civil Festival. Civil Engineering Cricket team became runner-up in the Inter Departmental Cricket Championship in Fall 2011.

The Cultural Club arranges cultural competition and programs such as- debate, stage play in various occasion and the winners of these competitions are sometimes sent to perform in the national programs. CE Debating team has participated in Inter- Departmental Debate Competition and became Champion in Fall 2013.

7.2.3 Achievements

Being encouraged by the department mentorship, students of the department participate in external competitions both individually and in group. Some of the recent achievements among the outcomes of the students' participation are provided below:

- **Md. Sohrab Hossain and Koushik Boshak (together), Safayet Hossain and Jobaer Ahmed (together) and Md. Sazzad Hossain** achieved 1st, 2nd and 5th positions respectively in the National River Olympiad (2017) organized by North South University.
- **Md. Ashikur Rahman**, student of 35th batch achieved 3rd position in the Hydraulic Olympiad (2017) organized by the Department of Water Resources Engineering, BUET.
- **Md. Safayet Hossain, Mohammad Sazzad Hossain and S. M. Mahmudur Rahman Akash**, students of 33rd batch achieved 3rd position in the Trust Bridge Making Competition (2017) organized by North South University.
- **Masud Rana, Kazi Salehin Hasan and Md. Iftekhar Ul Islam**, students of 32nd batch achieved second runner up position in the project showcase competition (2016) (Tower Bridge of Bangladesh) organized by Military Institute of Science and Technology.
- In 2016, **UAP** has been declared as ACI Outstanding University by American Concrete Institute (ACI) for the academic and extra-curricular activities of the students of the Department of Civil Engineering.
- **Ariful Hasnat**, UAP graduate has been selected as a delegate of ASCE in the 'Future

Leader Forum’ at the next the ‘Asian Civil Engineering Coordinating Council (ACECC)’ meeting to be held in Nepal in April 2017.

- UAP graduate and present faculty, **Ariful Hasnat** was the **First Bangladeshi** to be selected as the “**ASCE New Faces of Civil Engineering 2016**” and received award in person from the ASCE President in Outstanding Projects and Leaders Gala held in Arlington VA, USA.
- **Rashed Kabir Shoumik**, a 3rd-year student of civil engineering department, UAP has participated in the Inter-University Short Film Festival (IUSFF) organized by North South University Cine and Drama Club and his film named ‘Security’ achieved **the 2nd runner-up position**. His other film ‘Janala’ also secured **6th place** in the competition.
- A Film titled ‘Flop- the Cylinder’ has been selected in the 10th International Children’s Film Festival.
- A Film titled ‘Calculator’ has been selected in the 8th International Children’s Film Festival.

7.3 Career and Placement

Standard 6-4: Career counseling and activities relating to placement of graduates need to be done on regular basis under the management of a permanent administrative set up

Career Counselling Center (CCC) formed under DSW, provides career advisory services to the students in a professional manner. Regular career fair also supports the students in the job hunting. Department of Civil Engineering, University of Asia Pacific organized its 1st Career Festival on August 5, 2017 for the final year students. The objective of organizing this festival was to provide a new platform where graduating students will be connected with the professionals, learn about their policies, expectations from different organizations on how much effort the students should

put forth to obtain a job. On the event, 13 companies were invited and individual seminar was conducted by each company for the students. A fair was also organized consisting of stalls of the participating organizations containing CV booths, attractive distributions and showcases from each company. This initiative intended to help the students to focus on and build their career in the right direction. Established professionals in Civil Engineering field were invited as special guests to provide motivational speech to the students. Participating organizations included Building Technology & Ideas, The Structural Engineers Ltd, Sheltech (Pvt.) Ltd, Lafarge Holcim, BSRM (Bangladesh Steel Re-rolling Mills), Crown Cement, Center for Natural Resource Studies, Engineering and Research Associates Ltd, BBS Group (Bangladesh Building Systems), SMEC Group, Water Aid, IWA (International Water Association and CEGIS (Center for Environmental and Geographic Information Systems). Figures 7.1 and 7.2 provide snapshots of the event.



Figure 7.1: Student Participants with the head of the Department, Career Fair 2017



Figure 7.2: Students visiting BTI stall in the Career Fair

The graduates of this department have maintained a decent record of serving various job sectors in Bangladesh as well as other countries. A survey has been conducted among around 200 graduates of different graduating years. From the survey it has been revealed that around 51% of

the alumni are involved in Engineering jobs and serving as Assistant Engineer, Structural Engineer, Project/Site Engineer, Designer and Consultants in various reputed institutions like LGED, IWM, IWFM, Concord Real Estate Ltd., SMEC, HBRI, FOSROC Chemical India Pvt. Ltd., DDC and many other private consultancy firms.

Another 15% of the alumni are doing managerial jobs in various projects as well as companies. A good number of alumni (7%) are involved in academic jobs like Lecturer, Graduate Research Assistant and Teaching Assistant in UAP and other universities. Moreover, 6% of the highly ambitious graduates have gone abroad to pursue higher studies and the percentage is increasing day by day. The survey result is shown in figure 7.3 in the form of a pie chart.

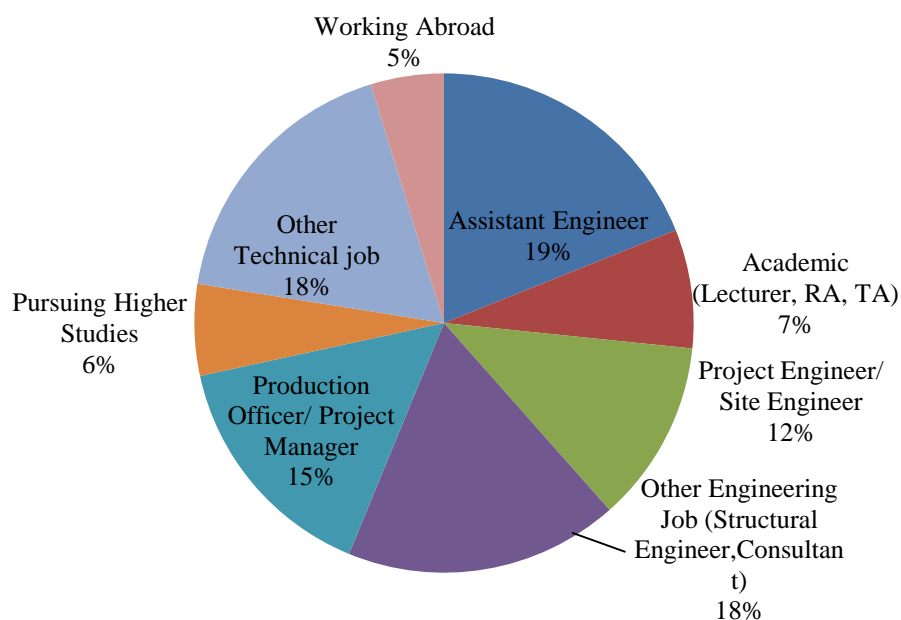


Figure 7.3: Percentage of different jobs served by the UAP graduates

7.4 Alumni Services

Standard 6-5: The university and program offering entities should have well organized and meaningful alumni association to support the quality education efforts

Standard 6-6: The university and program offering entities should have a formal system to collect alumni feedback on the effectiveness of academic programs, emerging changes in the industry and working life

Standard 6-7: The university and program offering entities should organize programs relating to career guidance and university industry collaboration (UIC) with the active participation of alumni association

Civil Engineers' Alumni Association at UAP (CEAA, UAP) was formed in 2015 during the 18 years celebration of the department at Krishibid Institute, Dhaka. The association formed its basis as a non-political, non-communal and non-profitable body with a constitution of its own. The constitution details the necessary information regarding the Alumni association including the address, jurisdiction, nature and goals, membership eligibility, process and categories, rights and privileges and cessation of membership etc. The constitution also lists the advisory committee, the executive committee and the active members.

The Association holds regular meetings, aims to maintain an account and aspires to contribute to the needs of the Civil Engineering department through collaborating in different events and festivals that the department organizes. Participation of the alumnae members were evident and successful in the 1st Civil Engineering career festival during 2017 where “Meet the alumni” session enabled the students to get direct feedbacks and advices from the successful alumnae members of the department. However, more frequent exchange of views and coordination between the department and the alumnae association is expected to be achieved for active participation of alumnae association in the career guidance and university-industry collaboration.

7.5 Community Services

Standard 6-8: Students have the opportunity to involve themselves in community services under the management of the program offering entity in an organized manner on a regular basis

The students and faculty members actively participate in many community services. There are some voluntary clubs conducting their services to make the society a better place to live with peace and harmony. Environment & Disaster Management Club (EDMC) and Short-Term Pre-School Education Program (SMSSK Group) are two active clubs continuing their good works on a regular basis.

7.5.1 Awareness Raising by Environment & Disaster Management Club (EDMC)

With the motto “To improve environment by generating awareness in individuals” this club is conducting various charitable works which include relief for flood victims, Distribution of warm clothes in winter prone areas, Shitalakkhya riverside cleaning and awareness program, Dhanmondi lake cleaning project etc. Figure 7.4 shows the participation of students and faculty in the riverside cleaning program.



Figure 7.4: The faculty and students participating in the Shitalakkhya riverside cleaning and awareness program

7.5.2 Short-Term Pre-School Education Program (SMSSK Group)

Because of poverty, a lot of kids in Bangladesh skip school for being unable to bear the education expenses. There are also other kids who are completely uninterested in school or do not know what it even is to counter this problem. In 2009 some of the students of the department of Civil Engineering of University of Asia Pacific decided to consult Professor Dr. M. R. Kabir about it, which led to the decision of starting up a short-term pre-schooling after class school activities with the help of the professors for the financially challenged children.

The students of the department of CE ventured out into the slums of Dhaka city to search for such deprived children and finally started first class in the 2nd July, 2009. Since then, the students of Civil Engineering, University of Asia Pacific have been conducting 6 month long classes for such deprived children. The students have not only been providing pre-school education to the children but also providing the children with behavioral and social education along with enhancing their creativity and interests. The children are also supplied with pencils, erasers, books and bags for

their daily school activities. Children are also provided knowledge on hygienic practices. At the end of the semesters the children are admitted to renowned school and all the expenses for the children are borne by voluntary donations from the Professors of the Department of Civil Engineering. Figure 7.5 provides an account of one of the mentioned groups of students with the volunteer students and faculty members involved in the program.



Figure 7.5: The faculty and students of Department of CE with the children of Short-Term Pre-School Education Program

7.5.3 Warm Cloth Distribution Program during winter

The students of Civil Engineering Department take regular participation in distributing warm clothes in winter prone rural areas of Bangladesh. This activity is monitored by the Environment & Disaster Management Club (EDMC). The president, vice president and active members of EDMC inform the students before any program and assign a deadline to collect and store warm clothes. Students and faculty members donate clothes personally as well as gather from their

neighborhoods. After the completion of collection, the club divides its members in groups and sends them to the areas that require immediate help. Figures 7.6 and 7.7 are provided as pictorial documentation of the noble practice in the department.



Figure 7.6: Faculty participation in warm cloth collection by Environmental Club



Figure 7.7: Club members donating warm clothes to the victims

7.5.4 Blood Donation Program

Blood donation activities are conducted through social networking websites and students' forum of Department of Civil Engineering. There is a database containing the blood group of all the current students and alumni. Whenever there is a need for blood in the nearby hospitals, notifications are posted on the facebook group named 'Blood Bank- UAP' and 'CE Students' Forum- UAP'. Students respond to the notifications and volunteer according to their availability.

7.5.5 Public Awareness Campaigns

Different public awareness campaigns are conducted by the students of CE. These include: Afforestation program, Road crossing awareness program, roadside cleaning program, removal of nails from trees etc.

7.5.6 Personal Community Services

Faculty Members engage themselves in reviewing journal articles in well acclaimed journals. The experienced faculty members in different divisions of Civil Engineering also participate in different conferences through chairing or moderating different sessions, seminars and also involve themselves in judging different competitions such as Olympiads, poster exhibitions that are organized by external universities or other organizations.

7.6 Survey Results

The feedback regarding the student support services have been obtained from all the stakeholders. 200 students, 114 alumni and 22 faculty members participated in the survey. The responses on the different aspects of evaluation of the stakeholders are presented in figure 7.8. Students, alumni and faculty mostly corroborated on a satisfactory academic guidance and counselling along with the availability of financial support. Provision to participate in co-curricular activities seem to be adequate. However, the alumni and students' feedback are not as frequently sought to update the learning outcomes as required or expected. This issue might result to a subsequent gap between the students' knowledge and the learning outcomes that are targeted to be achieved out of the courses.

The students and the alumni are not fully in agreement regarding the adequacy of the financial grants which are available to the students. This is also because the hardship of the respective students itself should justify for them to be eligible for the grant, however for the same reason, some students fail to keep up with the requirement of academic excellence which is another criteria for eligibility.

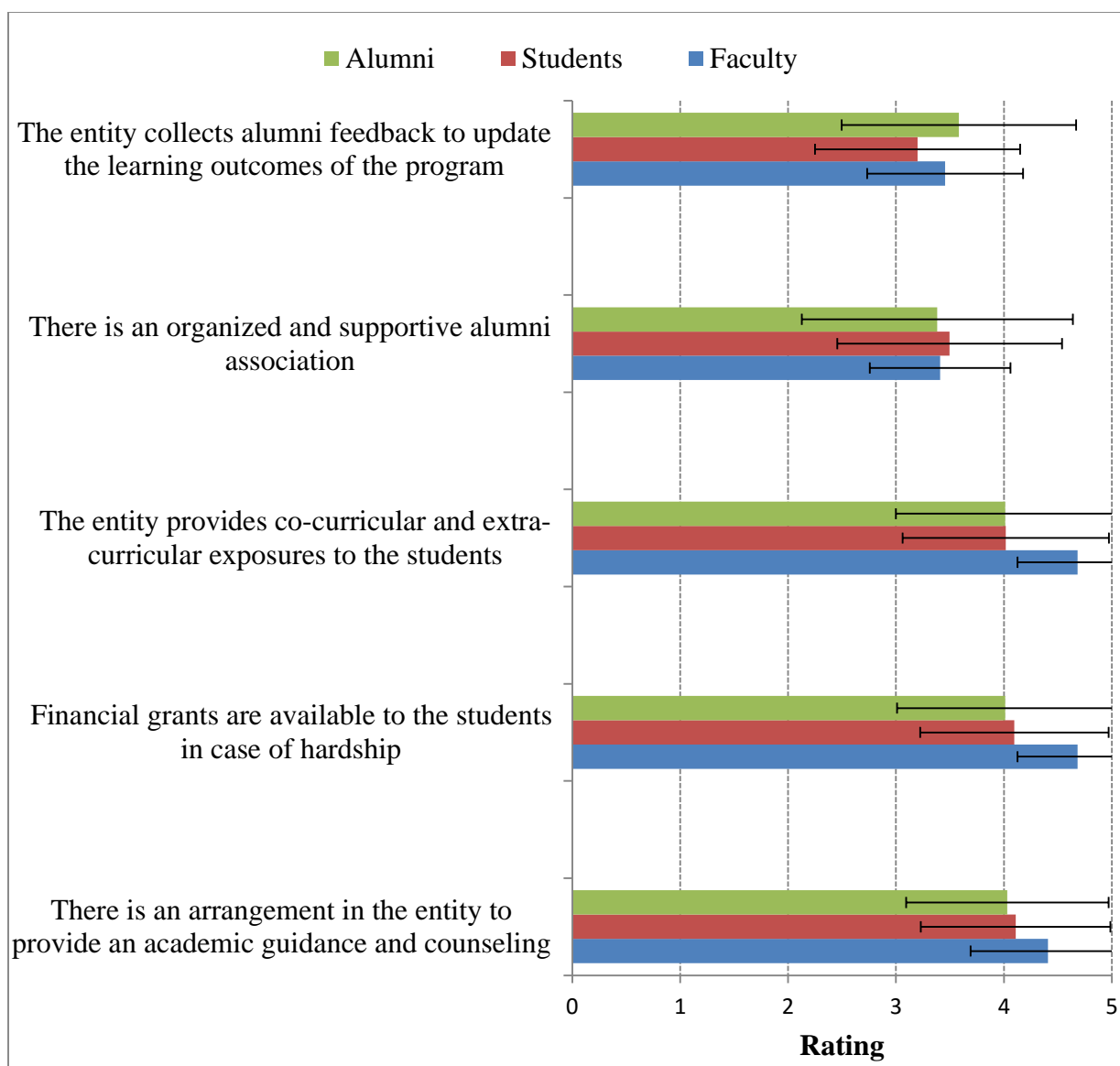


Figure 7.8: Survey Responses (Mean± standard deviation) from students, alumni and faculty on Student Support Services

The fact that the students and alumni are not totally in agreement regarding the exposure to the extra and co-curricular activities should be justified through the lack of facilities and enough spaces for playground, gymnasium, rehearsal rooms, common rooms etc. Seasonal events are held, but year round nurturing is not a reality. In addition, the formation and organizing of the alumnae association and its activities are not visible and interactive enough with the department which is supported by all the stakeholders.

CHAPTER 8

Staff and facilities

Since 1997, the Department of Civil Engineering (CE) at UAP attracts high quality academic and non-academic staffs who are actively contributing to the excellence of the department.

Department of Civil Engineering is under the deanship of the School of Engineering. Headed by a Professor on a rotation basis, the department has a total of 35 posts of which 23 are academic and 12 are non-academic posts. The post of Head has tenure of 2 years. At present, there are 23 active full time academic and 12 non-academic staff. Academic posts include Professor, Associate Professor, Assistant Professor and Lecturer.

Table 8.1a and 8.1b provide the organograms that detail the number of positions for academic and non-academic staff

8.1a: Organogram of the Department of CE, UAP (Academic)

Position	Number of posts
Head	1
Professor	4
Associate Professor	4
Assistant Professor	6
Lecturer	8
Total	23

Table 8.1b: Organogram of the Department of CE, UAP (Non-academic)

Position	Number of posts
Departmental Administrative Officer	1
Laboratory Assistant	4
Library Assistant	1
Office Assistant	1
Laboratory Attendant	3
Messenger	2
Total	12

8.1 Recruitment

Standard 7-1: In order to select the right person for the right job university must have a transparent, fair, appropriate and properly documented recruitment policy, specifying the entry qualifications and outlining the key stages for both academic and non-academic staffs

The recruitment (academics and non-academics) is done through fair selection and under fixed policy. The recruitment process starts through the issuance of advertisement in national-level newspapers and university website. The eligible and short-listed applicants go through interview and/or written tests before the final selection.

8.1.1 Rules for Recruitment

The recruitment policy clearly specifies the minimum requirements for the concerned applicant. which are detailed in Table 8.2 a, table 8.2b and table 8.2c.

Table 8.2a: Minimum requirements for academics at CE, UAP

Position	Minimum Requirement
Professor	<p>a) First Class B.Sc. Engg degree or equivalent in relevant branch and a Ph.D. or an equivalent degree in relevant discipline from a recognized university/institution plus 11 years of teaching or 14 years of service experience of which, in both cases, at least 8 years of active teaching in the post of Assistant Professor and/or above (of which at least 3 years must be in the post of Associate Professor).</p> <p>b) At least 10 publications.</p>
Associate Professor	<p>a) First Class B.Sc. Engg. Degree or equivalent and an M.Sc. Engg./M. Engg. Or an equivalent degree in relevant branch from a recognized university/institution plus 8 years of teaching or 11 years of service experience of which, in both cases, at least 5 years of active teaching in the post of Assistant Professor.</p> <p>Or</p> <p>First Class B.Sc Engg degree or equivalent in relevant branch and a Ph.D. or equivalent degree in relevant discipline from a recognized university/institution plus 7 years of teaching or 9 years of service experience of which, in both cases at least 5 years of active teaching in the post of Assistant Professor</p>

Table 8.2a: Minimum requirements for academics (continued)

Position	Minimum Requirement
Assistant Professor	<p>a) First Class B.Sc. Engg. Degree or equivalent in relevant branch obtained from a regnized university/institution plus 3 years of teaching experience or 6 years of professional experience or a combination of both a minimum 1 year of teaching experience.</p> <p>Or</p> <p>First Class B.Sc. Engg. Degree or equivalent and an Ms/M.Sc. Engg. Or an equivalent degree in relevant branch form recognized university/institution plus 3 years of service, experience of which 1 year in teaching</p> <p>Or</p> <p>B.Sc. Engg. Degree or equivalent in relevant branch and a Ph.D. or equivalent degree in relevant discipline from a recognized university/institution. In this category selection board may recommend for additional increment(s) considering the number of publications and research of candidate.</p> <p>b) At least 1 publication.</p>
Senior Lecturer	<p>The candidate must possess CGPA – 3.00 or a First Class B.Sc. Engg. Degree or equivalent in relevant branch obtained from a recognized university/institution plus 2 years of teaching experience or 4 years of professional experience or MSc. with 1 year of teaching/2 years of professional experience.</p>
Lecturer	<p>The candidate must possess CGPA – 3.00 or a First Class B.Sc. Engg. Degree or equivalent in relevant branch obtained from a recognized university/institution.</p>

Table 8.2b: Minimum Requirement for Officer at CE, UAP

Position	Minimum Requirement
Departmental Administrative Officer	Masters with Administrative experience. Computer literacy is essential.
Laboratory Assistant	Diploma in Civil Engineering.

Table 8.2c: Minimum Requirement for Supporting Staff at CE, UAP

Position	Minimum Requirement
Office Assistant	Graduate with Administrative experience. Computer literacy is essential.
Library Assistant	Must have Master's degree in Library and Information Science with at least two years relevant experience in University and having good command over English language and computer proficiency in Word processing (English and Bangla).Familiarity with automated library management system and cataloguing software.
Laboratory Attendant	HSC(Science)
Messenger	None
Cleaner	None

Qualifications for different posts in the central administration are provided in table 8.3.

Table 8.3: Minimum requirements for central administrative positions at UAP

Position	Section	Qualifications
Registrar	Administration	Masters degree with good academic background. Dynamic, energetic, capable of working under pressure, ability to provide administrative support to the Vice Chancellor and to the Board of Trustees.

		Relevant administrative experience of 15 years in similar position is essential.
Deputy/Assistant Registrar	Administration	Candidates must have Masters Degree with good academic background. Ability to run offices, maintain records and files, and produce quality staff work will be prime consideration for the posts. Previous experiences in private/public universities in similar positions will be an added advantage. Computer literacy and a good command of English are essential.

A brief summary of the active members of faculty with their educational qualification are summarized in Table 8.4. The Table 8.5 summarizes their publication. However detailed profile and publication lists are provided in ANNEX 8 at the end of this document.

Table 8.4: Full time faculty list

Dr. M. Shamim Z. Bosunia Professor Emeritus PhD., University of Strathclyde, UK	Dr. M. R. Kabir Professor & Dean Ph.D., Catholic University of Leuven, Belgium, 1993
Dr. M. Mizanur Rahaman Professor & Head Postdoctoral researcher, Aalto University, Finland, 2009-2013	Dr. Iftekhar Anam Professor Ph.D., Texas A&M University, USA, 2000
Dr. Farzana Rahman Professor Ph. D., Saitama University, Japan, 2009	Mr. Emtazul Haque Associate Professor M. Sc. Engineering, University of Oklahoma, USA, 1997
Dr. Tanveer Ferdous Saeed Associate Professor Ph. D., Monash University, Australia, 2011	Dr. Sarah T. Noor Kakoli Associate Professor Ph.D., Concordia University, Canada, 2011

Dr. Nehreen Majed Associate Professor Ph. D., Northeastern University, Boston, MA, USA, 2011	Syed Jamal Uddin Ahmed Assistant Professor M. Sc., The University of Dundee, Scotland, UK, 2010
Dr. Md. Mahmudul Hasan Assistant Professor Ph.D., Ritsumeikan University, Japan, 2014	Dr. Sharmin Nasrin Assistant Professor Ph.D., Queensland University of Technology, Australia, 2015
Rumman M. Chowdhury Assistant Professor M. Sc., University of Stuttgart, Germany, 2014	Mansura Sharmin Assistant Professor M. Engg., CE (U. Toronto), 2013
Dr. Md. Jihad Miah Assistant Professor PhD, University of Pau and Payes de l'Adour, France, 2017	Dr. Md. Ashraful Alam Assistant Professor PhD, University of Malaysia, Malaysia, 2010
Md. Nazmul Alam Lecturer B. Sc. in Engineering (Civil), UAP, 2011	Mahfuza Tabassum Lecturer B. Sc. in Engineering (Civil), UAP
Musawer Ahmad Saqif Lecturer B. Sc. in Engineering (Civil), BUET, 2017	Nafeesa Khan Lecturer B. Sc. in Engineering (Civil), BUET, 2017
Israt Jahan Lecturer B. Sc. in Engineering (Civil), BUET, 2017	Fatima Afifah Lecturer B. Sc. in Engineering (Civil), BUET, 2016
Mohammad Sabbir Rahman Lecturer MSc, Kunsan National University, South Korea, 2016	Shameer Saleh Lecturer MS, University of Sydney, NSW, Australia, 2017
Md. Tarek Hasan Lecturer B. Sc. in Engineering (Civil), BUET, 2017	

Table 8.5: Summary of Publications by the faculty members

Name of The Faculty	Number of Journal Articles	Number of Books/Book Chapters	Number of Conference Publications
Dr. Muhammad Mizanur Rahaman	23	17	21
Dr. M. R. Kabir	16	2	25
Dr. Iftekhar Anam	5	1	33
Dr. Farzana Rahman	15	0	19
Emtazul Haque	0	0	2
Dr. Tanveer Ferdous Saeed	18	2	4
Dr. Sarah Tahsin Noor	5	0	8
Dr. Nehreen Majed	9	1	19
Syed Jamal Uddin Ahmed	2	0	2
Dr. Md. Mahmudul Hasan	7	0	6
Dr. Sharmin Nasrin	4	0	8
Rumman Mowla Chowdhury	3	0	5
Mansura Sharmin	0	0	1
Dr. Md. Jihad Miah	0	0	17
Dr. Md. Ashraful Alam	31	0	32
Limon Barua	0	0	2
Mahfuza Tabassum	0	0	1
Fatima Afifah	2	0	0
Mohammad Sabbir Rahman	4	0	6
Shameer Saleh	0	0	2
Md. Tarek Hasan	0	0	2

Standard 7-2: Salary and incentives should be reasonable to attractive and retain the talented and experienced staff members

8.1.2 Salary

The salary for academic and non-academic staffs are fixated based on experience, seniority and accomplishments. The salary structure is updated and revised to keep up with the national level standard.

8.1.3 Bonus

It is a general practice in the university that all the staffs receive two festival bonuses in a year.

8.1.4 Provident Fund

All permanent/regular employees at UAP enjoy the benefit of provident fund subject to PF rules.

Table 8.6 provides the provident fund rules.

Table 8.6: Provident Fund Rules: University of Asia Pacific

Provident Fund	<p>All employees of the University other than:</p> <ul style="list-style-type: none"> i. Persons who are in receipt of the pension from the Government and other bodies; ii. Persons who are over the age of 60 when appointed; iii. Part-time employees; iv. Persons who are on deputation and holding pensionable posts under Government and other bodies; and v. Persons appointed on a temporary basis for a period not exceeding one year and persons appointed in leave vacancies shall subscribe every month to the University Provident Fund except when on leave without pay: <p>Provided that an employee who has not served and contributed to the Provident Fund continuously for a minimum period of three years shall not receive anything beyond his deposits in the fund with interest accrued thereon:</p> <p>Provided further that notwithstanding the previous provisions, the University authority may at the time of making a particular appointment decide that the individual appointed to that particular post shall or shall not be a subscriber to the Provident Fund.</p>
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Rate of subscription and contribution	<p>A sum equal to 10% percent of the basic pay of all employees below the rank of administrative officer or equivalent, and 5% for all other employees, are deducted from the salary of each subscriber every month and paid into the Provident Fund and the University contributes an equal amount in respect of each subscriber in each month:</p> <p>Provided that the subscriber has already made contribution for twenty-four consecutive months</p> <p>In calculating the monthly pay on which deductions are to be made and contributions are to be paid any fraction of a taka of such monthly salary shall be omitted.</p>
Mode of Investment	<p>A University Provident Fund account is opened in Bank in Dhaka to be decided by the University authority to which the total deductions from the pay of the University staff as well as the corresponding contributions from the University under paragraph (2) above are credited at the beginning of each month. All investments and securities are held jointly by the Vice Chancellor or the Treasurer. In the absence of the Vice Chancellor or the Treasurer, The Pro-Vice Chancellor or the Registrar respectively executes authority.</p>

8.1.5 Leave Rules

Leaves rules applicable to the staffs at UAP are provided in table 8.7

Table 8.7: UAP leave Rules (Effective from 1st July 2003)

Index	Type of Leave	Description
1	Casual Leave	10 days in a calendar year. Not exceeding 3 days at a time. This leave will not accumulate.
2	*Earned Leave (EL)	14 days per 1 full year of service. Accumulation: 45 days (max.)
3	Sick Leave	Included in Earned leave.
4	Duty Leave	The duration of leave are determined by the sanctioning authority on the basis of the mode of job
5	**Study Leave	<p>Maximum 5 years (2 years for M. Sc./MS/M. Phil. & 3 years for Ph.D.</p> <p>25% of the last drawn basic pay is paid for total duration of leave which are subject to joining at the UAP and submission of bond regarding further</p>

		continuation of active teaching of not less than 2 years of the total active teaching of 5 years at UAP. Total amount of 25% is paid as per the following procedure. I. 25% of the amount is paid in the first month of joining. II. Rest 75% is paid in equal monthly installments during the next 2 years.
6	***Maternity Leave	60 days with full pay and 30 days without pay

*Those, who have availed no leave up-to 30-06-2003, are deemed to have accumulated leave upto that date to the extent of 28 days @ 14 days each completed year of service. Those who have availed leave of less than 28 days up-to 30-06-2003 then the period of leave enjoyed are deducted from the leave that falls due to him @ 14 days each completed year of service, maximum 28 days, and up-to that date and the balance, if any, will be credited in his leave account. If the leave enjoyed up-to 30-06-2003 is more than 28 days, then the matter are ignored.

**Study leave are entitled to a full-time faculty serving the UAP for not less than 1 year. Study leave implies no break in study during leave period.

***A female employee serving the UAP for not less than 1 year is entitled to Maternity leave. This leave can be granted to an employee for a maximum of 2 occasions at two years interval during the entire service life in the UAP.

A. Weekly and public holidays can be prefixed and suffixed or both with Casual Leave/Earned Leave/ Maternity Leave.

B. Period of study leave are counted as service in the UAP for the purpose of annual increment, provident fund and gratuity. Period of extra-ordinary leave (leave without pay) are not counted as service in the UAP for any purpose. Service in the UAP mean service in any post in the UAP.

C. Every full time faculty will retire from the UAP from his/her 65th birth-day. After retirement the UAP may employ him/her on contract for a further period of 2 years (maximum) on negotiated fixed remuneration with approval of the Board of Governors, depending on his/her health conditions and the needs of the UAP.

Standard 7-3: Academic Staff are working as a team with high level of sincerity

In order to nurture the team spirit within the department environment and empower the faculty members with obligations through delegation of responsibilities, specific academic activities are divided among groups of faculty members with relevance to their expertise and fields of interest. Different clubs are assigned with faculty club advisors and different laboratories are assigned with faculty in-charge. In addition to all these, certain other committees have been formed to oversee

the exams, questions moderations, curriculum review, budget preparations etc. The details on the departmental committees comprising faculty members are provided in table 8.8.

Table 8.8: Academic functional committees comprising faculty members

Functional Committee	Faculty Convener
Curriculum Committee	Dr. Iftekhar Anam
Examination Committee	Dr. Tanveer Ferdous Saeed
Moderation Committee	Dr. Sarah Tahsin Noor
Budget Committee	Dr. Iftekhar Anam

8.2 Staff Development

Standard 7-4: Faculty-members are very serious and keen to enhance professional knowledge and skills through research and higher study leading to PhD degree

Standard 7-5: All academic staff must have training or orientation for effective academic guidance and counseling

Staff development is the key to the success of an efficient department. Understanding the necessity of continuous staff development, the department supports (provides facilities, nomination) to attend training programs, workshops, seminars and international conferences. The university encourages its staff for higher study by granting study leave.

At the commencement of each semester, an orientation workshop is arranged for the newly appointed academics where distinguished resources persons provide lectures on various aspects

such as: responsibilities of academics, diverse and effective teaching methods, research and publications, ethics, etc.

An extensive training program of 7 weeks' duration in each semester, namely Improving Learning and Teaching Skills (ILTS) is also provided to the new academics. It is a weekly daylong program that focuses on the skills and strategies of improved teaching and learning as well as lecture delivery skills.

Civil Engineering department has recently initiated a series of seminars namely UAP CE SEMINAR SERIES. The seminars are held on regular basis. External distinguished resource persons give lecture on specific subjects of civil engineering. Faculty members as well as students take part in the seminars.

The Center for Research, Training, Testing and Consultation (CRTTC) of Civil Engineering Department has the ability to coordinate in house training program with external guest speakers. Though such programs have not yet been organized the department has plan to start soon.

The Institute for Energy, Environment, Research and Development (IEERD) provides financial support for the academics to attend national and international conferences, seminars and workshops. IEERD also provides funds for in house research. IEERD is established at the University of Asia Pacific as a constituent research and academic institute or center with a separate administrative structure. The purpose of it is to keep pace with regional and global research of development and education which support staff development.

No provision is there yet for training program for the development of non-academic staffs.

In addition, timely salaries, provident fund, group insurance, increments as per qualification, basic logistic supports, easily available laboratory facilities are some of the options that are adopted for staff development.

8.3 Peer observation

Peer observation is conducted through several practices including:

- Attendance: All faculty members are required to maintain 40 office-hours per week and a daily roster of hours of service for each faculty member is maintained in the department
- Punctuality in class: Faculty members are required to commence the classes as scheduled as well as fulfill the designed duration of classes.
- Make-up class: If any class is missed, academics need to fill up make-up class form provided from department. This ensure the completion of the total numbers of classes in a semester.
- Question moderation: All questions are moderated that ensures the total completion of course content and following the Bloom's Taxonomy Action Verbs.
- Results scrutinizing: After preparation and prior to final submission, results are scrutinized by another academic (nominated by department).
- In-Class observation: Senior faculty members pay surprise visits to classes of different courses in order to evaluate the quality of the lecturing and classroom activities during the commencement of the sessions. This practice allows the evaluation of the peer as well as the monitoring of the required duration of the classes.

Peer observation of academics through the above-mentioned points is done by the department and the monitoring comments are reflective of the academics' performance.

8.4 Career Development

Academics have opportunities to get involved in several in house extra or co-curricular tasks for developing their career in the positions such as: Laboratory in charge, Club advisor, and Administrative post like Proctor/Assistant Proctor.

The Department always encourages academics to attend national and overseas seminars, conferences, workshops, training program by providing financial support (through IEERD) and granting leave. A well defined rules and policies is already available in Department.

The opportunities are also available for non-academic staffs if required.

8.5 Key Performance Indicators (KPIs)

Key performance indicators (KPIs) define a set of values against which to measure. KPIs are used to evaluate the success of an organization or of a particular activity. At UAP, there are several performance indicators which are measured quantitatively and qualitatively to judge staffs' performances:

- Teachers evaluation: Students evaluate instructors' performance by filling in an online questionnaire which is mandatory to be done to sit for the final examination. The questionnaire is designed to evaluate confidence, preparation, punctuality, knowledge, motivation etc. of the instructors'. The answers of the students' evaluation are analyzed by statistics and the result is used to measure performance in teaching.

- Counselling hours: Every faculty ensures daily slots of counselling hours for students. The maintenance of the hours is also considered as an indicator.
- Student advising: Each faculty has 40-45 advising students in each semester. The faculty advisor provides advise not only regarding academic matters but also other issues like career planning, higher studies planning, psychological problems etc.
- Research: Research contributions and publications are considered at the time of salary increment and up-gradation or promotions of academics.

Similar application form is also available for non-academic staffs. The process is carried out with due consideration of their performance in carrying out the responsibilities.

8.7 Survey Results

The feedback regarding the staff and facilities have been obtained from 22 faculty members and 12 non-academic staff. Figure 8.1 shows the survey responses of the faculty members regarding the opportunities and the existing practices in the department that concern them. There seem to be consensus regarding the adequacy of the recruitment policies, research and development practices and opportunities. Team work has been expressed to be satisfactory as well. However, the department has to address the salary and incentive issues to make those more attractive which are crucial to retain a skilled pull of academic staff. Most of the faculty members are satisfied with the academic and research atmosphere to nurture and apply the professional knowledge, but it could be improved through more online facilities and congenial digital framework. There is little disagreement regarding the opportunities for participation in seminars, workshops and training programs as faculty members are assigned to participate in internal and external events according to their interests and concentrations.

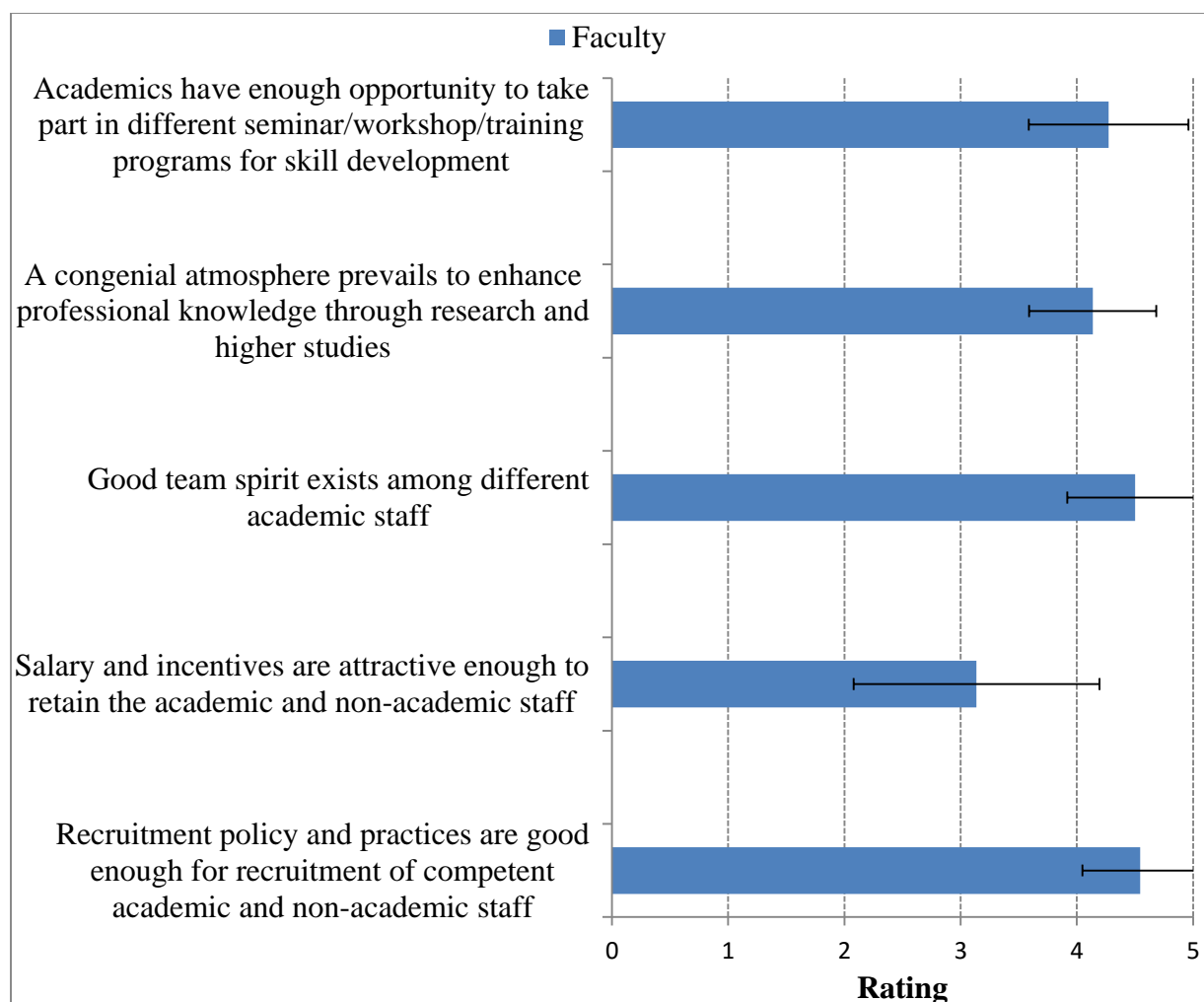


Figure 8.1: Survey responses of academic staff on the Staff facilities and opportunities

Figure 8.2 provides the feedbacks of the non-academic staff regarding their facilities and opportunities in the department. Consensus exists among the non-academic staff regarding the team rapport, supportive working environment and existence of performance indicators for promotion. Disagreement seems to appear in the issues of provisions for skill development programs, salary levels and incentives for good performance. Improvements need to take place in the recruitment policy and salary structure, performance award system and development of skill development mechanism and programs.

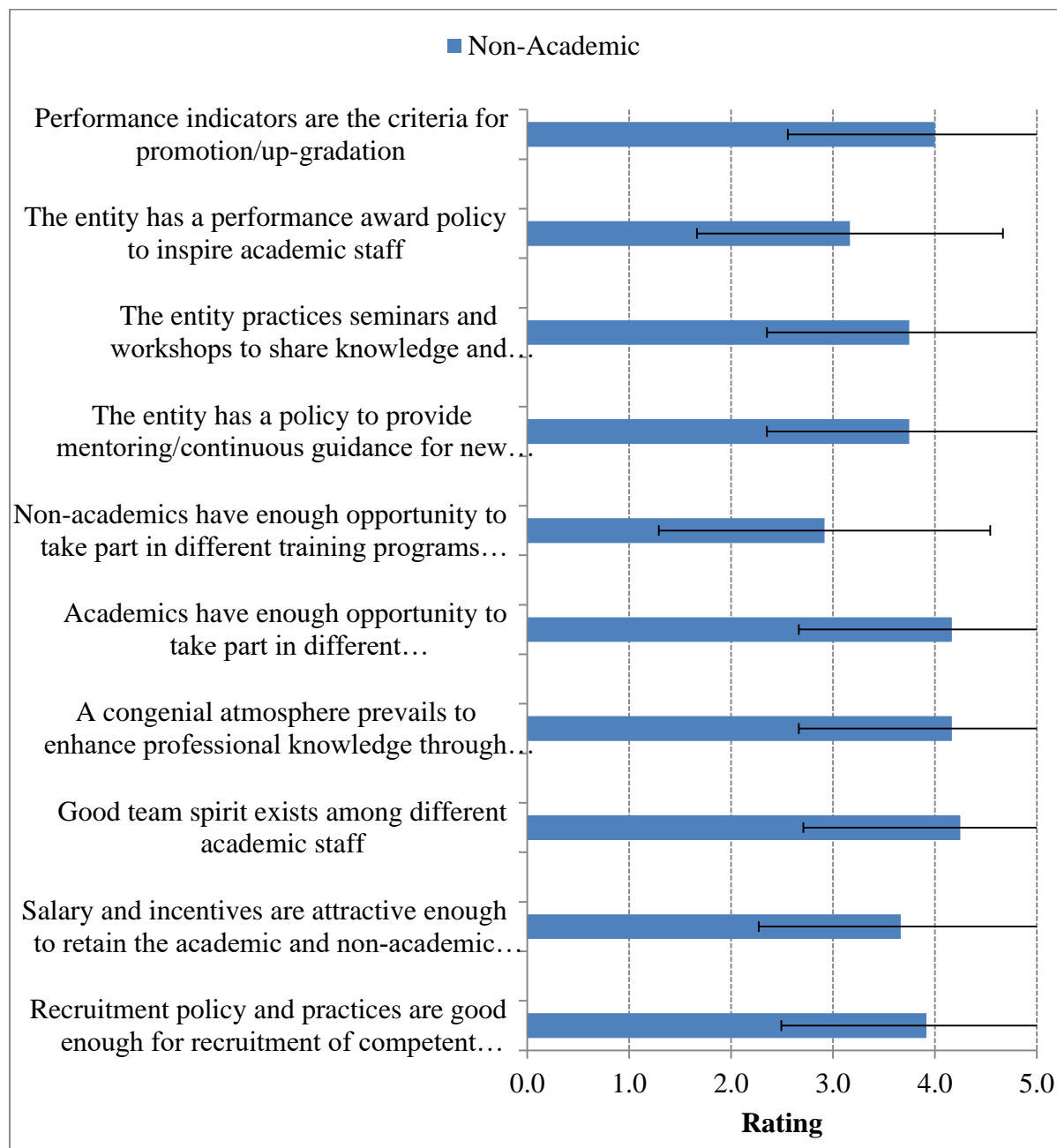


Figure 8.2: Survey responses of non-academic staff on the Staff facilities and opportunities

Both Academic and non-academic staffs seem to have certain grievances towards the salary and incentives which would motivate them to prioritize their working place. Performance award policy and provision of training programs need to be incorporated as well.

CHAPTER 9

Research and Extension

CE department and UAP emphasize on research activities to create new knowledge, thereby contributing to technical development of the country. To facilitate such research and extension, the department and the university have definite policies and programs. As such, faculties, students and alumni body of the department have strong research profiles and notable achievements.

9.1 Policy and Program

Standard 8-1: University must develop capacity with appropriate facilities and provisions to undertake research with national relevance and give due motivation and recognition to researchers

Department of CE had set the following policies and programs for supporting research, development and outreach activities as described in the following sections:

9.1.1 Graduate degrees in Civil Engineering

Masters of Science in Engineering (M.Sc. Engg.) and Masters of Engineering (M. Engg.) are offered by the department of CE. Graduate students who get admission in these programs are required to complete major research works as partial requirement of degree completion. Novelty of research works is ensured by the department so that it could be published in international peer reviewed journals or conference papers. Prior to commencement of research works, proposals are being evaluated by the Board of Post Graduate Studies (BPGS), that include faculty members from Assistant Professor ranking and above. The students are required to go through thesis defense process before an examination committee, to complete their degree requirements.

9.1.2 Compulsory research components at undergraduate level

Undergraduate students are also required to perform research works to fulfill degree requirements. Undergraduate students must complete 4.5 credit hours during their final year of study. The students present their findings in front of audience that include faculty members and students of the department. Many undergraduate research studies often produce novel works that are accepted by peer reviewed journal papers.

9.1.3 Publication requirements for academic promotion

The university has strict policies on academic journal requirements for academic promotion of the faculty members.

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

The Institute for Energy, Environment, Research and Development (IEERD) is a constituent research and academic institute of UAP. IEERD aims to undertake and promote research and teachings in the relevant fields. The purpose of the “Institute” is to keep pace with regional and global research of development and education in energy; which includes clean energy, increasing the energy efficiency of equipment & appliances, work on the quality of materials, environment, water resources & water management; and other related fields at the University.

9.1.5 Center for Research, Training, Testing and Consultancy (CRTTC)

The department provides consultation services to different government and private organizations through CRTTC. These services generally include materials testing, water quality testing, structural design, technical feasibility studies etc.

9.2 Fund and Facilities

Many government and non-government development projects have been implemented since the independence of the country. After construction constant maintenance of the system at a standard level is also a big challenge. These development activities cannot be performed without direct involvement of Civil Engineers. Thus, there is a very good opportunity for the Civil Engineers in Bangladesh, to participate in these development projects. The course curriculum of the department is designed to give the students a strong theoretical background coupled with laboratory experiences, projects and practical work, thereby providing them required knowledge and expertise for becoming competent Civil Engineers.

The department of CE has eight spacious, air-conditioned classrooms within its premises. The rooms have maximum sitting capacity varying from 40-50 students; all classrooms are equipped with modern teaching equipment such as: white boards, multimedia, overhead projectors and sound systems. These rooms are used mainly for theoretical classes of Civil Engineering.

The department has given priority to develop necessary facilities associated with laboratories. As a result, UAP became the first private university in Bangladesh to provide complete in-house laboratory facilities in all branches of Civil Engineering. All laboratories are equipped with modern equipment to carry out rigorous research works and practical classes. 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. The laboratories of the department include:

- Structural Mechanics and Strength of Material Lab
- Hydraulics Lab
- Engineering Materials Lab

- Transportation and Traffic Engineering Lab
- Geo-Technical Engineering Lab
- Environmental Engineering and Chemistry Lab
- Computer Lab

Graduate research students are also supported with books, journals, internet, printing facilities etc. Graduate research works are being funded if necessary. The Institute for Energy, Environment, Research and Development (IEERD) at the UAP also promote research activities of the students and faculty members in emerging fields. The Institute has a scrutinizing committee and an Advisory council. The Institute provides financial support for the followings:

- Publication charge for publishing research article in reputed journals
- Registration fee for presenting research outcomes in national and international conference/symposium/workshop/seminar/meeting
- Expenses for conducting research works at UAP

Faculty strength is one of the key parameters of the department. Currently, the department has 22 faculty members in total; 10 faculty members have Ph.D. degrees, who work and supervise student in various research areas including: integrated water resources management, transboundary river basin institutions, water conflicts and security, global water policies and water laws, structural dynamics, earthquake engineering, vehicular vibration, ocean wave mechanics, offshore structures, dynamic soil-structure interaction, random vibrations, improve road safety analysis and evaluation techniques, traffic calming decision making process and its prioritization system, statistics associated with transportation planning implications, service quality of public transport, bus rapid transit to commuters, pile foundation, unsaturated soil mechanics, problematic soils,

water and wastewater treatment, solid waste management, air pollution, bio-accumulation of environmental contaminants through food-chain etc.

The faculty members of this department are engaged in research works with renowned international universities. Young faculty members and many students of the department are either enrolled or graduated from prestigious universities of North America, Europe, Australia and Asia. Many faculty members have served as committee members in different national, international conferences, workshops as well as reviewers of peer reviewed journal papers.

Some faculty members and students of the department have received different awards for their research and project works as given below:

- Professor Dr. Muhammad Mizanur Rahaman received German Academic Exchange Service (DAAD) Travel Grant in 2016, The Scottish Government Travel Grant in 2015, University of Asia Pacific, Travel Grant in 2015 and Water Aid Travel Grant in 2014.
- Professor Dr. M. R. Kabir received Quality Leader Award from the World Council for Total Quality and Excellence in Education (WCTQEE) in 2011. He also received Exemplary Leadership Award from EDS Business School, Penang Malaysia, in 2012.
- Dr. Tanveer Ferdous Saeed, Associate Professor received the prestigious University Grant Commission (UGC) award for best research in Engineering and Technology in 2013.
- Dr. Sarah Tahsin Noor, Associate Professor received the Best Paper Award in the division of Geotechnical Engineering in the Global Civil Engineering Conference (GCEC 2017) in 2017.

- Dr. Nehreen Majed, Associate Professor received the Best Paper Award in the division of Water and Environmental Engineering in the Global Civil Engineering Conference (GCEC 2017) in 2017.
- Ariful Hasnat, Assistant Professor is the first Bangladeshi who received the “ASCE New Faces of Civil Engineering 2016” award. Mr. Hasnat received the award from the ASCE President in Outstanding Projects and Leaders Gala held in Arlington VA, USA in 2016.
- Dr. M. Shamim Miah, Assistant Professor received the Best Paper Award at the 5th International Conference on Advances in Civil and Structural Engineering (CSE), Institute of Research Engineers and Doctors in 2016.
- Dr. M. Shamim Miah, Assistant Professor received Reviewer Certificate of Construction & Building Materials (ELSEVIER) in recognition of the review made for the Journal of Construction and Building Materials, Elsevier, Amsterdam, The Netherlands in 2016.
- Undergraduate students Md. Sohrab Hossain and Koushik Boshak (together), Safayet Hossain and Jobaer Ahmed (together) and Md. Sazzad Hossain achieved 1st, 2nd and 5th positions respectively in the National River Olympiad organized by North South University in 2017.
- Undergraduate student Md. Ashikur Rahman achieved 3rd position in the Hydraulic Olympiad organized by the Department of Water Resources Engineering, BUET in 2017.
- Undergraduate students Md. Safayet Hossain, Mohammad Sazzad Hossain and S. M. Mahmudur Rahman Akash achieved 3rd position in the Trust Bridge Making Competition organized by North South University in 2017.

- Undergraduate students Masud Rana, Kazi Salehin Hasan and Md. Iftekhar Ul Islam achieved second runner up position in the project showcase competition (Tower Bridge of Bangladesh) organized by Military Institute of Science and Technology in 2016.

9.3 Fund hunting

Standard 8-2: University should have institutional approach to explore the possibility of corporate funding through university industry research collaboration

Since Bangladesh is a developing country, there is a scarcity of research funding from both government and industrial sectors. Despite such limitations, faculty members of CE, UAP are actively hunting for research and development funds. Table 9.1 includes different local and international research and development grants obtained by the faculty members of CE, UAP.

Table 9.1 List of research and development grants obtained by faculty members of CE, UAP.

Faculty	Project	Type	Source
Professor Dr. Muhammad Mizanur Rahaman	Academy of Finland, Research Project Grant	Research	Foreign
	Land and Water Technology Foundation, Finland, Research Project Grant		
	Sven Hallin Research Foundation, Research		
	TekniikanEdistämissäätiön (Foundation of Technology, Finland), Research Grant		
Professor Dr. M. R. Kabir	Manual of Environmental Management Plan of Completed Small and Medium Scale Water Projects of Bangladesh Water Development Board (BWDB)	Development	Local
	Updating of the Existing Groundwater and Land Subsidence Model		
	Long Embankment to Protect a Locality Against Wave Erosion at Mithamuin, Kishoreganj		
	Hydraulic Design of the Bridge over Sitalakhya		
	Physical Model Development for Jamuna Multipurpose Bridge Project		
	Management model at Barisal Irrigation Project (BIP)		
	Calibration and Simulation of Rainfall Run off model (NAM) for Bangladesh		

Professor Dr. Iftekhar Anam	Seismic/Non-Seismic Design/Construction/Retrofit Manuals for Capacity Development on Natural Disaster Resistant Techniques of Construction and Retrofitting for Public Buildings”, JICA-PWD Technical Cooperation Project CNCRP	Research	Local-Foreign
	Review & Modification of Structural Design for Enhanced Seismic Performance of a Proposed 10-Storeyed Residential Building		Local
	Technical Development to Upgrade Structural Integrity of Buildings in Densely Populated Urban Areas and its Strategic Implementation towards Resilient Cities, GOB-JICA co-sponsored Research Project SATREPS		Local-Foreign
	Dynamic elasto plastic behavior of Reinforced Concrete, Ministry of Science and Technology		Local
Professor Dr. Farzana Rahman	Structural Equation Model to Evaluate the Performance of Para-Transit Service Quality in Dhaka City	Research	Local
	Implementing Bus Priority Lanes as a Measure to Reduce Traffic Congestion by Using VISSIM		
	Assessing the Mode Choice Behavior Generated for Work Trips in Dhaka City		
Dr. Tanveer Ferdous Saeed	Constructed wetlands for textile wastewater treatment	Research	Local
	Application of Floating Wetlands for the Treatment of Buriganga River		
	Composting Production through Anaerobic Degradation		
Dr. Sarah Tahsin Noor	Experimental Investigation on Improvement of Soil Strength Using Additives	Research	Local
Dr. Nehreen Majed	Food Contamination, Aquatic Pollution and Biomagnification: Bangladesh Perspective (Phase I)		Local
	Food Contamination, Aquatic Pollution and Biomagnification: Bangladesh Perspective (Phase II)		
Dr. M. Shamim Miah	Experimental Investigation of Flat Plate and Flat Slab	Research	Local

9.4 Dissemination of Research Findings

Standard 8-3: University should have a system and policy to disseminate and transfer the research findings to the industry and community through extension services

The department is active on dissemination of research findings through publications in journals, conferences and collaborations with government and public organizations.

9.4.1 Publications

Faculty members of CE department have published in different peer reviewed journals and reputed national-international conferences. A list of publications and conference names are listed in Table 9.2 produced from five divisions of CE department.

Table 9.2: Publication lists and name of conferences where research works are published.

Division	Name of Journals	Name of Conferences
Structure	Malaysian Journal of Civil Engineering, Structural Control and Health Monitoring, Journal of Materials in Civil Engineering, Construction and Building Materials Journal, Journal of Composites for Construction, International Journal of Civil and Structural Engineering, Journal of Advanced Concrete Technology.	Global Civil Engineering Conference, Sixth International Conference on Structural Engineering, Mechanics and Computation, BUET-ANWAR ISPAT 1st Bangladesh Civil Engineering Summit, 1st International Conference on Advances in Civil Infrastructure and Construction Materials, IABSE-JSCE Joint Conference on Advances in Bridge Engineering-III, International Conference on Recent Innovation in Civil Engineering for Sustainable Development.
Transportation	International Journal of Education and Applied Research, Journal of Built Environment, Technology and Engineering, Journal of Transportation Technologies, Journal of Transportation System, Journal of Traffic and Transportation Engineering, Transportation Research Part A: Policy and Practice, Journal of the Eastern Asia Society for Transportation Studies, MOJ Civil Engineering, International Journal of Civil And Environmental Engineering, Transportation Research Record.	96 th Transportation Research Board Meeting, 4th Conference on Transportation Research Group of India, BUET-ANWAR ISPAT 1st Bangladesh Civil Engineering SUMMIT, International conference on Innovative Engineering Technologies, Transportation Research Board 94th Annual Meeting Compendium of Papers, International Conference on Recent Innovation in Civil Engineering for Sustainable

		Development, First International Conference on Advances in Civil Infrastructure and Construction Materials.
Geotech	Canadian Geotechnical Journal, Open Civil Engineering Journal.	Global Civil Engineering Conference.
Environment	Chemical Engineering Journal, Critical Reviews in Environmental Science and Technology, Water Research, Bioresource Technology, Process Biochemistry, Chemosphere, Journal of Environmental Management, Frontiers in Environmental Science, Water Science and Technology, Environmental Monitoring and Assessment.	Global Civil Engineering Conference, 8th International Civil Engineering Congress, 3rd International Conference on Advances in Civil Engineering, Sanitation Conference: Journey to Zero.
Water resource	Water Policy, Sustainable Water Resources Management, Natural Resources Forum, Journal of Water Resource Engineering and Management, International Journal of Sustainable Society.	ASTAAG, IRDR and CCOUC, Hong Kong, China, Conference on Water Security and Climate Change: Challenges and Opportunities in Asia, XV IWRA World Water Congress.

9.4.2 Collaboration

The department also collaborates with different national and international partners for consultancy and research. These collaborations support two-way research findings dissemination between CE department, UAP and collaborating partners. A list of the collaboration projects undertaken by CE department and partner organizations are enlisted in Table 9.3.

Table 9.3 List of collaboration projects and partner organizations.

Faculty	Project Title	Collaborating organization
Prof. Jamilur Reza Chowdhury And Dr. Sharmin Nasrin	Transport and Mobilities: Meeting the needs of Vulnerable Population in Developing Cities	University of Leeds, UK; University Oxford, UK; University of Manchester, UK; University of Durham, UK; Lagos State University, Nigeria; University of Cape Coast, Ghana; Urban Action Lab, Makerere University, Uganda; University of Pretoria, South Africa; University of Lyon, France; Sustainable, Low Carbon Transport Partnership (SLoCaT); and Institute of Transport Economics, Norway. Funded by Economic and Social Research Council, UK.
Prof. Dr. M. R. Kabir	Impact of Climate Variability on Stream Flow and Runoff Pattern	IUCN
	Khulna-Jessore Drainage Rehabilitation Project (KJDRP)	Surface Water Modelling Centre (SWMC)
	Fish Pass and Fish Friendly Regulators Study	Department of Fisheries (DOF)
	Water Availability and Usage Regime in Rural Bangladesh	Department of Public Health Engineering, Govt. of Bangladesh
Professor Dr. Iftekhar Anam	Assessment and Retrofitting for Affected Portions of the Existing Building of East West University	East West University
	Application and use of Glass Fiber Reinforced Polymer (GFRP) bars in Bangladesh	Auspicious
	Rechecking of Structural Assessment and Retrofitting Report	East West University
	Vetting of structural design for Gulshan House	Multiplan Ltd.
	Review and Modification of Structural Design for Enhanced Seismic Performance of a Proposed 10-Storeyed Residential Building	Building Technology and Ideas (BTI)
	- Review of CNCRP Manuals - Technical Development to Upgrade Structural Integrity of Buildings in Densely Populated Urban Areas and its Strategic	GOB and JICA

	Implementation towards Resilient Cities (TSUIB)	
	- Ductility & Prevention of Structural Failure - Ductility & Seismic Design of Structures	BSRM
	Earthquake Resistant Design and Construction of Structures for Civil/Structural engineers	Bangladesh Earthquake Society (BES)
	Structural Assessment of 16-Storeyed Commercial cum Residential Building at Karwan Bazar	Northern University Bangladesh
	Structural Design of Power Sub-Stations	KSRM, DPDC, NPBS, Energy Pac Engg.
	Theory and Applications of Structural Dynamics	Public Works Department
Professor Dr. Muhammad Mizanur Rahaman	Transboundary Water Management and Conflict Resolution in Asia	Chinese Academy of Sciences, Institute of Development Studies, University of Sussex, UK
Dr. Tanveer Ferdous Saeed	Pharmaceutical compounds removals in constructed wetlands	Edith Cowan University, Australia
Dr. Nehreen Majed	Dynamics of heavy metal uptake from water by commonly consumed fish species in Bangladesh	Chemical Engineering, BUET, Dhaka
	Application of Life Cycle Analysis on Industrial wastewater at US and Bangladesh	Manhattan College, USA
Dr. M. Shamim Miah	Technical Development to Upgrade Structural Integrity of Buildings in Densely Populated Urban Areas and its Strategic Implementation towards Resilient Cities (TSUIB)	Japan International Cooperation Agency - JICA, Japan and The People's Republic of Bangladesh, Bangladesh

9.5 Survey Results

The feedback regarding the process and practices about research have been obtained from all the stakeholders. 200 students, 114 alumni and 22 faculty members participated in the survey. Figure

9.1 shows the survey responses of all the stakeholders together on teaching-learning and learning assessments respectively in order to obtain a comprehensive and comparative assessment.

The single category (bar) of responses are relevant to the questions that were directed towards only the displayed category of the stakeholders. Stakeholders do not entirely agree that the department has a clearly defined research policy.

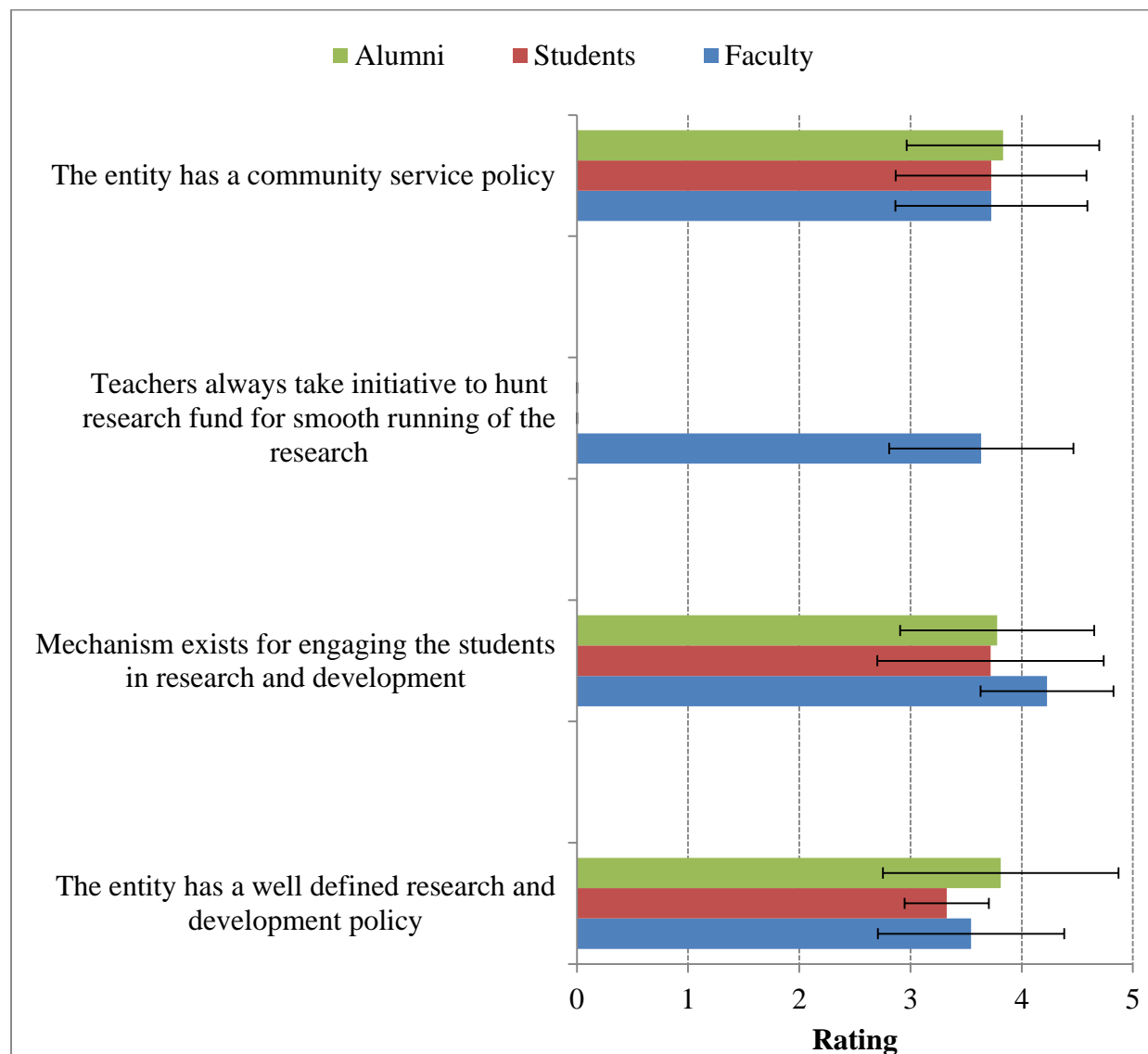


Figure 9.1: Survey Responses (Mean± standard deviation) from students, alumni and faculty on Research opportunities

According to most students and alumnae, there could be more mechanisms in practice to engage students in research. The research hunt could be comprehensive, spontaneous and more rigorous as well. The community service policy is not communicated to the extent that the department could proudly display the uniqueness of the activities. The department needs to be pro-active regarding the mentioned issues to boost up the research and the extended activities.

CHAPTER 10

Process Management and Continuous Improvement

10.1 Self-assessment /Quality Assurance

Standard 9-1: University or the entity must have internal quality assurance system with set policies and procedures for quality assurance

The landmark recognition of the department which was achieving the accreditation by Institution of Engineers, Bangladesh (IEB), was attained in 2007. This provided the department with a national as well as a global acknowledgement. For this purpose, the department had to prepare its first official self-assessment report in 2006. Accordingly, the B.Sc. Civil Engineering program and the facilities were reviewed physically by the team (consisting of 3 members), formed by Board of Accreditation for Engineering and Technical Education (BAETE), IEB. For continuing the accreditation, the department prepared self-assessment report in 2012 and again in 2017.

Recently, the department has given priority to implement outcome-based education (OBE) system by addressing the program outcomes of both Washington Accord and ABET. This is a milestone that will uplift the Civil Engineering department at UAP to a unique level.

10.2 Improvement plan

Since the moment of satisfying the peer-review team of BAETE (IEB), the department has always given efforts for continuous quality improvement. In this respect, the biggest accomplishment of UAP is that all the departments now operate at its own premises. Therefore, conducive and improved learning environment can be ensured. The university keeps records of individual student in automation (ORBUND) since 2013. The same software is used also for course registration.

The recent establishments of several bodies (such as DSW office, Social Counseling Centre, IQAC, Students' Academic Support Cell, etc.), aiming to provide extensive supports to the students, would be noticeable shortly. The upgradation and new additions in all the laboratories are common, but these become significantly evident at its permanent location. Embracing the spirit of continuous quality improvement and shifting the focus to Outcome-based-Education will lead the department towards achieving international recognition.

The department will address the feedbacks from the stakeholders for further improvement to satisfy the mission and PEO of the department.

10.3 Stakeholders' Feedback

To date, the department has received stakeholders' feedback in different ways. However, except students' feedback, the results of the other stakeholders had not been analyzed previously.

- Since 2013, UAP has been fostered by the renowned Civil Engineer, Professor Dr. Jamilur Reza Choudhury as vice-chancellor. He is involved with several local and international organizations. For example, he was the Technical Adviser of Padma bridge. Therefore, the department of civil engineering can receive his directions and instant feedback on any activities curricular and co-curricular activities of the department.
- The department collects students' feedback on each course every semester, and the results are sent to the respective faculty member and the head of the department. Vice-chancellor and Pro-vice chancellor also receive the students' feedback on each course offered by the department.

- The department appoints Teaching Assistants who were also UAP graduates and showed their outstanding performance during undergraduate program. Therefore, the feedback of fresh graduates can also be obtained.
- The curriculum design and review committee consists of faculty members from other universities and therefore, the proposals are in line with the requirements.
- The connections among the Alumni (engaging in higher education in home and abroad) and faculty members are also a mode of sharing their experiences.

Based on the feedbacks received, the department updates the course contents, provides directions to the faculty members to stress on improving students' communication skill (especially, presentation skill), etc. Moreover, different activities such as study tour, field trip, site visit, etc., are given importance to enhance student's knowledge about practice and ability to link theory to practice. In this respect, collaboration with industry is being initiated.

10.4 Use of Peer Observation Results

The department applies different techniques for peer observation, such as

- Self-assessment of individual faculty (annually)
- Assessment of individual faculty by the Head of the department (annually)
- Teaching evaluation by the students
- Monitoring the availability of the faculty members during academic counselling hours throughout the semester
- Maintaining the availability of the faculty members for advising during registration period

- Monitoring whether the students receive feedback timely after assessment (class test, midterm exam, etc.)
- Monitoring if lesson plans are provided at the beginning of the semester by the course teacher
- Monitoring if learning outcomes are properly addressed and assessed
- Monitoring if the answer scripts are properly checked
- Monitoring if the exams are set according to the lesson plans that was provided to the students through question moderation before the final exam

The teacher's evaluation, focusing the teaching and assessment strategies, is considered as one of the Key Performance Indicators. The teachers, receiving evaluation significantly below average, are provided 42-hours training throughout the semester. The classroom lectures are also monitored randomly.

The status of research dissemination of individual faculty is assessed by the Head of the department and is considered essential for the approval of annual increment.

In order to ensure OBE in assessment methods, the department has recently introduced 'Question Setter Form' and Question Moderation Form'. These forms help the faculty members the main objectives of OBE. The moderation committee ensures whether course teacher has incorporated the changes suggested by the moderator to assess all the learning outcomes appropriately.

10.5 Regular Updating of Program Objectives and ILOs

The department had followed input-based system previously and hence the course contents were updated time-to-time to match the higher-order job requirements. Recently, the department has

given priority to implement outcome-based education (OBE) system by addressing the program outcomes of both Washington Accord and ABET. The lesson plans of different courses include both the learning outcomes and program outcomes addressed. This is a milestone that will uplift the Civil Engineering department at UAP to a unique level.

10.6 Survey Results

The feedback regarding the process management issues have been obtained from 22 faculty members. Figure 10.1 shows the survey responses of the faculty members regarding the existing process, plans and continuous improvement.

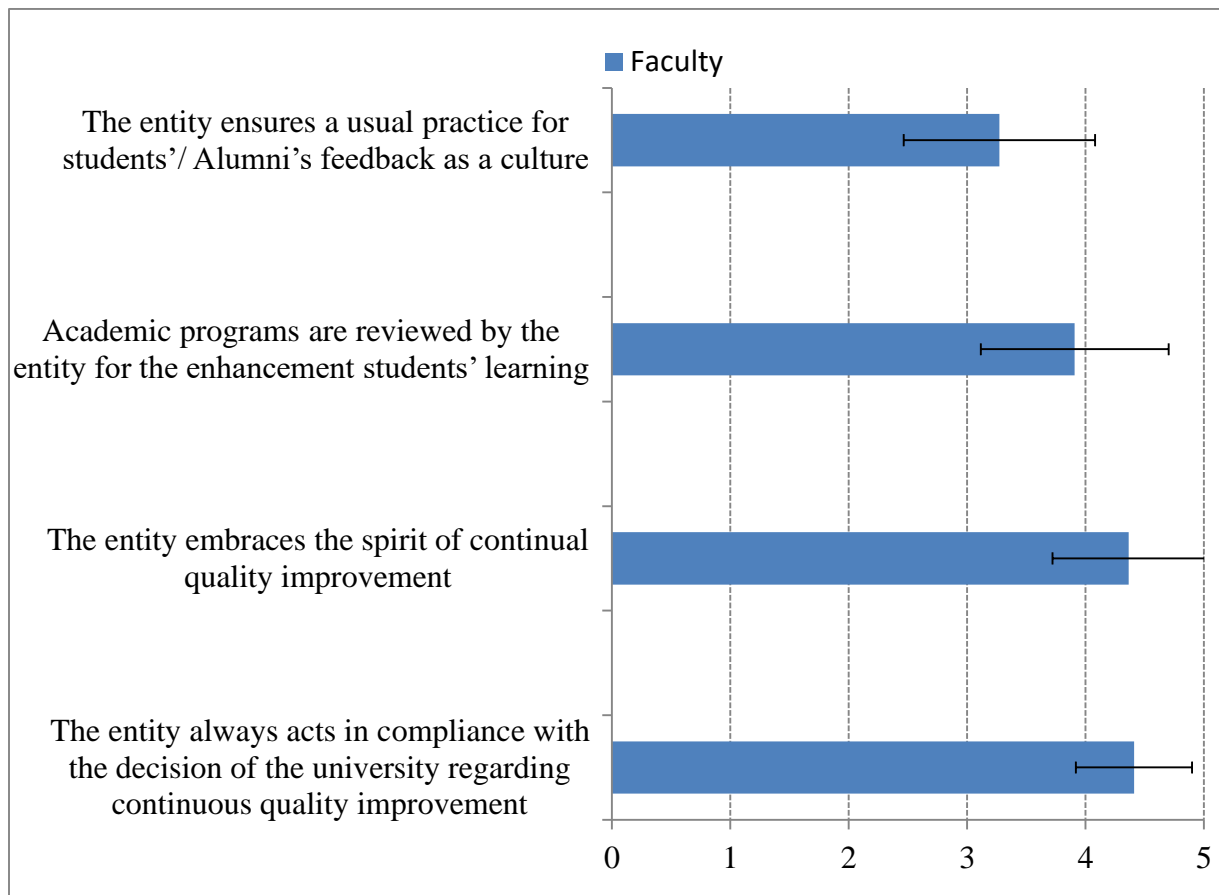


Figure 10.1: Survey responses of faculty members on the process management issues

The academic staff are mostly in agreement that the Department practices continual quality improvement which are compliant with the university decisions. The agreement is lesser towards frequent review of academic program and even lesser regarding seeking for alumni/student feedback. This is reassuring that the dedicated faculty members while agreeing to the need of the continual improvement, have also addressed the need for the stakeholders' feedbacks.

CHAPTER 11

SWOT Analysis

SWOT analysis is an acronym for *Strengths, Weaknesses, Opportunities, and Threats* which are evaluated as parts of a planning method done in a structured manner. SWOT analysis is a useful technique for understanding an entity's strengths and weaknesses, and for identifying both the opportunities open to the entity and the threats that the same entity faces. The analysis helps focusing on the strength, minimizing threats and taking the greatest possible opportunities that are available. Evidently, strengths and weaknesses are internal to the entity and proper strategies help improving those, however opportunities and threats are external factors which can be hardly controlled, but careful strategies have to be adopted to address those elements.

SWOT analysis is usually performed by every organization at reasonable intervals to address the needs of the changing environment and implement strategies to cope up with the surrounding. The department of Civil Engineering at UAP has also evaluated its potentials and shortcomings through analyzing the strengths, weaknesses, opportunities and threats at various time points through the inputs of the versatile faculty pool and external visitors. The self-assessment initiative has further enabled the entity to gain feedbacks from different stakeholders through survey to add to its own SWOT analysis. This chapter is a compilation of all the previous discussions sessions and the external feedbacks on SWOT analysis for each of the categories that the entity has been assessed for.

11.1 Strengths

Governance

- The statements of Vision, Mission, Program Educational Objectives, Program Objectives, and Learning Outcomes are clear, well defined and adequately communicated.
- The organogram of University of Asia Pacific (UAP) represents the structure of workforce clearly and depicts the relationships among employees, departments and jobs at different levels.
- One of the most undeniable strengths of the department is that the academic calendar is maintained strictly and results are published timely in compliance with the ordinance. The stakeholders exhibit strong agreement in this statement as well.
- UAP maintains standard award policies for disbursements of fellowships, scholarships, prizes and medals in accordance with the University regulations.
- The university supports in the establishment and maintenance of laboratories, workshops, centers and institutes for the development of teaching and research while at the same time encourages co-curricular activities to nurture the innate capabilities of students.
- UAP maintains proctorial committee, disciplinary board and sexual harassment committee to establish and practice discipline in the premises. Violation of any UAP rules leads to imposition of fines, suspension, expulsion, or rustication.
- UAP management sticks to well-developed and clearly defined service rules and human resource policies.
- The decision making procedure in the entity is participatory and decisions are taken with fairness and transparency.

- The Civil Engineering (CE) department has a conducive learning environment that satisfies the stated mission and objectives of the department as agreed by the stakeholders from the survey responses.
- Documentations of the committee decisions, attendance registers and all the academic affairs are properly maintained in the department.

Curriculum Design and Review

- UAP ensures periodic review of various academic programs. Department of CE has a well-structured course and curriculum committee composed of the Head of the Department, an external subject-matter expert and the senior full-time faculty members). The Head of the Department acts as the convener of the committee that meets once every semester for the purpose of curriculum review.
- From the survey responses it has been found that all stakeholders are in agreement of the courses in the curriculum being consistently arranged from lower to higher level.
- Curriculum in UAP CE department strongly addresses the program objectives and program learning outcomes that make this entity unique and one of the best compared to contemporary private universities. All stakeholders agreed that the curriculum addresses the objectives and learning outcomes of the programs.
- Course contents, learning outcomes, assessment strategies and prerequisites are clearly stated in the lesson plans and the curriculum.

Student Admission, Progress and Achievement

- Admission policy ensures entry of quality students, and admission procedure is quite fair in the department which is agreed by the stakeholders. To ensure quality intake, B.Sc. in Civil Engineering program requires that students having a total GPA of 7.5 and above at

SSC and HSC or equivalent exam are eligible to apply for admission. The stakeholders also admitted that admission policy reasonably ensures entry of capable and quality students.

- An advisor is assigned to each newly admitted student to monitor his /her progress.
- Mandatory counseling hours are set by all faculty members which are one third of the total credit hours.

Teaching, Learning and Assessment

- B.Sc. in Civil Engineering program has introduced outcome-based education (OBE) and learning, which is interactive in nature. From the survey responses all stakeholders confirmed that lesson plans are provided to the students in advance, and modern devices are used to improve teaching learning process. Various educational strategies are also being implemented as part of the OBE-based learning.
- Teaching-learning is interactive and supportive as strongly agreed by the stakeholders.
- In each course students get the opportunity to learn the application of theories in real life context. This is done through various teaching methodologies i.e. case studies, exhaustive exercise, analysis and experimentation in lab work, presentations, class discussions, field trips at the end of the final semester etc.
- There are strict invigilation guidelines, prescribed format for moderation and scrutiny which ensures fair and honest evaluation of students by the faculty members.
- Teachers provide regular feedback and students' progress are regularly recorded and monitored as agreed by the stakeholders.
- Survey responses revealed that the highly qualified faculty members are also very much cooperative which encourages the students to improve their academic standing.

- Strict requirement and imposition of 70% attendance rule is very useful in making a student regular in following the curriculum which ultimately contribute towards better performance.

Staff and Facilities

- Department of CE has 25 full time faculty members who earned from internationally reputed universities at home and abroad (12 PhD holders and 5 M.Sc.). Accordingly, most of the core courses (if not all) are being currently offered through the subject experts (obtained specialization) in the fields of Civil Engineering.
- UAP maintains well-documented recruitment policies, leave rules and other facilities for staffs.
- UAP revises pay scales on a need basis including salary, festival bonuses, provident fund and gratuity for academic and non-academic staffs.
- Faculty diversity is quite exemplary in Civil Engineering Department. 10 out of 25 faculty members are females among whom, four members are PhD degree holders and two members are MSc degree holders.
- The faculty survey responses show that good team spirit exists among different academic staffs.

Physical Facilities

- UAP has its independent permanent campus at the heart of the capital which makes it easy for the students to commute from different parts of the city.
- CE department sits acquiring a 20000 square feet of area on the sixth floor of the UAP building, containing seven spacious classrooms and a meeting room equipped with modern amenities.

- The department also has high speed internet connectivity both for the faculty members and students, a state of the art computer laboratory, departmental library containing sufficient number of civil engineering related books, theses and a female common room.
- UAP has a well-equipped central medical center with physicians and related staffs to meet medical emergencies.
- There are separate rooms for professors and associate professors, cubicles for assistant professors and two common rooms for lecturers equipped with modern facilities (PABX extensions, printers etc.).
- There is a spacious, hygienic and well ventilated cafeteria where foods are sold at an affordable rate.
- Different stakeholders agree that CE department has all the laboratories necessary for teaching-learning required to be achieved in psychomotor domain in B.Sc. CE program.
- The University has a central prayer room for Muslims.
- From the survey it has been confirmed that there are competent manpower and office equipment available to support the needs and run the departmental affairs.

Student Support Services

- The department facilitates different club activities, such as workshop, presentation, quiz, debate etc., in the classrooms throughout the semester. To encourage extra-curricular activities, the department organizes ‘Civil Engineering Festival’ every semester. On the day of the event students not only have opportunities to demonstrate different project activities relevant to Civil Engineering but also have opportunities to participate in different cultural activities.

- UAP has a separate office named Directorate of Students Welfare (DSW) to provide necessary support to the students. DSW is in charge of organizing central co-curricular activities, personal & professional development programs and managing financial support for underprivileged students.
- A central counseling service is available for the students to guide and help students in the right direction when they feel lost and helpless.
- To cope with the current demands of the recruiters, the department takes initiatives such as various workshops, seminars, debate competitions, project competitions, quiz competitions, poster and presentation competition, photography exhibitions, and sports competitions through different clubs.
- Department of CE tries to continually impart knowledge to the students beyond classroom teaching. As a part of this, seminars are held on a weekly basis, where renowned experts of the discipline share their experiences and wisdom with the budding civil engineers.
- Every semester final year students have the opportunity to go for field visits to gain exposure to different civil engineering applications which helps in culminating the learning.
- Department of CE organizes career festival for graduating students to provide a new platform where graduating students connect with the professionals, learn about their policies, expectations from different organizations on how much effort the students should put forth to obtain a job.
- A picnic is attempted every year in Fall semester for the students and the faculty members for relaxation purpose.

- The department encourages students for accomplishing their social commitment by facilitating short term Pre-School education program run by Students in CE department for financially challenged children.
- Participation and direct involvement of faculty members in the community service encourage the students to involve themselves in social welfare.

Research and Extension

- UAP has a central research institute named The Institute of Energy, Environment, Research and Development (IEERD) to facilitate research and collaborations. The faculty members receive funds for various purposes which include basic research works, publication of articles in journals, registration fees and conveyance for participation in national and international conferences.
- The department arranges workshops on research methodologies in an attempt to improve faculty members' research capabilities and create enthusiasm for research among students. Participation is encouraged in workshops that are arranged in home and abroad.
- The faculty members have access to renowned journals like ASCE, ACI, Elsevier and Wiley through the internet.
- Students' involvements in research activities are ensured in coursework through proper credit allocation under the supervision of faculty members. Students are always encouraged and guided to participate in different conferences.

Process Management and Continuous Improvement

- Department of CE has standard and well-defined policies for admission, question moderation, examination and evaluation as strongly supported by the faculty members.

11.2 Weaknesses

Governance

- In spite of having a well-defined organogram, UAP lacks adequate staff at different administrative levels which obstructs smooth operation of administrative activities.
- The existing administrative staffs need to be more professional, efficient and competent in carrying out the responsibilities. Proper training and staff development programs are missing in the process.
- Documentation of students' and staff records should be modernized and easily accessible. More improved computerized database management system should be introduced.
- Peer Observation & Feedback Process are not spontaneous enough to ensure quality improvement.

Curriculum Design & Review

- Although the department has reviewed the existing curriculum, certain other revisions are still pending to be approved and implemented.
- The curriculum is heavier on the cognitive side and has lacking in developing the psychomotor and affective domains.

Student Admission, Progress and Achievement

- The ratio of the intake to the total number of applicants is still not satisfactory.
- The admission test schedule during fall semester collides with that of public universities. This has a significant impact on the number and quality of the applicants.

Teaching, Learning & Assessment

- Internship is not included as a part of curriculum and accordingly, students have significant lacking in industry experience.

- Employers in the survey responded that graduates from the UAP CE Department have significant lacking in confidence and communication skill. Strategies should be adopted that enhance students' confidence and communication skill.

Staff and Facilities

- The pay scale of the senior faculty members is not equivalent to the industry standard. This leads to demotivation among the faculty members in prioritizing to serve in academia.
- There is an absence of coherent leave policy in the service rule of UAP for certain cases such as absence of sick leave policy.
- There is no performance award policy to inspire academic staffs.

Physical Facilities

- Although the university has an indoor sport center in its premises; however, it does not have its own outdoor playground for arranging outdoor sports. According to the survey responses, the sport facility of the university need to be improved.
- From the survey responses it is ascertained that library facility should be improved. UAP should establish self-service library station.
- There are no transportation and accommodation facilities for students.
- Ambulance service is not available in the institution.
- Common study area/reading rooms should be expanded.
- Modernization of Laboratory facilities is required which is capable of meeting the ever increasing needs of the students to keep pace with the outside world.

Student Support Service

- Non-academic departmental support staffs lack professionalism providing their services.

- From the survey data it can be understood that the alumni association of the department needs to be better organized. Alumni participation is beneficial in the quality improvement process which would open the doors for internship and job opportunities for new graduates.
- Club activities are not universal enough to prepare the students to represent in broader national and international podiums.

Research and Extension

- In the distribution of faculty work load, time allocation in research is not explicitly shown. Faculty members are preoccupied with administrative responsibilities.
- There is no clear incentive or directives for research.
- There is lack of adequate collaboration between the faculty members.
- More resources are required in terms of funding and laboratory equipment in order to carry forward with international collaborations and state of the art research.

Process Management & Continuous Improvement

- The department does not have detailed key performance indicators to ensure continuous quality improvement.

11.3 Opportunities

Governance

- There is scope for addressing students' and alumni opinion regarding academic and extra academic matters, as opined by the students and also supported by the alumni.
- Administrative performance could be improved significantly by recruiting more efficient and experienced personnel at different levels of administration.

Curriculum Design and Review

- Employers' perspectives and expert opinions should be taken into account for designing and upgrading the curricula which would provide significant competitive advantage to the graduates of Department of CE in landing a job.
- Employers and alumni should have involvement in curriculum committee to gain the outside perspective.

Student Admission, Progress and Achievement

- More eligible and quality students will be attracted by demonstrating the outcomes of ensuring quality education.
- Adoption of advanced technology should be initiated in teaching and learning.
- The department should encourage more female students and potential candidates from English medium to apply.
- UAP may reach the parents (non-technical) of meritorious students by informing the strength, achievements, tuition waiver policy, reasonable tuition fees through direct methods.

Teaching, Learning and Assessment

- Currently a number of permanent faculty members in the department are on leave for pursuing PhD from reputed universities around the world which would become strength for the department in the long run.
- UAP may arrange external audits by international experts each year.
- Scope should be created for more industry visits and internships.

- Given the communication skill being a barrier in the professional accomplishment of students as reflected in survey, a special “English Center” should be hosted in the premises for the students to improve their communication skill.
- Scholars from reputed international institutions should be invited or even hosted as visiting or “Fulbright” scholars in order to gain outside perspective and evaluation of the program.

Staff and Facilities

- Department of Civil Engineering can attract more experienced faculty members by revising the pay scale since the present salary structure is not appropriate in drawing talents towards this university.
- There should be a position of “Associate Chair” in the department for smooth operations of the academic and administrative activities.

Physical Facilities

- UAP has purchased 3 acres of land in the ‘RAJUK Purbachal New Town’, where a larger campus including playground and dormitories will be constructed.
- A gymnasium with modern equipment and facilities has already been proposed for the students.
- Library facilities can be improved with more study areas for students. Access to online journals can enhance students’ knowledge and facilitate their research opportunities.
- Laboratories are already equipped with essential experimental requirements, however there are significant opportunities for upgradation and modernization.

Student Support Service

- Development of a functional alumni database could ensure the access to the job market for the fresh graduates.

- Regular career fairs and festivals will present the opportunity to showcase the talent of our students to potential employers.
- Based on the reputation thus created, fund-raising activities from industries should be ventured for student scholarships, internship abroad and upgrading laboratory facilities.
- Student clubs should be formed in a professional outlook which engages themselves more in service activities having to communicate more with external professionals. This will essentially create a positive scope and opportunities for the students when they graduate.

Research and Extension

- Faculty members should participate in a range of training and workshops arranged by external research bodies.
- More faculty members having PhD would enrich the department.
- With the current infrastructure, joint research program could be established, in collaboration with renowned national and international universities and professional bodies.

Process Management & Continuous Improvement

- Through continuous quality improvement, Department of CE will be able to meet the upcoming challenges and demands of the civil works.
- There is scope to improve the department by ensuring practices to address the students'/Alumnae feedback as a common and accepted culture.

11.4 Threats

Governance

- From the survey responses it has been determined that website needs to be redesigned and updated as compared to other universities, which is intensely opined by the stakeholders as well.

Curriculum Design & Review

- Since the department is yet to upgrade its curriculum addressing the industry demand and contemporary practices, students have potential chance to lag behind in the competitive job market.
- The delay in getting the approval for curriculums revision by UGC make the required incorporations in the curriculum difficult and later than expected.

Student Admission, Progress and Achievement

- More frequent and aggressive promotional strategies that the other private universities practice becomes a challenge for UAP to come forward with its own and innovative strategies.

Teaching, Learning & Assessment

- In order to make the quality improvement a continuous process according to the stipulation and expected level, the department needs to enrich itself with experienced faculty members and non-academic staff with improved professionalism.

Staff & Facilities

- Recruitment through talent hunt in other institutions with lucrative compensation will lead to the loss of experienced faculty members.

- Recruitment of junior faculty members (without post graduate degrees) will always come with challenges of high turnover rates for the purpose of pursuing higher degrees.
- Faculty burnout is a common phenomenon for course overloads, administrative responsibilities without account and unaccounted for and unacknowledged research obligations and service activities.

Physical Facilities

- UAP will lag behind in meeting the state of the art facilities' expectations if it's not operational in its permanent campus with yet to establish full-fledged facilities within a narrower deadline.

Student Support Service

- If international conferences and seminars are not held at regular intervals which are important in providing more exposure to the civil engineering graduates of UAP, the entity will lose its appeal with respect to host impression.

Research & Extension

- The engineering schools of other universities are emphasizing more on research and extension compared to the engineering school of UAP, which may lead to a slowdown in knowledge dissemination.

Process Management & Continuous Improvement

- Class room peer observation should be practiced to train junior faculty members, as there is frequent change in faculty recruits.
- The department does not currently have any measurements of CQI.

11.5 Outcome: Employers' Requirement versus Graduates' Performance

Survey was conducted involving 25 employer Organization/Institutions where graduates of Civil Engineering of UAP are currently working. The questionnaire survey enabled obtaining the real scenario of how the graduates are performing in the practical working environment. Figure 11.1 portrays the comparative picture of the requirement of employers for recruitment versus the actual performance of the UAP -CE graduates.

The figure shows that the deviation from requirement is a common phenomenon ranging from 8%-30% varying in different sectors of skills. The major deviation between requirement during recruitment and performance from students is observed (30%) regarding written communication skill. Respective deviations that are observed through the survey are above 20% for the categories of oral communication, time management, judgement, problem formulation and decision making. In addition, students also need to improve substantially on the categories of linking theory to practice, analyzing data, knowledge on the subject matter etc.

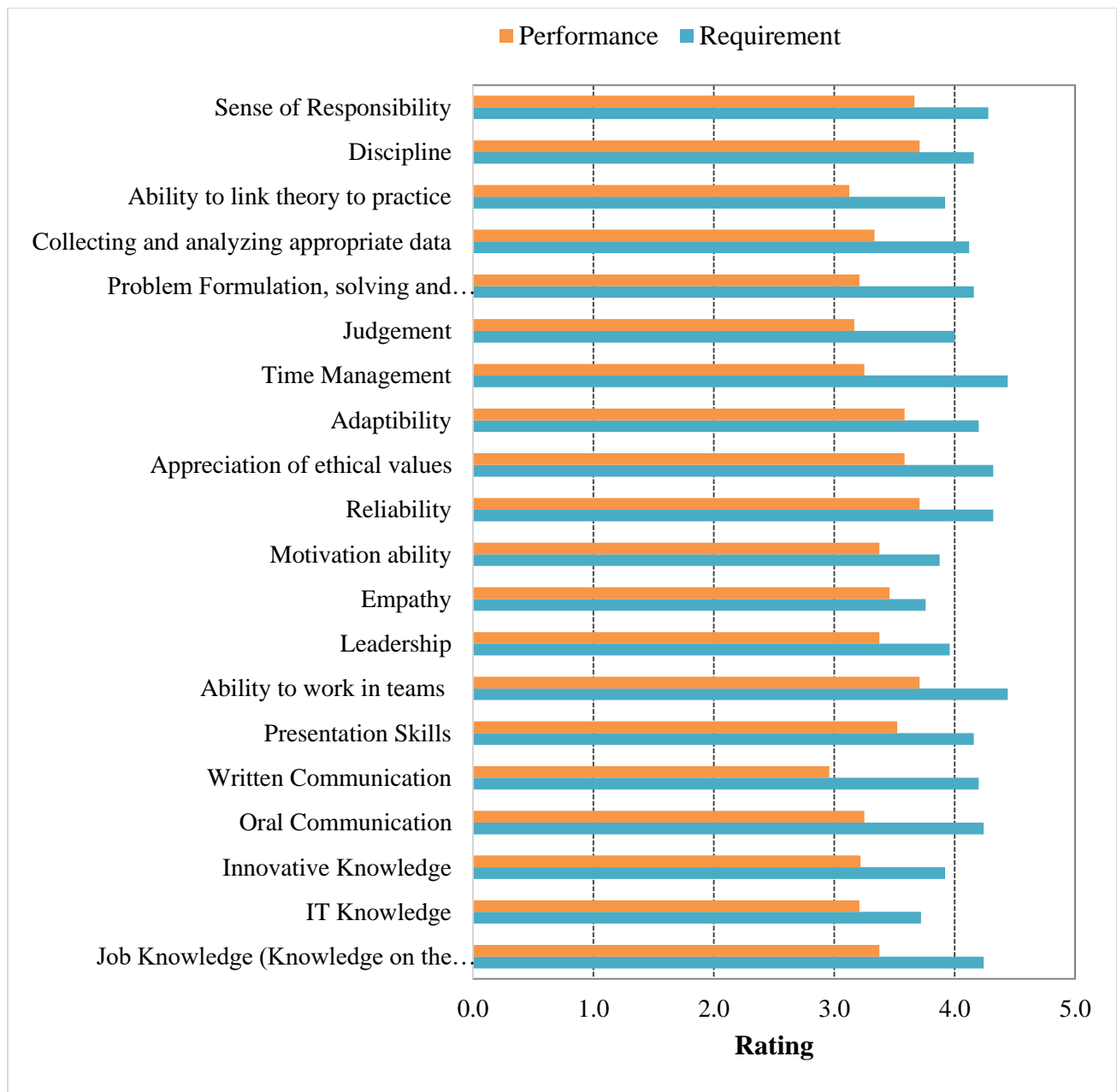


Figure 11.1: Employers requirement versus graduates' performance on different skills in the working environment

In an attempt to address the lacking in the skills that are being observed, the department needs to incorporate the necessary changes in the courses on communication and review the curriculum and also overcome the weaknesses that the chapter has discussed earlier about.

CHAPTER 12

Conclusion

12.1 Conclusions

To meet the challenges of globalizations, raising the quality of education to the world standard is essential. And so, self-assessment is a mandatory phenomenon to know the gap between current situation and the targeted world quality standard. Accordingly, the department of Civil Engineering of University of Asia Pacific (UAP) has followed a demanding quality assessment process under the leadership of the Self-Assessment Committee and with the support of Institutional Quality Assurance Cell (IQAC), UAP. Following that, this Self-Assessment Report (SAR) was prepared that represents an overview of Civil Engineering Degree Program (both graduate and post graduate) of UAP including its vision and mission, course learning outcome (LO) and program outcomes (PO), etc. This is followed by a detailed enumeration and in-depth analysis of the nine dimensions that encompass a holistic view of the entire teaching-learning process relating to this program. These nine dimensions include governance, curriculum content design and review, student admission, progress and achievement, teaching-learning and assessment, physical facilities, student support services, staff and facilities, research and extension, and process improvement. The report is culminated by highlighting the strengths, weaknesses, opportunities and threats (SWOT) under each of these nine dimensions. In order to elicit their opinions regarding these nine aspects and other relevant issues, five stakeholders, namely, students, academics, non-academic staff, alumni and employers, were surveyed. A total of three hundred and seventy-nine respondents participated in this study.

Although the three-members' SAR committee displayed their leadership potential from the front for accomplishing the process, all the academics and non-academics also extended their fullest support in this regard as well. The salient features of the findings are highlighted below:

- Clearly stated vision and mission of the department exists which is well disseminated as well.
- The department has a diverse and highly qualified academics (12 PhD holders out of 25 full time faculty members).
- Curriculum of the department covers all major areas of Civil Engineering.
- Appropriate policies are in place and strictly followed in all aspects including student admission and evaluation, faculty recruitment and promotion.
- Learning outcome (LO) for each and every course have been devised and mapped with twelve program outcomes (PO) for the Civil Engineering program to meeting the requirements of outcome-based education (OBE). These are also documented in the curriculum as well.
- A number of templates have been used in setting exam questions mapping the LOs and the six levels of cognitive domains of Bloom's taxonomy, moderation of question papers and the scrutiny of the answer scripts. Besides, individual course files (attendance sheets, course materials etc.) are being maintained in the department.
- In order to facilitate faculty research and development, top-tier research databases, such as, Emerald and JSTOR have been subscribed. Faculty members regularly conduct studies, publish articles in high impact journals, and present their papers in conference (national and international) proceedings. The published research papers are displayed on the

designated boards to stimulate awareness and interest amongst the concerned faculty members' students.

- The department arranges different events namely “CE Seminar Series”, “Research Day” periodically to share the knowledge regarding advancement of Civil Engineering area.
- A Center for Research, Training, Testing and Consultation (CRTTC, UAP) exists in the department to provide testing and consultancy services with competitive price, prompt but accurate testing report delivery, report verification option, expertise of different field of Civil Engineering having large scale project experiences.

However, during the self-assessment process, some weakness also has revealed that include:

- Scarcity of development programs for non-academics.
- Lack of communication skills of graduates in professional level.
- Shortage of outdoor sports facilities for the students.
- Absence of transportation facilities for faculties and students. Accommodation facilities for students is also nonexistent.

12.2 Recommendation for Further Improvement

This entire process of self-assessment was a learning experience for all, through which enormous possibilities of skills and structural development of the department were identified systematically and a concerted effort was made at the end to propose improvement plan. We believe we have exercised and prospered in attaining the targeted quality standard goal in different aspects, nevertheless, in some issues we still have rooms for improvement. Therefore, the Department of Civil Engineering, UAP is proposing the following recommendations covering different aspects against the standard criteria and the SWOT analysis:

- Periodic Review of Curriculum

To enhance the quality of graduates, up to date curriculum and its periodic review is mandatory. Therefore, the department would need to pay attention to the periodic review of the curriculum relevant with advancement of technology, market demand and the emerging societal needs.

- Post Graduate Degree Program

The department should look forward to strengthen the running post graduate program.

- Introduction of New Programs and Courses

The department should explore the possibility of introduction of various distance education, certification program, diploma program i.e., Diploma in Environment and Disaster Management, Certification in GIS etc.

- Expanding Activities of Undergraduate Students

The department would focus on: Increased involvement in research programs; Increased opportunities for independent studies; Improving student engagement through possible internship programs; encouraging students to enroll in post graduate education.

- Qualified Faculty Recruitment and Retention

The department should look forward to set master degree as the minimum qualification of lecturer post to ensure entry level quality as well as augment the retention of academics.

- Enhancement of Teaching-Learning Environment

Although our faculty members possess excellent professional credentials, improvement of their teaching skills as well as mentoring capabilities should also help the department to achieve high quality education. Therefore, the department should focus on: Faculty training (local and overseas) on different pedagogical issues on a continuous basis; Faculty

involvement in development activities to improve networking and collaboration skills; Seeking continuous feedbacks from students'/peer observer and planning for necessary updates in teaching methodologies.

- Faculty Research and Training

Not only should the faculty members perform their teaching responsibilities, they must also involve themselves in cutting-edge research as well as publications. In this regard, the department should emphasize on: Arranging regular seminars, research talks, conference in the department; Procuring new devices and equipment for performing research; Promoting proposals and applications for research funds and travel grants; Faculty training (local and overseas) on advancement in the area of Civil Engineering, research methodologies; Faculty involvement in multi-disciplinary research activities.

- Website Upgradation

In this era of digitalization, university as well as the departmental website should have a dynamic interface in order to easily visualize and update the information.

- Testing and Consultancy

Although the department provide testing and consultancy service to companies through Center for Research, Training, Testing and Consultation (CRTTC, UAP) in some extent, but the department should procure more modern equipment as well as increasing the capacity of few equipment through upgradation.

- Physical Facilities

The department would focus on: Intensifying the Wi-Fi speed in the department premises; Provide students' common room; Provide student discussion room; Upgradation of laboratories.

- Alumni Database

The entity should develop and maintain an alumni database containing updated and sufficient information. This database will be instrumental in building an immense network of the former students who could be great resources for professional contacts, industry expectations, changing trends and so on.

- Facilities for Outdoor Sports

The department should focus on the facilities for outdoor sports.

- Monitoring Feedbacks of Suggestion Box

Although a suggestion box was placed in front of the department for the stakeholders to gather their insights, issues, concerns and suggestions to improve them, the entity should address and consider the suggestions.

APPENDIX

Appendix I: Course & Curriculum

Curriculum

Bachelor of Science in Civil Engineering

COURSE REQUIREMENTS FOR UNDERGRADUATE STUDENTS (CE)

<i>FIRST YEAR</i>		<i>First Semester</i>	
<i>Course No.</i>	Theory/Sessional Course Title [Prerequisites]	*Cr.H.	Co.H.
<i>HSS 101</i>	English I: Oral and Written Skills	3.0	3
<i>PHY 101</i>	Physics	3.0	3
<i>MTH 101</i>	Mathematics I	3.0	3
<i>CE 101</i>	Engineering Mechanics I	3.0	3
<i>CE 107</i>	Introduction to Civil and Environmental Engineering	2.0	2
<i>CSE 100</i>	Computer Skills	1.5	3
<i>CE 102</i>	Civil Engineering Drawing I	1.5	3
<i>PHY102</i>	Physics Lab	1.5	3
		18.5	23
		<i>Second Semester</i>	
<i>HSS 103</i>	English II: Language Composition Skill	3.0	3
<i>CHEM 111</i>	Chemistry	3.0	3
<i>MTH 103</i>	Mathematics II	3.0	3
<i>CE 103</i>	Engineering Mechanics II [Pre. CE 101]	3.0	3
<i>CE 105</i>	Surveying	4.0	4
<i>CE 104</i>	Civil Engineering Drawing II [Pre. CE 102]	1.5	3
<i>CE 106</i>	Practical Surveying	1.5	3
<i>CHEM 112</i>	Chemistry Lab	1.5	3
		20.5	25
<i>SECOND YEAR</i>		<i>First Semester</i>	
<i>Course No.</i>	Theory/Sessional Course Title [Prerequisites]	*Cr.H.	Co.H.
<i>HSS 211(a)</i>	Bangladesh Studies (Society and Culture)	2.0	2
<i>HSS 211(b)</i>	Bangladesh Studies (History of Bengal)	2.0	2
<i>MTH 201</i>	Mathematics III	3.0	3
<i>ECE 201</i>	Basic Electrical Engineering	3.0	3
<i>CE 211</i>	Mechanics of Solids I [Pre. CE 101]	3.0	3
<i>CE 201</i>	Engineering Materials	4.0	4

CE 200	Details of Construction	1.5	3
CE 202	Engineering Materials Lab	1.5	3
ECE 202	Basic Electrical Engineering Lab	1.5	3
		21.5	26
		<i>Second Semester</i>	
ECN 201	Principles of Economics	2.0	2
MTH 203	Mathematics IV [Pre. MTH 101]	3.0	3
CE 203	Engineering Geology and Geomorphology	3.0	3
CE 205	Numerical Analysis and Computer Programming	3.0	3
CE 213	Mechanics of Solids II	3.0	3
CE 221	Fluid Mechanics	3.0	3
CE 204	Quantity Survey Lab	1.5	3
CE 206	Computer Programming Lab	1.5	3
CE 212	Structural Mechanics and Materials Lab	1.5	3
		21.5	26

THIRD YEAR

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

CE 316	Concrete Structures Design Sessional [Pre. CE 311, 315]	1.5	3
CE 342	Geotechnical Engineering Lab [Pre. CE 341]	1.5	3
CE 354	Transportation Engineering Lab	1.5	3
		21.5	26

FOURTH YEAR

First Semester

Course No.	Theory/Sessional Course Title [Prerequisites]	*Cr.H.	Co.H.
CE 401	Project Planning and Management	3.0	3.0
CE 411	Structural Engineering III [Pre. CE 313]	3.0	3.0
CE 441	Geotechnical Engineering II (Foundation Engineering) [Pre. CE 341]	3.0	3.03
CE 451	Transportation Engineering II (Highway Design and Railways)	3.0	3.0
CE 461	Irrigation and Flood Control [Pre. CE 361]	3.0	3.03
CE 412	Structural Engineering Sessional II [Pre. CE 317]	1.53	1.53
CE 400	Project/Thesis	1.5	1.53
		18.0	21

Second Semester

CE 403	Professional Practices and Communication	2.0	2
CE 418	Computer Applications in Civil and Environmental Engineering	3.0	3
-----	Optional Course (Theory)	3.0	3
-----	Optional Course (Theory)	3.0	3
-----	Optional Course (Theory)	3.0	3
-----	Optional Course (Sessional)	3.0	3
CE 400	Project/Thesis	1.5	3
		18.0	24

External Members of CE Departmental Courses and Curriculum Committee for 2008-09

The *CE Departmental Courses and Curriculum Committee* (chaired by the Head of the CE Department and including all faculty members of the CE Department) for 2008-09 are suggested to be formed by the following *External Experts* and *UAP Faculty Members from Related Departments*

	Name	Designation
External Experts	Dr. M. Shamim Z. Bosunia	Professor Emeritus Department of Civil Engg., UAP
	Dr. M. Feroze Ahmed	Professor Emeritus Department of Civil Engg., Stamford University
UAP Faculty Members from Related Departments	Dr. A. Sayeed M. Ahmed	Professor and Dean School of Environmental Sciences and Design, UAP
	Dr. Sanjit Kumar Pal	Associate Professor and head Department of Basic Science and Humanities, UAP

Suggestions of the CE Departmental Courses and Curriculum Committee

The following modifications to the CE course curriculum were suggested in a meeting of the *CE Departmental Courses and Curriculum Committee* held on March 24, 2008.

1. Suggested new optional course

CE 425

2. Suggested modifications in the course titles and contents of

CE 311, CE 313, CE 411, CE 312, CE 316, CE 412

3. Suggested modifications in the course contents of

3.1 Suggested Modifications in CE Courses: CE 101, CE 205, CE 213, CE 315, CE 317, CE 403

3.2 Suggested Modifications in MTH Courses: MTH 101, MTH 103, MTH 201, MTH 203

4. Suggested modifications in the contents of sessional courses

CE 106, CE 206, CE 212

PHY 102, CHEM 112, ECE 202

The existing course titles and contents as well as the suggested modifications are attached herewith.

1. Suggested New Optional Course

CE 425: Concrete Technology (Credits: 2.0)

Contents: 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; Autogenous 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.

2. Suggested Modifications in Course Titles and Contents

CE 311: Structural Analysis and Design I (Credits: 3.0)

Contents: Stability and Determinacy of Structures; Analysis of Statically Determinate Trusses and Arches; Influence Lines; Moving Loads on Beams, Frames and Trusses; Cables and Cable Supported Structures.

CE 311: Structural Analysis I (Credits: 3.0)

Suggested: 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 313: Structural Analysis and Design II (Credits: 3.0)

Contents: Wind and Earthquake Loads; Approximate Analysis of Statically Indeterminate Structures, e.g. Braced Trusses, Portal Frames, Mill Bent and Multi Storied Building Frames; Deflection of Beams, Trusses and Frames by Virtual Work Method; Space Trusses; Analysis of Statically Indeterminate Structures by Consistent Deformation.

CE 313: Structural Analysis II (Credits: 3.0)

Suggested: 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 411: Structural Analysis and Design III (Credits: 3.0)

Contents: Analysis of Statically Indeterminate Structures by Displacement Method; Slope Deflection; Moment Distribution; Stiffness Matrix, Member Stiffness, Stiffness Transformations, Assembly of Stiffness Matrices and Solution for Beams, Frames and Trusses; Flexibility Matrix; Influence Lines for Statically Indeterminate Beams, Frames, Arches and Grids; Structural Forms and Their Applications.

CE 411: Structural Analysis III (Credits: 3.0)

Suggested: 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 312: Structural Analysis and Design Lab I (Credits: 1.5)

Contents: Analysis and Design Problems; Design of Members and Connection of Steel Structures; e.g. Trusses and Plate Girders.

CE 312: Structural Engineering **Sessional I (Credits: 1.5)**

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

CE 316: Concrete Structures Lab (Credits: 1.5)

Contents: Analysis and Design problems based on CE 315; Design of a Slab Bridge, Simple Girder Bridge and a Low Rise Building.

CE 316: Design of Concrete Structures Sessional (Credits: 1.5)

Suggested: 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 412: Structural Analysis and Design Lab II (Credits: 1.5)

Contents: Design of Reinforced Concrete Structures; e.g. Cantilever Bridge and Multistoried Building.

CE 412: Structural Engineering **Sessional II (Credits: 1.5)**

Suggested: 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 Water Tank.

3. Suggested Modifications in Course Contents

3.1 Suggested Modifications in CE Courses

CE 101: Engineering Mechanics I (Credits: 3.0)

Contents: Introduction to SI Units; Coplanar Concurrent Forces; Moments and Parallel Coplanar Forces; Non-Concurrent Non-Parallel Coplanar Forces; Centroids, Moment of Inertia of Areas, Flexible Cords.

Suggested: 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 205: Numerical Analysis and Computer Programming (Credits: 3.0)

Contents: Basic Components of Computer System; C Language, 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.

Suggested: 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 (Credits: 3.0)

Contents: Torsional Stresses in Shafts and Tubes; Compound Stresses; Helical Springs; Transformation of Stresses; Deflection of Beams by Direct Integration, Moment Area, Elastic Load and Conjugate Beam Methods; Buckling of Column.

Suggested: Torsional Stress and Rotation; Compound Stresses; Transformation of Stresses; Deflection of Beams by Direct Integration, Moment Area and Conjugate Beam Methods; Buckling of Columns.

CE 315: Design of Concrete Structures I (Credits: 3.0)

Contents: Fundamental Behavior of Reinforced Concrete; Introduction to WSD and USD Method; Analysis and Design of Singly Reinforced, Doubly Reinforced and T-beam According to WSD and USD Methods; Diagonal Tension; Bond and Anchorage According to WSD and USD Methods; One Way Slabs.

Suggested: 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 317: Design of Concrete Structures II (Credits: 3.0)

Contents: Two-Way Slabs; Columns; Footings; Retaining Walls, Reinforced Concrete Floor and Roof Systems. Review of Codes; Yield Line Method; Introduction of Prestressed Concrete. Analysis and Preliminary Design of Prestressed Beam Section.

Suggested: 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 403: Professional Practices and Communication (Credits: 2.0)

Contents: The Project Cycle; Project Proposal; Contractual Provisions; Techniques of Specification Writing; Evaluation of Bids; Project Evaluation.

Suggested: 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.

3.2 Suggested Modifications in MTH Courses

Course No.	Credit Hrs.	Course Contents	
		Current	Suggested
MTH 101	3.0	Real Number System; Rectangular Coordinates in 3-Dimensions; Vector Algebra; Calculus; Matrices	Differential Calculus; Integral Calculus
MTH 103	3.0	Differential Calculus; Integral Calculus	Vector Analysis; Solid Geometry
MTH 201	3.0	Differential Equation; Linear Algebra	Matrices; Linear Algebra; Statistics and Probability
MTH 203	3.0	Vector Analysis; Statistics and Probability; Fourier Transform; Laplace Transform	Differential Equation; Fourier Transform; Laplace Transform

MTH 101: Mathematics I (Credits: 3.0)

Contents:

Real Number System, Complex Numbers and their Elementary Properties.

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

Vector Algebra: Addition, Scalar Multiplication, Scalar and Vector Product, Multiple Products, Orthogonal Bases, Change of Orthogonal Bases.

Calculus: Differential Calculus - Functions, Limit and Continuity, Differentiation, Successive Differentiation, Maclaurin's Theorem, Taylor's Theorem, Geometric Meaning of Differential Coefficient. Integral Calculus - Method of Substitution, Integration by Parts, Integration of Rational Functions, Definite Integrals.

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.

Suggested:

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.

MTH 103: Mathematics II (Credits: 3.0)

Contents:

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.

Suggested:

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.

MTH 201: Mathematics III (Credits: 3.0)

Contents:

Differential Equation: Definition, Formation of Differential Equations Solution of First Order Differential Equations by Various Methods, Solution of 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.

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.

Suggested:

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, Poisson and Negative Binomial. Continuous Probability Distributions, e.g. Normal and Exponential. Characteristics of Distributions. Elementary Sampling Theory. Estimation. Hypothesis Testing and **Regression** Analysis.

MTH 203: Mathematics IV (Credits: 3.0)

Contents:

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.

Statistics: 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, Poisson and Negative Binomial. Continuous Probability Distributions, e.g. Normal and Exponential. Characteristics of Distributions. Elementary Sampling Theory. Estimation. Hypothesis Testing and Regressing Analysis.

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.

Suggested:

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.

4. Suggested modifications in the Contents of Sessional Courses

The following sessional courses in the CE curriculum do not specify the specific course contents (i.e., the experiments performed), while the other sessional courses do. A consistent format of course contents is suggested.

Course No.	Course Contents	Suggested Course Contents
CE 106	Field work based on CE 105	Field works on Chain, Plane Table, Traverse Survey; Calculation of Area, House Setting, Curve Setting; Leveling, Contouring, Calculation of Height
CE 206	Laboratory work based on CE 205	Introduction to Computer programming; Programming with Sequential, Selective, Repetitive Structures; Arrays, Subprograms; Applications in Civil Engineering and Numerical Analysis
CE 212	Laboratory work based on CE 101, CE 103, CE 211 and CE 213	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
PHY 102	Laboratory work based on PHY 101	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
CHEM 112	Laboratory work based on CHEM 111	Standardization of alkali, acid and salt solutions; Detection of Copper, Iron and Calcium in solutions
ECE 202	Laboratory work based on ECE 201	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

Proposed New Optional Courses
in the
B. Sc. Engineering (Civil) Curriculum

CE 405: Occupational Safety and Health Management in Construction

2.00 credits, 2 hrs/week

Safety and Accidents in construction projects, Theories of accident causation, Health and Illness related with construction works, Safety Risk Analysis and Control, Personal Protective Equipment, Characteristics of Effective Safety Culture, Management aspects of an Effective Safety Culture, Safety and Health Programs that support safety culture, Measuring Safety Culture.

CE 427: Structural Engineering XI

2.00 credits, 2 hrs/week

Introductory concepts, Fundamental mathematical concepts, Theory of vibrations, Introduction to Frequency Domain Analysis, Multiple Degree of Freedom Systems, Eigenvalue Problem, Laplace Transform, Linear System Stability, Fundamentals of Signal Processing, Vibration Testing Method, Modal Identification Methods, Peak Picking Method/Frequency Domain Decomposition Method.

CE 443: Earth Retaining Structures

2.00 credits, 2 hrs/week

Foundation of structures subjected to lateral loads; rigid and flexible earth retaining structures; methods of construction: dewatering and slurry-wall construction, braced excavation, sheet piles, cofferdams, caissons.

CE 445: Elementary Soil Dynamics

2.00 credits, 2 hrs/week

Elementary vibrations; dynamic properties of soil; seismic response of soils: site effects, site amplification, liquefaction problems, remedial measures and earthquake hazards.

CE 447: Soil-water Interaction

2.00 credits, 2 hrs/week

Introduction to soil-water interaction problems: permeability, capillarity and soil suction; slopes subjected to water current, wave action etc; theories of filters and revetment design; geotechnical design of landfills.

CE 442: Geotechnical Engineering Design Sessional**1.50 credits, 3 hrs/week**

Computer aided design of foundations: footing, pile and pile cap, pier, raft/mat foundations and caisson; retaining structures: shore pile, abutment, retaining walls; reinforced soils.

CE 453: Transportation Engineering III: Traffic Engineering Design and Management**2.00 credits, 2 hrs/week**

Advanced concepts of traffic management, management strategies; analysis of traffic flow characteristics; traffic control devices; intersection control and design; grade separation and interchanges; computer application in traffic system analysis; introduction to micro simulation and ITS; NMT issues and road safety.

CE 455: Transportation Engineering IV: Pavement Management, Drainage and Airport**2.00 credits, 2 hrs/week**

Pavement management systems; evaluation and strengthening of pavements; drainage: highway drainage and drainage structures; airports: importance, advantages and trends in air transportation, planning and design of airports, aircraft characteristics related to airport design, types and elements of airport planning studies, airport configuration, geometric design of the landing area, terminal area, heliports, design of airport pavements, lighting, marking and signing, airport drainage.

CE 457: Transportation Engineering V: Urban Transportation Planning and Management**2.00 credit, 2 hrs/week**

The urban transport problems and trends; road network planning; characteristics and operation of different transit and paratransit modes, planning transit network; estimating system costs and benefits, pricing and financing, evaluation, transit users attitude, policies and strategies for transit development in metropolitan cities; freight traffic planning and management; selected transport case studies, congestion management; safety management; environmental issues and sustainable transport.

CE 454: Transportation Engineering Sessional II: Pavement Design and Traffic Studies**1.50 credits, 3 hrs/week**

Design of flexible and rigid pavement and air field pavements; geometric design; road intersection design and interchanges; traffic studies.

CE 463: Integrated Water Resources Management**2.00 Credit, 2 hrs/week**

Concept and principles of IWRM; Institutions aspects; IWRM planning cycle; IWRM tools; People's participation; Basin wide management and water sharing; National and international water policies and laws; Climate change and IWRM; Implementation methods; Implementation challenges; Case studies.

CE 465: Water Disaster Management

2.00 Credit, 2 hrs/week

Definitions of disaster; Types of water related disasters; Water disasters in Bangladesh and South Asia; Concept of disaster management; Interconnections between water disasters and development; Disaster management framework - disaster prevention, preparedness, mitigation, response, recovery, adaptation to climate change; Disaster management tools and techniques; Structural and non-structural measures; Disasters management policies and laws; Stakeholders role in disaster management.

CE 467: Groundwater Engineering

2.00 Credit, 2 hrs/week

Groundwater in hydrologic cycle and its occurrence; Physical properties and principles of groundwater movement; Groundwater and well hydraulics; Groundwater resource evaluation; Groundwater levels and environmental influences; Water mining and land subsidence; Groundwater pollution and contaminant transport; Recharge of groundwater; Climate change and saline water intrusion in aquifers. Groundwater remediation; Groundwater management

CE 469: River Engineering

2.00 Credit, 2 hrs/week

Behavior of alluvial rivers; river channel pattern and fluvial processes; aggradation and degradation, local scours; river training and bank protection works; navigation and dredging sediment movement in river channels; bed form and flow regimes.

CE 462: Water Resources Engineering Sessional

1.5 Credit, 3 hrs/week

Design of hydraulic structures; river training works; groundwater resource assessment and water well design.

**Proposed Modifications
in the Existing
B. Sc. Engineering (Civil) Curriculum**

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

3.00 Credit, 3 hrs/week

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.

[Additional Course Material: Advance Railway Engineering]

CE 461: Irrigation and Flood Control

3.00 Credit, 3 hrs/week

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.

[New Course Title: Irrigation and Flood Management]

Appendix II: Program Outcomes

Mapping between Courses and Program Outcomes at Civil Engineering (shaded parts represent the optional courses)

Course Title	Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
English 1: Oral & W. Skill	HSS 101	√									√		
Physics	PHY 101	√											
Mathematics I	MTH 101	√											
Engineering Mechanics I	CE 101	√	√										
Intro. To Civil and Env. Engg.	CE 107	√		√			√	√	√				
Computer Skills	CSE 100	√			√								
Civil Engg. Drawing	CE 102			√		√							
Physics Lab	PHY 102	√			√						√		
English II: Language Composition Skill	HSS 103		√										
Chemistry	Chem 111	√											
Mathematics II	MTH 103	√											
Engineering Mechanics II	CE 103	√	√										
Surveying	CE105	√	√										
Civil Engg. Drawing II	CE 104				√	√							
Practical Surveying	CE 106	√			√	√							
Chemistry Lab	Chem 112	√			√						√		
Bangladesh Studies (Society & Culture)	HSS 211(a)												
Bangladesh Studies (History of Bengal)	HSS (b)												
Mathematics III	MTH 201	√											
Basic Electrical Engineering	ECE 201	√											
Mechanics of Solids I	CE 211	√	√	√									
Engineering Materials	CE 201	√	√	√									

Details of Construction	CE 200	√			√	√							
Engg. Materials Lab	CE 202	√			√	√				√	√		
Basic Electrical Engineering Lab	ECE 202	√		√									
Principles of Economics	ECN 201	√											
Mathematics IV	MTH 203	√											
Engg. Geology & Geomorphology	CE 203	√											
Numerical Analysis & Comp. Programming	CE205	√	√										
Mechanics of Solids II	CE213	√	√										
Fluid Mechanics	CE221	√	√										
Quantity Surveying Lab	CE 204	√		√									
Computer Programming Lab	CE 206	√				√							
Structural Mechanics and Materials Lab	CE 212	√		√		√							
Principles of Accounting	ACN 301	√			√								
Structural Engg. I	CE 311	√	√										
Design of concrete Structures I	CE 315	√	√	√		√			√				
Environmental Engg. I (Water Supply Engg.)	CE331	√	√			√							
Geotechnical Engg. (Soil Mechanics)	CE 341	√	√								√		√
Open Channel Flow	CE 361	√	√	√	√								
Structural Engg. Sessional I	CE 312	√			√								
Environmental Engg. Lab I	CE 332	√	√		√	√		√		√	√		
Hydraulic Lab	CE 222	√			√								
Principles of Management	IMG 301				√								
Structural Engineering II	CE 313	√	√			√							√
Design of concrete Structures II	CE 317	√	√	√		√			√				
Environmental Engg. II (Waste water)	CE 333	√	√	√	√	√							√
Transportation Engg. I	CE 351	√	√		√	√							
Engineering Hydrology	CE 363	√											
Concrete Structures Design Sessional	CE 316	√		√		√							
Geotechnical Engg. Lab	CE 342	√			√								

Transportation Engg. Lab	CE 354	√	√	√	√	√				√	√		
Project Planning and Management	CE 401									√		√	
Structural Engg. III	CE 411	√	√			√							
Geotechnical Engg. II (Foundation Engineering)	CE 441	√	√								√		√
Transportation Engineering II (Highway Design and Railway)	CE 451	√	√	√							√		√
Irrigation and Flood Control	CE 461	√		√		√	√		√				
Structural Engineering Sessional II	CE 412	√		√		√							
Project/Thesis	CE 400	√	√		√		√	√		√	√		√
Professional Practices and Communication	CE 403								√	√	√		
Comp. Applications in Civil and Env. Engg.	CE 418	√	√	√	√	√			√	√	√		√
Environmental Engg. Lab II	CE 432	√		√	√								
Theory of Elasticity & Elastic Instability of Structures	CE 413												
Prestressed Concrete	CE 415	√	√	√		√							
Design of Steel Structures	CE 417	√	√	√	√	√							
Intro. To FEM	CE 419												
Struc. Dynamics and EQ. Engg.	CE 421	√	√	√	√	√	√			√			√
EQ resistant Design and Retrofitting	CE 423												
Concrete Technology	CE 425	√	√				√	√					
Structural Engineering Lab III	CE 416	√	√	√				√	√	√			
Solid Waste Management	CE 431	√	√	√	√		√		√		√		
Environmental Pollution and its Control	CE 433	√	√	√	√			√					
Environmental and Development Projects	CE 435												
Environmental Management	CE 437		√	√		√	√	√	√	√			
Environmental Impact assessment	CE 439	√		√			√			√			
GIS Remote Sensing	CE 531		√	√		√							

Appendix III: Sample of Course Outline

University of Asia Pacific (UAP) Department of Civil Engineering

Course Outline

Program:	Bachelor of Science in Civil Engineering
Course Title:	Open Channel Flow
Course Code:	CE 361
Semester:	Fall-2017
Level:	3 rd Year, 1 st Semester
Credit Hour:	3.0
Name & Designation of Teacher:	Dr. Nehreen Majed, Associate Professor, Civil Engineering
Office/Room:	Level 6
Class Hours:	Sunday: 08:00 - 9:15 am(Room 614) (Section A) Tuesday: 02:00 - 3:15 pm (Room 602) (Section A) Wednesday: 09:30 - 10:45 am (Room 614) (Section B) Thursday:0 8:00 -9:15 am (Room 610) (Section B)
Consultation Hours:	Sunday: 9:30 – 11:00 AM Thursday: 9:30 – 11:00 AM
e-mail:	nehreen-ce@uap-bd.edu
Mobile:	01819206394
Rationale:	Required course
Pre-requisite (if any):	CE 221 (Fluid Mechanics)
Course Synopsis:	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

Course objective:

The objective of this course is to apply the concepts of fluid mechanics and hydraulics on open channels and flow profiles including uniform, gradually varied and rapidly varied flows. The knowledge is to be further consummated through investigation of and designing of channel structures and analyzing flow situations in practical orientations that takes into account the concerns related with civil Engineering infrastructures.

Learning Outcomes (LO):

Upon completion of the course, the students will be able to:

1. Explain the open channel flow principles, governing equations and analyze the state of flow, velocity and pressure distributions in an open channel flow.
2. Design of channels through determination of cross-sectional dimensions for rigid/mobile boundary and alluvial/non-alluvial types of channels.
3. Analyze the transition problems either in the direction of flow or change in the slope or cross-section in an open channel utilizing the concepts of specific energy and critical flow.
4. Explain the physical mechanisms of hydraulic jump, critical, uniform and gradually varied flow conditions and perform the related computations.
5. Analyze flow profiles under gradually varied flow conditions for mild, steep and critical slope conditions.

Teaching-learning and Assessment Strategy: Lectures, assignments, quizzes, exams

Linkage of LO with Assessment Methods & their Weights:

LO	Assessment Method	(%)
1, 3, 5	Quiz	15
1 – 5	Class participation	10
2, 3	Assignment/group work	5
1,2,3	Midterm exam	20
1 – 5	Final exam	50

Minimum attendance: 70% class attendance is mandatory for a student in order to appear at the final examination.

Mapping of Course LO and Program outcomes:

Learning Outcome (LO) of the Course	Program outcomes* (Appendix-1)											
	1	2	3	4	5	6	7	8	9	10	11	12
Explain the open channel flow principles, governing equations and analyze the state of flow, velocity and pressure distributions in an open channel flow	√											
Design of channels through determination of cross-sectional dimensions for rigid/mobile boundary and alluvial/non-alluvial types of channels.	√		√									
Analyze the transition problems either in the direction of flow or change in the slope or cross-section in an open channel utilizing the concepts of specific energy and critical flow.	√	√										
Explain the physical mechanisms of hydraulic jump, critical, uniform and gradually varied flow conditions and perform the related computations	√	√										
Analyze flow profiles under gradually varied flow conditions for mild, steep and critical slope conditions	√											

Lectures Schedule

Lecture	Topic	Reading assignment	Work assignment
Lecture 1,2	Properties and Classification of Open-Channel Flow, Effect of viscosity and gravity	Chapter 1	
Lecture 3,4	Velocity and Pressure distribution	Chapter 1	
Lecture 5,6	Continuity Equation, Energy and momentum principles	Chapter 2	
Lecture 6,7	Specific Energy and Critical Flow	Chapter 3	Quiz 1, Assignment
Lecture 8	Transition Problems	Chapter 3	
Lecture 9	Principles of Flow Measurement and Devices	Chapter 3	Assignment
Lecture 10	Concept of Uniform flow, Chezy and Manning's Equation	Chapter 4	
Lectures 11-13	Computation of Uniform flow	Chapter 4	Quiz 2
Lecture 14	Review for Midterm		
Lecture 15-18	Design of Channel	Chapter 5	
Lecture 19- 22	Gradually Varied Flow, Computation of flow profile	Chapter 6	Quiz 3, Assignment
Lecture 23-26	Hydraulic Jump and its characteristics	Chapter 7	Quiz 4
Lecture 27-28	Review for Final		

Required References: Basic Text: Lecture note on OPEN CHANNEL FLOW (for undergraduate students) by Dr. Md. Abdul Halim

Reference Text: Open Channel Flow by Ven. T. Chow

Grading System: As per the approved grading scale of University of Asia Pacific (Appendix-2).

Student's responsibilities: Students must come to the class prepared for the course material covered in the previous class(es).
They must submit their assignments on time.
They must be aware of the *Plagiarism Policy* as spelt out in the curriculum.

No late or partial assignments will be acceptable. There will be no make-up quizzes.

Prepared by	Checked by	Approved by
Dr. Nehreen Majed Associate Professor, Department of Civil Engineering	Head Department of Civil Engineering	Dean Faculty of Engineering

Appendix-1: Program outcomes

No.	Program outcomes
1.	An ability to apply knowledge of mathematics, science, and engineering
2.	An ability to identify, formulate, and solve engineering problems
3.	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
4.	An ability to design and conduct experiments, as well as to analyze and interpret data
5.	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
6.	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
7.	A knowledge of contemporary issues
8.	An understanding of professional and ethical responsibility
9.	An ability to function on multidisciplinary teams
10.	An ability to communicate effectively
11.	Project Management and Finance
12.	A recognition of the need for, and an ability to engage in life-long learning

Appendix-2: Grading Policy

Numeric 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

Appendix IV: Examination Guidelines & Templates

GENERAL GUIDELINES FOR EXAMINER

The examiner would use a pen with red ink.

- Marks should be clearly visible (it should not be at the very top or at the very bottom).
- Marks should be legible (For ex., the scrutinizer should not be in confusion whether the marks given is 2 or a (✓) tick mark)
- Spellings and Grammatical mistakes should be pointed out (to the extent possible)
- The examiner should keep some evidences that s/he has gone through all the pages of the answer script (by giving at least one tick mark on the page(s); in other words, the scrutinizer should feel that the pages are “seen” by the examiner).

Exam Rules and Regulations

1. Students should bring their **Admit** and **ID cards** to their exams.
2. The exam room will open at least 10 minutes prior to the start of the exam and it will be closed at sharp **10:00 am**. Late comers should stay out of the exam room for **10 minutes** and treat it as a punishment.
3. Students should carefully read the instructions on the front page of the examination paper.
4. Students must bring their own pens, pencils, eraser, rulers, and nonprogrammable scientific calculators. And they are not permitted to share or pass these items between each other during the exam period.
5. All electronic devices (**including cell phones**) are strictly prohibited. Cell phones must be turned off and stowed away during the exam.
6. In Mid-Term exams, students are not permitted to exit the room for any reasons before submitting their exam scripts.
7. In Final exams, students might be allowed to exit only for 5 minutes for using washroom. For this purpose, however, they should maintain the log book.
8. No students may be admitted to an examination room after the expiration of **30 minutes** from the commencement of writing.
9. Students are not permitted to roam around the university campus during or after the completion of an examination.
10. University will take stern actions against any kind of unfair activities of the students as per university rules.

Invigilation Guidelines

1. Invigilators are expected to be at the exam rooms by **9:45 am** and students will not be allowed before 9:50 am. The exam rooms should be closed at 10:00 o'clock and it will remain closed for 10 minutes for late comers.
2. As per decision of the Discipline Committee meeting, invigilators are instructed to announce the examinations rules and discipline before the start of examination to caution the examinees.
3. Invigilators are expected to round the exam hall and be vigilant.
4. Invigilators are expected to sign the students' answer scripts after checking their Admit and ID cards, Registration number, Course Code and other particulars on the front page of answer scripts.
5. Invigilators have to ensure that the students are on their seats as per the seat plan.
6. Invigilators are to ensure that no student possesses mobile/cell phones or any other electronic devices in the exam hall under any circumstances.
7. Students might be allowed to use wash room only for 5 minutes in final examinations and invigilators have to monitor the log book in this regard.
8. Invigilators are expected and requested to avoid any activities that may hamper students' concentration in the exam hall (e.g. reading newspapers, checking answer scripts, having tea etc.)
9. Invigilators should ensure that all students record their information accurately in the attendance sheet.
10. Before submission of the answer scripts to the office, invigilators should verify the number of answer scripts collected matches that of the attendance mentioned on the top sheet.

TABLE OF SPECIFICATIONS FOR EXAM QUESTIONS

University of Asia Pacific

Department:

Final Examinations, Semester: 2017

Program: B.Sc. in Civil Engineering

Course Code:

Course Title:

Credit Hrs:**Time:****Total Marks:**

Name & Designation of the Examiner:

Learning Outcomes (LO):

LO 1:

LO 2:

LO 3:

LO 4:

Levels in Bloom's Cognitive Domain:

C1: Remember

C2: Understand

C3: Apply

C4: Analyze

C5: Evaluate

C6: Create

Question No.	Learning Outcomes (LO)	Level in Bloom's Cognitive Domain along with Allocation of Marks					
		C1	C2	C3	C4	C5	C6
Q1 (a)							
Q1 (b)							
Q2 (a)							
Q2 (b)							
Q3							
Q4							
Q5							
Total Allocation of Marks							

Signature of the Examiner

Date:

MODERATOR REPORT OF QUESTION PAPER

University of Asia Pacific

Department:

Final Examinations, Semester: 2017

Program: B.Sc. in Civil Engineering

Course Code:

Course Title:

Credit Hr:

Time:

Total Marks:

Name & Designation of the Moderator(s):

A. Evaluation of Question Paper:

SL	Items	Accepted as it is	Minor correction	Major Correction
1.	Relevance of the questions according to six levels of Cognitive domain in Bloom's Taxonomy			
2.	Reflection of the learning outcomes in the questions provided			
3.	Breadth of the course material supposed to be covered during the			
4.	Clarity of the questions provided			
5.	Distribution of marks allocated for each question			
6.	Correctness of the grammar and spelling			
7.	Format followed as prescribed by the department			

B. Suggested modifications (if necessary) for the questions

Question No. Suggestions:

Question No. Suggestions:

Question No. Suggestions:

C. Overall Comments of the Moderator(s)

.....
.....
.....
.....

Moderated and Accepted ☐

Signature of the Moderator(s)

Date:

TEMPLATE: SCRUTINIZER REPORT ON ANSWER SCRIPTS

University of Asia Pacific

Department:

Final Examination, Semester:

Program:

Course Code

Course Title

Credit Hr:

Time:

Total Marks:

Name & Designation of the Scrutinizer(s):

Name & Designation of the Examiner:

D. Scrutiny of Answer Scripts

SL	ITEM	Corrections needed	Corrections not needed	Remarks
1.	Examiner's signature was given on answer scripts			
2.	Invigilator's signature was given on answer scripts			
3.	Cover page of the answer script (Q. No./Full Marks/Marks Obtained) was filled by examiner.			
4.	Calculation of total marks in the cover page of answer script is correct			
5.	Marks were given for each part of a question i.e.1(a); 1(b); 1(c)			
6.	No answer was left unmarked/not graded.			
7.	Errors, spelling or grammatical mistakes were highlighted by the examiner			
8.	There is no anomaly between answer script marks and the marks in printed report from automation			

E. Overall Comments of the Scrutinizer(s) [if any]

.....
.....
.....

Signature of Scrutinizer:

Date (Answer script received):

Date (Answer script Delivered):

Appendix V: Survey Analysis (in percentage)

Survey Results for Students

A. Governance

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Vision, mission and objectives of the entity are clearly stated (1.1)	0	1.15	4.6	37.36	56.9
2. Academic decisions are taken by the entity with fairness and transparency (1.2)	0.57	3.45	8.62	41.95	45.4
3. The intended learning outcomes (ILOs) satisfy the stated mission and objectives of the entity (1.4)	0.57	3.41	9.09	42.61	44.32
4. The entity has adequate infrastructures to satisfy its mission and objectives (1.5)	1.71	10.86	7.43	58.29	21.71
5. Academic calendars are maintained strictly by the entity (1.5)	0.57	3.43	5.14	22.86	68.0
6. Results are published timely in compliance with the ordinance (1.5)	0.57	0.57	3.41	32.39	63.07
7. The entity reviews its policy and procedures periodically for further improvement (1.6)	1.71	0.57	9.71	64.0	24.0
8. Codes of conduct for the students and employees are well communicated (1.7)	0.57	2.3	8.62	37.36	51.15
9. Disciplinary rules and regulations are explicitly defined and well circulated (1.7)	0	1.72	2.87	29.89	65.52
10. Website is updated properly (1.8).	23.86	26.14	18.18	23.86	7.95
11. The entity provides comprehensive guidelines to the students in advance by means of a brochure/handbook (1.9)	0.58	0.58	4.62	45.09	49.13
12. The entity ensures a conducive learning environment (1.12)	1.14	1.71	8	59.43	29.71
13. Students' opinion regarding academic and extra-academic matters are addressed properly (1.13)	3.43	14.86	28.57	38.29	14.86

B. Curriculum: content, design and review

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Courses in the curriculum from lower to higher levels are consistently arranged (2.3)	0	1.71	2.86	32.57	62.86

2. Teaching strategies are clearly stated in the curriculum (2.3)	0	2.87	5.17	45.98	45.98
3. Assessment strategies are explicit in the curriculum (2.3)	0.57	0	1.14	24.43	73.86
4. Curriculum load is optimum and exerts no pressure (2.4)	9.14	21.14	24.57	32.57	12.57

C. Student Entry qualifications, Admission procedure, Progress and Achievements

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Admission policy ensures entry of quality students (3.1).	1.71	6.29	5.14	38.86	48.0
2. Commitment among students is observed to ensure desired progress and achievement (3.2)	2.29	6.29	12.57	49.14	29.71
3. Admission procedure is quite fair (3.3)	0.57	2.29	2.86	22.86	71.43
4. Students' progress is regularly recorded and monitored (3.7)	1.14	2.29	6.86	32.57	57.14
5. Teachers provide regular feedback to the students about their progress (3.7)	2.29	4.0	8.57	46.29	38.86
6. The entity maintains individual student's records properly (3.8)	0.0	1.71	3.43	28.0	66.86

D. Structures and facilities

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Classroom facilities are suitable for ensuring effective learning (4.1).	0.57	11.49	7.47	42.53	37.93
2. Laboratory facilities are congenial for practical teaching-learning (4.1)	1.71	9.71	13.71	47.43	27.43
3. Facilities for conducting research are adequate (4.1)	4.57	9.14	52.0	23.43	10.86
4. The library has adequate up-to-date reading and reference materials to meet the academic & research needs (4.1)	15.43	37.71	18.29	22.29	6.29
5. Indoor and outdoor medical facilities are adequate (4.1)	5.14	27.43	26.86	31.43	9.14
6. There are adequate sports facilities (indoor and outdoor) (4.1)	9.14	32.57	15.43	32.57	10.29
7. Existing gymnasium facilities are good enough (4.1)	76.0	16.0	5.71	1.71	0.57
8. Access to internet facilities with sufficient speed are available (4.2)	50.86	33.71	6.86	7.43	1.14

E. Teaching learning and assessment**E.1: Teaching-learning**

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Teaching-learning is interactive and supportive (5.1)	0.57	4.0	6.29	58.29	30.86
2. Class size is optimum for interactive teaching learning (5.1)	0	5.14	5.71	61.71	27.43
3. Entity provides adequate opportunities for practical exercises to apply in real life situation. (5.2)	20.11	33.33	30.46	13.22	2.87
4. Modern devices are used to improve teaching-learning process (5.5)	1.71	10.29	9.14	59.43	19.43
5. Diverse methods are practiced to achieve learning objectives (5.5)	1.15	8.05	11.49	63.79	15.52
6. Lesson plans/course outlines are provided to the students in advance (5.6)	1.14	0	2.29	26.86	69.71

E.2: Learning Assessment

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Assessment systems are duly communicated to students at the outset of the term/semester (5.7).	0.57	1.14	5.71	40.57	52.0
2. Assessment procedures meet the objectives of the course (5.8)	0.0	4.0	7.43	53.14	35.43
3. Both formative (quizzes, assignments, term papers, continuous assessments, presentations etc.) and summative assessment (final examination) strategies are followed (5.8).	0.0	0.0	0.57	33.71	65.71
4. Diverse methods are used for assessment (5.9).	0.57	1.14	9.71	60.0	28.57
5. The students are provided feedback immediately after assessment (5.10).	1.14	8.0	6.29	54.29	30.29

F. Student Support Services

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
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1. There is an arrangement in the entity to provide an academic guidance and counseling (6.1).	0.0	8.57	8.0	47.43	36.0
2. Financial grants are available to the students in case of hardship (6.1)	1.71	5.14	8.0	52.0	33.14
3. The entity provides co-curricular and extra-curricular exposures to the students (6.3)	3.45	5.17	8.62	51.72	31.03
4. There is an organized and supportive alumni association (6.5).	5.14	11.43	26.86	41.71	14.86
5. The entity collects alumni feedback to update the learning outcomes of the program (6.6)	5.14	15.43	40.0	33.14	6.29
6. There are opportunities to be involved with community services (6.8).	3.43	3.43	9.71	58.29	25.14

G. Research and Extension Services

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The entity has a well-defined research and development policy (8.1)	5.14	12.0	39.43	32.0	11.43
2. Mechanism exists for engaging the students in research and development (8.1)	3.43	8.57	23.43	41.71	22.86
3. The entity has a community service policy (8.3)	1.14	9.14	20.0	55.43	14.29

Survey Questionnaire for Alumni

A. Governance

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Vision, mission and objectives of the entity are clearly stated (1.1)	0.95	3.81	11.43	53.33	30.48
2. Academic decisions are taken by the entity with fairness and transparency (1.2)	1.9	3.81	9.52	40.0	44.76
3. The intended learning outcomes (ILOs) satisfy the stated mission and objectives of the entity (1.4)	1.9	1.9	18.1	50.48	27.62
4. The entity has adequate infrastructures to satisfy its mission and objectives (1.5)	1.9	4.76	20.95	40.0	32.38
5. Academic calendars are maintained strictly by the entity (1.5)	2.86	0.95	6.67	29.52	60.0
6. Results are published timely in compliance with the ordinance (1.5)	1.92	1.92	7.69	31.73	56.73

7. The entity reviews its policy and procedures periodically for further improvement (1.6)	3.81	2.86	17.14	41.90	34.29
8. Codes of conduct for the students and employees are well communicated (1.7)	3.81	4.76	15.24	38.1	38.1
9. Disciplinary rules and regulations are explicitly defined and well circulated (1.7)	0.96	2.88	10.58	46.15	39.42
10. Website is updated properly (1.8).	5.88	14.71	23.53	26.47	29.41
11. The entity provides comprehensive guidelines to the students in advance by means of a brochure/handbook (1.9)	2.86	2.86	14.29	42.86	37.14
12. The entity ensures a conducive learning environment (1.12)	0.95	2.86	6.67	49.52	40.0
13. Students' opinion regarding academic and extra-academic matters are addressed properly (1.13)	2.86	13.33	14.29	38.1	31.43

B. Curriculum: content, design and review

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Courses in the curriculum from lower to higher levels are consistently arranged (2.3)	0.95	2.86	5.71	40.95	49.52
2. Teaching strategies are clearly stated in the curriculum (2.3)	0.95	3.81	6.67	45.71	42.86
3. Assessment strategies are explicit in the curriculum (2.3)	0.95	3.81	14.29	40.95	40.0
4. Curriculum load is optimum and exerts no pressure (2.4)	1.9	5.71	10.48	53.33	28.57
5. The curriculum is effective in achieving day-one skill (which happens right at the beginning in the first day at job place) (2.5).	6.67	3.81	22.86	40.95	25.71

C. Student Entry Qualifications, Admission procedure, Progress and Achievements

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Admission policy ensures entry of quality students (3.1).	1.94	4.85	10.68	33.98	48.54
2. Commitment among students is observed to ensure desired progress and achievement (3.2)	0.97	4.85	15.53	49.51	29.13
3. Admission procedure is quite fair (3.3)	0.97	0.97	7.77	26.21	64.08
4. Students' progress are regularly recorded and monitored (3.7)	1.94	4.85	16.5	34.95	41.75
5. Teachers provide regular feedback to the students about their progress (3.7)	1.96	4.9	12.75	42.16	38.24

6. The entity maintains individual student's records properly (3.8)	0.97	7.77	12.62	25.24	53.04
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D. Structures and facilities

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Classroom facilities are suitable for ensuring effective learning (4.1).	0.99	6.93	8.91	36.63	46.53
2. Laboratory facilities are congenial for practical teaching-learning (4.1)	3.96	9.9	4.95	33.66	47.52
3. Facilities for conducting research are adequate (4.1)	5.88	9.8	16.67	46.08	21.57
4. The library has adequate up-to-date reading and reference materials to meet the academic & research needs (4.1)	3.92	16.67	22.55	35.29	21.57
5. Indoor and outdoor medical facilities are adequate (4.1)	8.91	22.77	30.69	27.72	9.9
6. There are adequate sports facilities (indoor and outdoor) (4.1)	7.92	18.81	22.77	33.66	16.83
7. Existing gymnasium facilities are good enough (4.1)	45.1	23.53	17.65	6.86	6.86
8. Access to internet facilities with sufficient speed are available (4.2)	3.92	18.63	23.53	36.27	17.65

E. Teaching learning and assessment

E.1: Teaching-learning

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Teaching-learning is interactive and supportive (5.1)	2.97	1.98	4.95	50.50	39.6
2. Class size is optimum for interactive teaching learning (5.1)	1.98	3.96	4.95	49.5	39.6
3. Entity provides adequate opportunities for practical exercises to apply in real life situation. (5.2)	11.88	14.85	16.83	37.62	18.81
4. Students attained additional practical ideas apart from class room teaching (5.3)	6.0	12.0	28.0	35.0	19.0
5. Modern devices are used to improve teaching-learning process (5.5)	4.0	4.0	8.0	44.0	40.0
6. Diverse methods are practiced to achieve learning objectives (5.5)	2.97	3.96	17.82	51.49	23.76
7. Lesson plans/course outlines are provided to the students in advance (5.6)	2.97	0.99	11.88	40.59	43.56

E.2: Learning Assessment

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Assessment systems are duly communicated to students at the outset of the term/semester (5.7).	2.0	2.0	14.0	42.0	40.0
2. Assessment procedures meet the objectives of the course (5.8)	3.0	3.0	11.0	53.0	30.0
3. Both formative (quizzes, assignments, term papers, continuous assessments, presentations etc.) and summative assessment (final examination) strategies are followed (5.8).	1.98	0.0	3.96	38.61	55.45
4. Diverse methods are used for assessment (5.9).	1.98	2.97	17.82	44.55	32.67
5. The students are provided feedback immediately after assessment (5.10).	2.97	4.95	15.84	36.63	39.6

F. Student Support Services

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. There is an arrangement in the entity to provide an academic guidance and counseling (6.1).	3.19	3.19	13.83	46.81	32.98
2. Financial grants are available to the students in case of hardship (6.1)	2.11	8.42	11.58	42.11	35.79
3. The entity provides co-curricular and extra-curricular exposures to the students (6.3)	3.23	5.38	15.05	39.78	36.56
4. There is an organized and supportive alumni association (6.5).	11.7	10.64	26.6	29.79	21.28
5. The entity collects alumni feedback to update the learning outcomes of the program (6.6)	4.17	13.54	22.92	38.54	20.83
6. There are opportunities to be involved with community services (6.8).	4.21	2.11	21.05	40.0	32.63

G. Research and Extension Services

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The entity has a well-defined research and development policy (8.1)	4.21	9.47	13.68	46.32	26.32
2. Mechanism exists for engaging the students in research and development (8.1)	2.11	7.37	16.84	57.89	15.79
3. The entity has a community service policy (8.3)	2.11	5.26	18.95	54.74	18.95

Survey Questionnaire for Non-Academics

A. Governance:

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Vision, mission and objectives of the entity are clearly stated (1.1)	0.0	0.0	8.3	16.7	75.0
2. Academic decisions are taken by the entity with fairness and transparency (1.2)	0.0	8.3	0.0	33.3	58.3
3. The intended learning outcomes (ILOs) satisfy the stated mission and objectives of the entity (1.4)	0.0	16.7	8.3	25.0	50.0
4. The entity has adequate infrastructures to satisfy its mission and objectives (1.5)	0.0	8.3	8.3	50.0	33.3
5. Academic calendars are maintained strictly by the entity (1.5)	8.3	0.0	0.0	25.0	66.7
6. Results are published timely in compliance with the ordinance (1.5)	8.3	8.3	0.0	41.7	41.7
7. The entity reviews its policy and procedures periodically for further improvement (1.6)	8.3	8.3	25.0	16.7	41.7
8. Codes of conduct for the students and employees are well communicated (1.7)	0.0	0.0	16.7	16.7	58.3
9. Disciplinary rules and regulations are explicitly defined and well circulated (1.7)	0.0	0.0	25.0	33.3	41.7
10. Website is updated properly (1.8).	0.0	0.0	0.0	58.3	41.7
11. The entity provides comprehensive guidelines to the students in advance by means of a brochure/handbook (1.9)	0.0	16.7	16.7	25.0	41.7

B. Staff and Facilities: Recruitment and staff development

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Recruitment policy and practices are good enough for recruitment of competent academic and non-academic staff (7.1)	0.0	0.0	16.6	33.3	41.7
2. Salary and incentives are attractive enough to retain the academic and non-academic staff (7.2).	0.0	33.3	8.3	16.7	41.7
3. Good team spirit exists among different non-academic staff (7.4).	0.0	8.3	8.3	33.3	50.0
4. A congenial atmosphere prevails to enhance professional knowledge through research and higher studies (7.5)	0.0	0.0	16.7	50.0	33.3
5. Academics have enough opportunity to take part in different seminar/workshop/training programs for skill development (7.7)	0.0	8.3	0.0	58.3	33.3

6. Non-academics have enough opportunity to take part in different training programs for skill development (7.7)	8.3	41.7	16.7	16.7	16.7
7. The entity has a policy to provide mentoring/continuous guidance for new academic staff. (7.8)	0.0	16.7	25.0	25.0	33.3
8. The entity practices seminars and workshops to share knowledge and experience among the faculty members (7.11)	0.0	8.3	33.3	33.3	25.0
9. The entity has a performance award policy to inspire academic staff (7.12)	8.3	16.7	50.0	0.0	25.0
10. Performance indicators are the criteria for promotion/up-gradation (7.12)	0.0	8.3	25.0	25.0	41.7

Survey Questionnaire for Academics

A. Governance

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Vision, mission and objectives of the entity are clearly stated (1.1)	0.0	0.0	4.55	31.82	63.64
2. Academic decisions are taken by the entity with fairness and transparency (1.2)	0.0	0.0	9.09	36.36	54.55
3. The intended learning outcomes (ILOs) satisfy the stated mission and objectives of the entity (1.4)	0.0	0.0	0.0	54.55	45.45
4. The entity has adequate infrastructures to satisfy its mission and objectives (1.5)	0.0	0.0	14.29	57.14	28.57
5. Academic calendars are maintained strictly by the entity (1.5)	0.0	0.0	0.0	9.09	90.91
6. Results are published timely in compliance with the ordinance (1.5)	0.0	0.0	0.0	9.09	90.91
7. The entity reviews its policy and procedures periodically for further improvement (1.6)	0.0	0.0	40.91	54.55	4.55
8. Codes of conduct for the students and employees are well communicated (1.7)	0.0	4.55	13.64	59.09	22.73
9. Disciplinary rules and regulations are explicitly defined and well circulated (1.7)	0.0	0.0	0.0	40.91	59.09
10. Website is updated properly (1.8).	0.0	13.64	50.0	36.36	0.0
11. The entity provides comprehensive guidelines to the students in advance by means of a brochure/handbook (1.9)	0.0	0.0	0.0	27.27	72.73
12. Documentations (decisions of committees, class attendance registers, questions, answer scripts, marks, examination results,	0.0	0.0	0.0	31.82	68.18

students' progress etc) are maintained properly (1.10)					
13. Decision making procedure in the entity is participatory (1.11)	0.0	0.0	19.05	66.67	14.29
14. The entity ensures a conducive learning environment (1.12)	0.0	0.0	0.0	63.64	36.36
15. Students' opinion regarding academic and extra-academic matters are addressed properly (1.13)	0.0	0.0	22.73	45.45	31.82

B. Curriculum Design and Review

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Curriculum is reviewed and updated at regular intervals in compliance with the rules of the universities (2.1)	0.0	4.76	28.57	52.38	14.29
2. Opinions from the relevant stakeholders (students, teachers, employers and alumni) are duly considered during review of the curriculum (2.2)	0.0	4.55	45.45	40.91	9.09
3. Courses in the curriculum from lower to higher levels are consistently arranged (2.3)	0.0	0.0	9.09	18.18	72.73
4. Teaching strategies are clearly stated in the curriculum (2.3)	0.0	0.0	0.0	50.0	50.0
5. Assessment strategies are explicit in the curriculum (2.3)	0.0	0.0	0.0	36.36	63.64
6. Curriculum load is optimum and exerts no pressure (2.4)	4.55	4.55	4.55	63.64	22.73
7. Curriculum addresses the program objectives and program learning outcomes (2.4)	0.0	0.0	4.55	54.55	40.91
8. The curriculum is effective in achieving day-one skill (which happens right at the beginning in the first day at job place) (2.5).	0.0	4.55	27.27	54.55	13.64

C. Student Entry qualifications, Admission procedure, Progress and Achievements

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Admission policy ensures entry of quality students (3.1).	0.0	0.0	18.18	50.0	31.82
2. Commitment among students is observed to ensure desired progress and achievement (3.2)	0.0	0.0	18.18	50.0	31.82
3. Admission procedure is quite fair (3.3)	0.0	0.0	0.0	22.73	77.27

4. Students' progress is regularly recorded and monitored (3.7)	0.0	0.0	0.0	40.91	59.09
5. Teachers provide regular feedback to the students about their progress (3.7)	0.0	0.0	0.0	45.45	54.55
6. The entity maintains individual student's records properly (3.8)	0.0	0.0	0.0	31.82	68.18

D. Structure and Facilities

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Classroom facilities are suitable for ensuring effective learning (4.1).	0.0	4.55	4.55	45.45	45.45
2. Laboratory facilities are congenial for practical teaching-learning (4.1)	0.0	0.0	4.55	54.55	40.91
3. Facilities for conducting research are adequate (4.1)	0.0	4.55	36.36	27.27	31.82
4. The library has adequate up-to-date reading and reference materials to meet the academic & research needs (4.1)	0.0	9.09	36.36	50.0	4.55
5. Indoor and outdoor medical facilities are adequate (4.1)	0.0	4.55	31.82	40.91	22.73
6. There are adequate sports facilities (indoor and outdoor) (4.1)	4.55	13.64	27.27	54.55	0.0
7. Existing gymnasium facilities are good enough (4.1)	31.82	22.73	45.45	0.0	0.0
8. Office equipments are adequate to support the students' need (4.1)	0.0	0.0	18.18	50.0	31.82
9. Entity has competent manpower to run the academic affairs (4.1)	0.0	0.0	13.64	68.18	18.18
10. Access to internet facilities with sufficient speed are available (4.2)	0.0	9.09	13.64	63.64	13.64

E. Teaching learning and assessment

E.1: Teaching Learning

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Teaching-learning is interactive and supportive (5.1)	0.0	0.0	0.0	54.55	45.45
2. Class size is optimum for interactive teaching learning (5.1)	0.0	4.55	13.64	54.55	27.27
3. Entity provides adequate opportunities for practical exercises to apply in real life situation. (5.2)	0.0	0.0	22.73	68.18	9.09

4. Teaching-learning process encompasses co-curricular activities to enrich students' personal development. (5.4)	0.0	0.0	4.55	63.64	31.82
5. Modern devices are used to improve teaching-learning process (5.5)	0.0	0.0	13.64	36.36	50.0
6. Diverse methods are practiced to achieve learning objectives (5.5)	0.0	0.0	0.0	63.64	36.36
7. Lesson plans/course outlines are provided to the students in advance (5.6)	0.0	0.0	0.0	27.27	72.73

E.2: Learning Assessment

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Assessment systems are duly communicated to students at the outset of the term/semester (5.7).	0.0	0.0	0.0	36.36	63.64
2. Assessment procedures meet the objectives of the course (5.8)	0.0	0.0	0.0	40.91	59.09
3. The assessment system is reviewed at regular intervals (5.8)	0.0	0.0	18.18	50.0	31.82
4. Both formative (quizzes, assignments, term papers, continuous assessments, presentations etc.) and summative assessment (final examination) strategies are followed (5.8).	0.0	0.0	0.0	27.27	72.73
5. Diverse methods are used for assessment (5.9).	0.0	0.0	0.0	36.36	63.64
6. The students are provided feedback immediately after assessment (5.10).	0.0	0.0	13.64	54.55	31.82
7. Fairness and transparency is maintained in assessment system (5.9)	0.0	0.0	0.0	18.18	81.82

F. Students Support Services

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. There is an arrangement in the entity to provide an academic guidance and counseling (6.1).	0.0	0.0	13.64	31.82	54.55
2. Financial grants are available to the students in case of hardship (6.1)	0.0	0.0	4.55	22.73	72.73
3. The entity provides co-curricular and extra-curricular exposures to the students (6.3)	0.0	0.0	4.55	22.73	72.73
4. There is an organized and supportive alumni association (6.5).	0.0	4.55	54.55	36.36	4.55

5. The entity collects alumni feedback to update the learning outcomes of the program (6.6)	0.0	4.55	54.55	31.82	9.09
6. There are opportunities to be involved with community services (6.8).	0.0	4.55	18.18	54.55	22.73

G. Staff and Facilities: Recruitment and staff development

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Recruitment policy and practices are good enough for recruitment of competent academic and non-academic staff (7.1)	0.0	0.0	0.0	45.45	54.55
2. Salary and incentives are attractive enough to retain the academic and non-academic staff (7.2).	9.09	22.73	13.64	54.55	0
3. Good team spirit exists among different academic staff (7.4).	0.0	0.0	4.55	40.91	54.55
4. A congenial atmosphere prevails to enhance professional knowledge through research and higher studies (7.5)	0.0	0.0	9.09	68.18	22.73
5. Academics have enough opportunity to take part in different seminar/workshop/training programs for skill development (7.7)	0.0	0.0	13.64	45.45	40.91
6. Non-academics have enough opportunity to take part in different training programs for skill development (7.7)	0.0	18.18	59.09	18.18	4.55
7. The entity has a policy to provide mentoring/continuous guidance for new academic staff. (7.8)	0.0	0.0	27.27	50.0	22.73
8. The entity practices seminars and workshops to share knowledge and experience among the faculty members (7.11)	0.0	0.0	14.29	38.10	47.62
9. The entity has a performance award policy to inspire academic staff (7.12)	13.64	18.18	45.45	18.18	4.55
10. Performance indicators are the criteria for promotion/up-gradation (7.12)	0.0	0.0	18.18	63.64	18.18

H. Research & Extension Services

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The entity has a well-defined research and development policy (8.1)	0.0	9.09	40.91	36.36	13.64
2. Mechanism exists for engaging the students in research and development (8.1)	0.0	0.0	9.09	59.09	31.82

3. Teachers always take initiative to hunt research fund for smooth running of the research (8.1)	0.0	9.09	31.82	45.45	13.64
4. The entity has a community service policy (8.3)	0.0	9.09	27.27	45.45	18.18

I. Process Control Internal (Quality Assurance and Continuous quality Improvement)

Aspects of Evaluation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The entity always acts in compliance with the decision of the university regarding continuous quality improvement (9.1)	0.0	0.0	0.0	59.09	40.91
2. The entity embraces the spirit of continual quality improvement (9.2).	0.0	0.0	9.09	45.45	45.45
3. Academic programs are reviewed by the entity for the enhancement students' learning (9.3).	0.0	0.0	36.36	36.36	27.27
4. The entity ensures a usual practice for students'/ Alumni's feedback as a culture (9.3)	0.0	13.64	54.55	22.73	9.09

Appendix VI: Research and Publications (During 2015 – 2017)

Peer Reviewed Journals

Ahmed, S. J. U., & Das, T. (2017) Concrete in chloride environment: comparison of rapid electrochemical test methods. *Malaysian Journal of Civil Engineering*, 29(1), 28-41

Noor, S.T. (2017). Discussion of ‘Drag load on end-bearing piles in collapsible soil during inundation’. *Canadian Geotechnical Journal*, Vol. 54, pp. 742-743.

Noor, S.T. (2017). Numerical and Analytical Modeling for Predicting Drag Load Induced on Pile in Collapsible Soil because of Inundation. *Open Civil Engineering Journal*, Vol. 11(1), pp. 664-675.

Choudhury, J. R. & **Rahaman, M. M.** (2017) Building Resilience to Cyclones and Storm Surge in the Coastal Region of Bangladesh, In: Shaw R., Chan E., Lian F., Lu L., Shi P., Yang S., Chan G., Wong J. (Eds.) Co-designing DRR Solutions: Towards participatory action and communication in science, technology and academia, pp. 16-18 (ASTAAG, IRDR and CCOUC, Hong Kong, China).

Choudhury, J. R. & **Rahaman, M. M.** (2017) Harnessing Sunshine to Provide Safe Drinking Water in Disaster Prone Areas of Bangladesh, In: Shaw R., Chan E., Lian F., Lu L., Shi P., Yang S., Chan G., Wong J. (Eds.) Co-designing DRR Solutions: Towards participatory action and communication in science, technology and academia, pp. 19-21 (ASTAAG, IRDR and CCOUC, Hong Kong, China).

Miah, M. S., Chatzi E. N., Dertimanis V. K., and Weber F. (2017) Real-time experimental validation of a novel semi-active control scheme for vibration mitigation, Structural Control and Health Monitoring, 24:e1878. doi: 10.1002/stc.1878.

Uddin, F., **Rahman, F.,** Rahman, M. M., Islam, M. M. (2017) Discerning Pedestrian Accidents in Dhaka-Barisal National Highway in Bangladesh. *International Journal of Education and Applied Research* (IJEAR) Vol 7, Issue 1.

Rahman, M. M. & **Rahaman, M. M.** (2017) Impact of Farakka barrage on hydrological flow of Ganges river and environment in Bangladesh, *Sustainable Water Resources Management*, 1-14. DOI: 10.1007/s40899-017-0163-y [Springer].

Rahman, F., Uddin, F., Rahman, M. M., Islam, M. A. (2017) Characterizing Hazardous Road Locations and Black Spots on Route N8 (Dhaka-Barisal National Highway) of Bangladesh, *Journal of Built Environment, Technology and Engineering*, Vol. 2. Pages 203-214. ISSN 0128-1003.

Rahman, F., Chowdhury, T. D., Haque, M. T., Rahman, M. R. and Islam, M. A. (2017) Identifying Existing Bus Service Condition and Analyzing Customer Satisfaction of Bus Service in Dhaka City, *Journal of Transportation Technologies*, JTTs. Vol.7. No. 2, pp 107-122. doi: 10.4236/jtts.2017.72008

Rahman, F., Haque, M. F., Ehsan, M. T, Rahman, S. M. M., Hadiuzzaman, M. (2017) Determination of Users' Perception of Paratransit Service Quality in Dhaka City Based on Users Perception. *International Journal of Education and Applied Research (IJEAR)* Vol 7, Issue 1.

Saeed T., Sun, G. (2017). Pollutant Removals Employing Unsaturated and Partially Saturated Vertical Flow Wetlands: A Comparative Study. *Chemical Engineering Journal*, 325, 332–341

Saeed, T., Sun, G. (2017). A comprehensive review on nutrients and organics removal from different wastewaters employing subsurface flow constructed wetlands. *Critical Reviews in Environmental Science and Technology*, 47 (4), 203-288.

Nasrin, S. (2017) Assessing Vulnerability of Low Income Commuters With Respect To Their Transport Mobility-Considering Dhaka as a Case Study. *Journal of Transportation System*, 2 (2), 1-26

Ahmed, S. S. & Hawlader, B. C. (2016). Numerical Analysis of Large Diameter Monopiles in Dense Sand Supporting Offshore Wind Turbines. *ASCE International Journal of Geomechanics*, 04016018.

Amin, A.F.M.S., **Hasnat, A.**, Khan, A. H., & Ashiquzzaman, M. (2016). Residual cementing property in recycled fines and coarse aggregates: Occurrence and quantification. *Journal of Materials in Civil Engineering*, 28(4), 04015174.

Choudhury, M. S. I., Amin, A.F.M.S., Islam, M. M. & **Hasnat, A.** (2016). Effect of column geometry on the dilation behavior in FRP-confined plain concrete columns using stone, brick and recycled aggregates. *Construction and Building Materials Journal*, 102(1), 541-551.

Hasnat, A., Islam, M. M., & Amin, A.F.M.S. (2016). Enhancing the debonding strain limit for CFRP-strengthened RC beams using U-clamps: Identification of design parameters. *Journal of Composites for Construction*, 20(1), 04015039.

Feng, X. D., **Miah, M. S.**, Ou, Y. and Guo, S. H. (2016). Dynamic Response and Vibration Control of Tensegrity Systems Under Seismic Excitation, *Insights and Innovations in Structural Engineering, Mechanics and Computation* Edited by Alphonse Zingoni, CRC Press 2016, pp. 93–98, doi:10.1201/9781315641645-16.

Majed, N., Real, M. I. H., Akter, M. & Azam, H. M. (2016). Food Adulteration and Bio-Magnification of Environmental Contaminants: A Comprehensive Risk Framework for Bangladesh. *Frontiers in Environmental Science*, 4:34.doi: 10.3389/fenvs.2016.00034.

Miah, M. S. (2016). Structural Parameters Uncertainties Effect on Structural Responses, International Journal of Civil and Structural Engineering, Vol. 3, Issue: 2, pp. 7 – 11, ISSN: 2372-3971.

Rahaman, M.M., & Ahmed, T.S. (2016). Affordable water pricing for slums dwellers in Dhaka Metropolitan Area: The case of three slums. *Journal of Water Resource Engineering and Management*, 3(1), 15-33.

Rahaman, M. M., Sajib, K.I. & Intekhab, A. (2016). Impacts of climate change on the livelihoods of the people in Tanguar Haor, Bangladesh. *Journal of Water Resource Engineering and Management*, 3(1), 1-9.

Rahaman, M. M. (2016) Principles of Transboundary Water Resources Management and Water-related Agreements in Central Asia: An Analysis, In: Stucki, V., Wegerich, K., Rahaman, M. M. & Varis, O. (Eds.) *Water & Security in Central Asia: Solving a Rubik's Cube*, pp. 81-97 (Routledge, UK) [Republished].

Rahman, F., & Kubota, H. (2016). Point Scoring System to Rank Traffic Calming Projects. *Journal of Traffic and Transportation Engineering*, Elsevier, 324-335.

Rahman F., Das T., Hadiuzzaman M., and Hossain S. (2016) Perceived Service Quality of Paratransit System: A Structural Equation Approach. Transportation Research Part A: Policy and Practice, *Elsevier*. Volume 93, Pages 23-38. doi: 10.1016/j.tra.2016.08.008.

Rahman, F., Shingo, Y., Kojima, A. & Kubota, H. (2015). Public Acceptance Survey for Evaluation of Traffic Calming Prioritization Process. *Journal of the Eastern Asia Society for Transportation Studies*, 11, 1793-1809.

Rahman F. and Kubota H. (2016) Point Scoring System to Rank Traffic Calming Projects. *Journal of Traffic and Transportation Engineering*, Elsevier. pp. 324-335. doi:101016/j.jtte.2016.02.002.

Saeed, T., Paul, B., Afrin, R., Al-Muyeed, A., & Sun, G. (2016). Floating Constructed Wetland for the Treatment of Polluted River Water: A Pilot Scale Study on Seasonal Variation and Shock Load. *Chemical Engineering Journal*, 287, 62–73.

Stucki, V., Wegerich, K., **Rahaman, M. M.** & Varis, O. (Eds.) (2016) Water & Security in Central Asia: Solving a Rubik's Cube, 192 pages (Routledge, UK) [ISBN: 9781138692718].

Nasrin, S. (2016) Work Travel Condition by Gender-Analysis for Dhaka City. *MOJ Civil Engineering* 1(3): 00017. DOI: [10.15406/mojce.2016.01.00017](https://doi.org/10.15406/mojce.2016.01.00017)

Atiq, A. R., **Rahaman, M. M.**, Sojib, R. M., & Shil, S. C. (2015). Water quality changes in Balu River during non-monsoon and monsoon period. *Journal of Water Resource Engineering and Management*, 2(3), 38-49.

Miah, M. S. (2015). Semi-active Control for Magnetorheological dampers via coupling of System Identification Methods, ETH Zurich, Zurich, Switzerland, doi: 10.3929/ethz-a-010532900.

Mohammed, T. U., **Hasnat, A.**, Awal, M. A. & Bosunia, S. Z. (2015). Recycling of brick aggregate concrete as coarse aggregate. *Journal of Materials in Civil Engineering*, 27(7), B4014005.

Mohammed, T. U., Hamada, H., **Hasnat, A.** & Al-Mamun, M. A. (2015). Corrosion of steel bars in concrete with the variation of microstructure of steel-concrete interface. *Journal of Advanced Concrete Technology*, 13(4), 230-240.

Rahaman, M. M. (2015) Principles of transboundary water resources management and frontier watercourses agreement between Finland and Russia: An analysis, In: Tvedt, T., McIntyre, O., Woldesadik, T.K. (Eds.) *Sovereignty and International Water Law*, pp. 442-464 (I.B. Tauris, UK). ISBN: 9781780764481.

Rahman, F., Shingo, Y., Kojima, A., & Kubota, H. (2015). Paired Comparison Method to Prioritize Traffic Calming Projects. *Journal of the Eastern Asia Society for Transportation Studies*, 11, 2472-2487.

Rahman, F., Ezaz, M. H., Halder, D., & Mondal, P. (2015). Contributing Factors Affecting the Safety in Construction Sites of Bangladesh. World Academy of Science, Engineering and Technology. *International Journal of Civil And Environmental Engineering*, 1 (12).

Kattelus, M., **Rahaman, M. M.** & Varis, O. (2015). Hydropower development in Myanmar and its implications on regional energy cooperation. *International Journal of Sustainable Society*, 7(1), 42–66.

Sun, G., **Saeed, T.**, Zhang, G. & Sivakugan, N. (2015). Water quantity and quality assessment on a tertiary treatment wetland in a tropical climate. *Water Science and Technology*, 71.4, 511-517.

Rahman, M., **Hasan, M. M.** and Nakajima, J. (2015). Categories and Water Quality of Artificial Water Storage Ponds in Rural Areas of Khulna, Bangladesh, *Journal of Water and Environment Technology (JWET)*, 13 (6), 411-426.

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Appendix VIII: Academic Calendar



University of Asia Pacific
Academic Calendar **Fall-2017**



Academic calendar

Students meet Advisor: **15 October 17**
Registration week: **8 - 12 October 17**
Orientation for 1st Year 1st Semester: **14 October 17**
Classes start for Fall 2017: **15 October 17**
Declaration of merit- based waiver list: **23 Oct 17**
Last date of Application for VC's Special waiver: **24 Oct 17**
Mid Semester Exams: **3 - 9 Dec 17**
Publishing of Mid semester Results: **17 December 17**
Students meet Advisor: **17 Dec 17 & 17 Jan 18**
Preparatory leave: **4 - 10 February 18**
Semester Final Exams: **11-24 February 18**
Publishing of results: **6 March 18**
Repeat Exams (RE): **12 - 15 March 18**
Publishing of Results after RE: **18 March 18**
Registration for Spring- 2018: **18-22 March 18**

Registration and other payment dates (last date)

- A) Registration fee (1st Installment) – **9 October 17**
- B) 2nd Installment – **19 November 17**
- C) 3rd Installment – **15 January 18**

Holidays

1 Oct 2017: Muharram (Ashura)*
1 Dec 2017: Eid-e-Miladunmabi*
10-16 Dec 2017: Winter Vacation
16 Dec 2017: Victory Day
25 Dec 2017: Christmas Day
21 Feb 2018: International Mother Language Day
17 Mar 2018: Birthday of the Father of the Nation
Bangabandhu Sheikh Mujibur Rahman
26 Mar 2018: Independence Day
14 Apr 2018: Bengali New Year
25 Apr 2018: Shab E Miraj*

Classes for Spring- 2018 start on: **1 April 2018**

* - Subject to sighting of moon

October '17

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

1
2
3

November '17

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

4
5
6
7

December '17

S	M	T	W	T	F	S
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Mid
WV
8
9

January '18

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

10
11
12
13
14

February '18

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

Prep
Exam
Exam

March '18

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Result
RE

April '18

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

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