

Curriculum

Undergraduate
Session: 2023-2024

Department of Architecture



Shahjalal University of Science and Technology
Sylhet, Bangladesh

Curriculum Publication Committee

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Published by:

Office of the Registrar

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Ordinance for Semester System for Bachelor Degree

(This ordinance will replace other ordinances/resolutions etc. on the issues described here. However, it will not affect ordinances/resolutions on issues not mentioned here.)

1. Student Admission

1.1 Undergraduate Admission:

The admission committee of the university will conduct the admission process for the Bachelor's degree as per the rules. The student will enroll in the first semester of an academic year in individual disciplines of different schools. The admission of foreign students will be subjected to the verification of academic records as per the university rule.

1.2 Student Status, Student Level and Level of courses:

Every student has to maintain her/his student status by enrolling, paying tuition fees, and doing the registration for required credits every successive semester following the requirements (Section-4). For smooth operation of semester system and bookkeeping purpose: (1) a student's level will be expressed by her/his year and semester, and (2) courses of 1st year, 2nd Year, 3rd Year and 4th Year will be termed respectively as 100 level, 200 level, 300 level and 400 level courses.

1.3 Re-Admission:

(1) A student will be eligible for re-admission in the first year first semester of the subsequent session if s/he was present in at least 25% of the classes of her/his core and elective courses of the same semester.

(2) A student has to take re-admission if her/his student status is not maintained or one or more semesters have annulled because of disciplinary action taken against him/her. In the case of semester annulment, the student has to re-admit the same level of semester. The level (Year and Semester) of re-admitter will be determined by his/her completed credits. The re-admitted students will always be assigned the original Registration number.

1.4 Student's Advisor:

After admission, every batch of the students will be assigned to a student advisor nominated by the respective discipline to guide them during their study under the semester system. Advisors will always be accessible to the students and ready to mentor them in academic activities, career planning and if necessary, personal issues. There will be a prescribed guideline for the advisors to follow.

2. Academic Calendar

2.1 Number of Semesters:

There will be two semesters in an academic year. The first semester of the year will start on 1st January and end on 30th June, the Second semester will begin on 1st July and end on 31st December. The roster of the final examination dates and other academic deadlines will be announced at the beginning of each semester.

2.2 Duration of Semesters:

The duration of each semester will be as follows:

Classes	14 weeks
Recess before final Examination	2 weeks
<u>Final Examination</u>	<u>4 weeks</u>
Total	20 weeks

These 20 (twenty) weeks may not be continuous in order to accommodate various holidays and the recess before the final examination. The final grading will be completed within one month of the beginning of the semester.

3. Course Pattern

The entire Bachelor's degree program has covered through a set of theoretical, practical, project, viva and seminar courses. At the beginning of every academic session, a short description of courses will be published by the curriculum committee of each discipline.

		School of Applied Sciences and Technology:	
1.	ARC	Architecture	A
2.	CEP	Chemical Engineering and Polymer Science	B
3.	CEE	Civil and Environmental Engineering	C
4.	CSE	Computer Science and Engineering	D
5.	EEE	Electrical and Electronic Engineering	E
6.	FET	Food Engineering and Tea Technology	F
7.	IPE	Industrial and Production Engineering	G
8.	MEE	Mechanical Engineering	Q
9.	PME	Petroleum and Mining Engineering	H
		School of Life Sciences	
10.	BMB	Biochemistry and Molecular Biology	I
11.	GEB	Genetic Engineering and Biotechnology	J
		School of Physical Sciences:	
12.	CHE	Chemistry	K
13.	GEE	Geography and Environment	L
14.	MAT	Mathematics	M
15.	PHY	Physics	N
16.	STA	Statistics	O
17.	OCG	Oceanography	S
		School of Social Sciences	
18.	ANP	Anthropology	a
19.	BNG	Bangla	b
20.	ECO	Economics	c
21.	ENG	English	d
22.	PSS	Political Studies	e
23.	PAD	Public Administration	f
24.	SCW	Social Work	g
25.	SOC	Sociology	h
		School of Agriculture and Mineral Science	
26.	FES	Forestry and Environmental Science	P
		School of Management and Business Administration	
27.	BUS	Business Administration	i
		Institute of Information and Communication Technology	
28.	SWE	Software Engineering	W

3.1 Course Development:

3.1.1 Core, Elective and General Education Courses: The Curriculum Committee of the discipline duly formed by the respective Dean will develop all the courses of the curriculum for every session. These courses include the Core, General Education, and Elective courses needed for the program of the discipline. The General Education courses will be developed with the close cooperation of the respective discipline concerned, considering the necessity of the program. If for any of the disciplines, the needed General Education courses are not running/operating in the University then the Curriculum Committee of that discipline will develop all the necessary/relevant courses for the program. Finally, the curriculum has to be approved by the respective school and the Academic Council.

3.1.2 Curriculum: (a) Core, Elective and General Education Courses: The Curriculum Committee will select and approve the courses from Core/Elective courses of the discipline as well as General Education courses designed/offered by the other disciplines for completing the full curriculum. The Curriculum committee will also select a group of courses as the core courses. In that instance, without completing all of these core courses, a student will not be considered for graduation even if s/he completed the credits required for the degree. Also, the committee may assign a prerequisite for any course if deemed necessary.

(b) Second Major Courses: The curriculum committee will select a set of courses of 28-36 credits from the core and elective courses for a second major degree.

3.1.3 Course Instruction: At the beginning of every semester, the course instructor has to prepare a detailed course plan and submit it to the head of the discipline to make it available for the students. The course plan should have information about the suggested textbooks, topics per week and corresponding course learning outcomes (Cos) covered, teaching and learning strategies, assessment strategies, number and approximate dates of term-test examinations, quizzes,

presentations, and mandatory office hours reserved for the students of the course offered. If not otherwise mentioned, the medium of instruction is always English.

3.2 Course Identification System:

Each course is specified/designated by a three-letter symbol for discipline/school abbreviation (if not otherwise mentioned) followed by a four-digit International Standard Classification of Education (ISCED) code and a four-digit number to characterize that course. To avoid confusion, any new or modified courses should never be specified/designated by reusing a discontinued course number.

3.2.1 Discipline Identification:

The three-letter symbol will identify a discipline/institute/school offering the course as follows. If the same course is offered to more than one discipline/institute, if necessary, an extra letter shown in the list may be used after the four digits to specify the department receiving the General Education course.

3.2.2 Course Number:

(a) Following the BNQF (Bangladesh National Qualifications Framework) guidelines, an ISCED Code will be assigned to each course (offered by the discipline/institute/school) immediately after the three-letter code of the specified course.

(b) First Digit: The first digit of the four-digit number, after the ISCED Code, will correspond to the year (level) intended for the course recipient.

(c) Second Digit: The second digit of the four-digit number, after the ISCED Code, will correspond to the semester intended for the course recipient.

(d) Third Digit: A discipline should use the numbers 0 and 1 for the third digit to identify allied General Education courses. The digits 2-9 are reserved for Core and Elective courses to identify the different areas within a discipline/institute.

(e) Fourth Digit: The fourth digit of the four-digit numbers (after the ISCED Code) will identify a course within a particular discipline/institute/school. This digit may be sequential to indicate the

follow-up courses. If possible, fourth digit may be even for identifying the laboratory/sessional courses of the discipline/institute/school.

3.2.3 Course Title and Credit: Every course will have a short representative course title and a number indicating the total credit as well as reference to prerequisite courses if any.

3.2.4 Theory and Lab/Sessional Course: If a single course has Theory and Laboratory/sessional part, then the course must be split by Theory and Lab/Sessional courses, and both should have separate course numbers. A student will not be allowed to register for the Lab/Sessional course without registering or completing the corresponding Theory course. Completion of both the Theory and the corresponding Lab/Sessional courses is mandatory for graduation.

3.3 Assignment of Credits:

3.3.1 **Theoretical:** One lecture of 1 (One) hour duration per week or 14 (Fourteen) lectures in total per semester will be considered as one credit.

3.3.2 **Laboratory/Sessional Classes:** Within the (laboratory/sessional) classroom of the discipline/institute minimum two contact hours of a laboratory/sessional class per week (or 28 contact hours in total) per semester will be considered as one credit. The minimum – maximum credits of the lab/sessional courses will be specified by/ limited to 1-3 credits. The other laboratory/sessional courses (like the design studio, field practicum, etc.) will be designed, and the credits will be determined/specified based on the necessity by the discipline/institute.

3.3.3 **Seminar, Projects, Fieldwork, Thesis, Viva etc.:** Will be assigned by the respective discipline/institute.

3.4 Classification of the Courses:

The Bachelor's degree courses will be classified into several groups, and the curriculum committee will finalize the curriculum by selecting courses from the groups shown below.

3.4.1 **Core and Elective Courses:** Every student has to take the courses specified/marked as core courses of the program offered by the discipline/institute. The percentage of the core and elective courses

shall be at most 75% of the total credits so designed by the respective discipline/institute.

3.4.2 **General Education Courses:** Every student is required to take General Education courses developed by the Curriculum Committee of the discipline/institute. The General Education courses shall be at least 25% of the total credits offered by the respective discipline/institute. If any General Education course is specified/declared as a mandatory course in the curriculum, a student is required to take that course to graduate.

3.4.3 **Non-credit Courses:** The credit of these courses will be added to the total credits if passed but will have no effect on the CGPA as there will be no grades for these courses.

3.4.4 **Non-credit Course for BNCC:** The credit of these courses will be added to the total credits if passed and its grade will be separately shown but will have no effect on the CGPA.

4. Admission in semesters and Course Registration

4.1 Requirements for Admission and Course Registration:

For admissions to higher semester (2nd to 10th) and course registration following requisites and steps have to be strictly maintained:

- (1) Completion of 100 level courses is mandatory for student's admission in semester of 300 level courses.
- (2) Completion of 200 level courses is required for admission in semester of 400 level courses.
- (3) A student having incomplete 100 level courses shall be allowed for admission in her/his next available semester of 100-200 level courses until s/he completes all of 100 level courses.
- (4) A student having incomplete 200 level courses shall be allowed for admission in her/his next available semester of 200-300 level courses until s/he completes all of 200 level courses.
- (5) Once a student reaches to 8th/10th semester of 4/5 years' program s/he will be kept at this level, if necessary, till the

specified last semester of the undergraduate program for completion of credit requirement of graduation.

Every admission/course registration of a student will be counted and adjusted from the total number of semesters of the program to determine her/his remaining period of study. Student advisors of all disciplines will advise every student about her/his courses for registration and monitor her/his performances. Accordingly, a student has to register for her/his courses and pay necessary dues within the first 4 (Four) weeks of every semester (2 more weeks for late registration). A student will not be allowed to appear in the examination if her/his semester and examination fee is not fully paid off. Foreign student must have valid Visa/residential permit to appear in the examination and that has to be checked by the student advisor and the head of the discipline/institute.

4.2 Minimum and Maximum Credit:

A student, if s/he is not a clearing graduate, will not be allowed to register for more than 30 credits per semester.

4.2.1 Course registration for clearing graduate: For course registration of a clearing graduate (8th/10th and subsequent semesters), however, the condition(s) for maximum and minimum credits is/are relaxed.

4.3 Incomplete Courses:

If a student has an incomplete course(s), s/he has to register such an incomplete course(s) from preceding semesters before registering courses from current or successive semesters. If an incomplete course is not available or offered in the running semesters, the student shall take such course(s) when it is available or offered.

4.5 Course Withdrawal:

A student can withdraw a course by a written application to the Controller of Examinations through the Head/Director of the discipline/institute two weeks before the examination start. The

Controller of Examinations will send the revised registration list(s) to the disciplines before the commencement of semester final examination. There will be no record in transcript if the course is withdrawn.

4.6 Course Repetition:

If a student has to repeat a failed or incomplete course and that course is not available/offered any more, the discipline may allow him/her to take an equivalent course from the current curriculum. For clearing graduates, if any incomplete course is not available/offered in the running semester, the discipline may suggest a suitable/equivalent course to complete the credit requirement so required for the degree.

5. Graduation Criteria

5.1 Major Degree

5.1.1 Total Credits: For graduation, a student must complete all of the offered courses prescribed by the curriculum committee for her/his session. In general, the minimum requirements for graduation from the disciplines of different Schools and Institute are as in the following table:

Schools/Institute	Disciplines	Program duration (in year)	Minimum credits
Physical Sciences	All disciplines	4	140
Social Sciences			
Management and Business Administration			
Applied Sciences and Technology	Architecture	5	200
	Other disciplines	4	160
Institute of Information and Communication Technology	Software Engineering	4	160
Life Sciences	All disciplines	4	160
Agriculture and Mineral Sciences			

Student must complete all the core and prerequisite (if assigned in curriculum) as well as all the registered courses for graduation.

5.1.2 Total Years:

A regular student is expected to complete her/his graduation in 8/10 semesters for 4/5 (four/five) years' program of the disciplines/institute. If necessary, s/he will be given 4 (four) extra semesters (in consecutive 2 (two) years) in addition to 8/10 (eight/ten) semesters of the program to complete the credit-requirement of the degree. In very special cases, that is, if a student completed her/his 80% or more of the credits and intended through application to complete the remaining credits then the discipline may send a detailed report to the respective Dean for further steps. Then, based on the report and Dean's opinion, Academic Council may allow 2 (two) extra semesters as the special semesters for completing the credit-requirement of the degree as irregular students. In the case of Institute,

the director will send the report through the governing body to the academic council. The regular examination year will be specified/identified by the session and the end-month (June or December) of the semester in which the student graduates.

5.1.3 Break in study:

In very special cases, if a student does not register and remains absent continuously for 2-4 (two to four) semesters within her/his 12/14 semesters of 4/5 years' program, then s/he may apply for readmission as an irregular student. Her/his application will be considered only once provided that s/he has already completed 80% or more of the credits for which s/he was supposed to register and sit in the examination before the beginning of her/his break of study. The concerned discipline will analyze the application and send its well-judged recommendation to the Dean within the 1st month of the running semester. The Academic council, based on the recommendation of the discipline and the opinion of the Dean, may allow the applicant for admission as an irregular student. Such student has to complete the required credits within her/his remaining number of semesters.

In the certificate, grade sheet and transcript of all irregular students, the word "irregular" will be mentioned.

5.2 Second Major Degree

5.2.1 Total Credits: A student will be eligible for a second major degree if s/he completes an extra 28-36 credits requirement stipulated by the program offering discipline.

5.2.2 Total Semesters: A student must complete the credit-requirement of second major degree within her/his 8 (eight) regular and 4 (four) extra semesters.

5.2.3 Requirement of Second Major Degree: A student will not be given a second major degree if s/he fails to complete her/his regular major degree.

5.2.4 Registration Criteria: An offering discipline will decide on the number of seats for the second major, enrollment criteria, and get it approved from the Academic council. Students willing to get a second major have to apply to the offering discipline for enrollment, and the concerned discipline will enroll them as per the admission criteria.

5.2.5 Class routine: After enrollment, a regular student may start taking the second major courses starting from her/his 3rd semester. The class routine will be arranged to accommodate the student's need.

5.2.6 Certificate and Mark sheet: A Student completing the requirement will be given an additional standard certificate and mark sheet for her/his second major degree.

6. Examination System

A student will be evaluated continuously under the semester-course system. For theoretical classes, students have to be assessed by class participation, assignments, quizzes, term-test examinations, topic-based report writing/presentation, and semester-end final examination. For laboratory/sessional work, s/he will be assessed by observation at work, viva-voce during laboratory/sessional works, from her/his written reports and grades of examinations designed by the respective course teacher and the examination committee.

6.1 Distribution of Marks:

The marks of a given course will be as follows:

1.	Class Attendance	10%
2.	Class performance (Quizzes, MCQ, fill in the gap, report writing/ presentation / Assignments)	10%
3.	Term-Test Examinations	20%
4.	Final Examination (25% is the pass mark for the final examination)	60%

6.1.1 Class participation: The marks for class participation will be as follows:

Attendance (Percentage)	≥ 95	90	85	80	75	70	65	60	50
		–	– <	– <	–	–	–	–	–
		< 95	90	85	< 80	< 75	< 70	< 65	< 60
Marks	10	9	8	7	6	5	4	3	0

A student will not be allowed to appear the final examination of a course if her/his class attendance in that course is less than 50%.

6.1.2 Term-Test:

There should be at least two Term-Tests for every theory course. The course teacher may decide the marks distribution between term-tests. The answer script must be shown to the students as it is essential to their learning process.

6.1.3 Final Examination:

After the 16th week since the beginning of the semester, the final examination will be conducted as per the Semester Examination Ordinance.

(a)

(b)

(c) Duration of the Final Examination:

There will be a 3-hour final examination for every course of 3-4 (three-four) credits, and the courses less than 3 (three) credits will have a final examination for 2 (two) hours duration.

(d) Evaluation of answer scripts of final examination:

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%	C-	2.00
Less than 40%	F	0.00

The

Examinations for book-keeping and to take the approval of the Vice-Chancellor.

The system of answer script evaluation of the school has to be approved by the Academic Council.

7. Grading System

7.1 Letter Grade and Grade Point:

Letter Grade and corresponding Grade-Point for a course will be awarded from the roundup marks of individual courses as follows:

7.2 Calculation of Grades

7.2.1 GPA: Grade Point Average (GPA) is the weighted average of the grade points obtained in all the courses completed by a student in a semester.

7.2.2 CGPA: Cumulative Grade Point Average (CGPA) of major and second major degrees will be calculated separately by the weighted average of all courses of the previous semesters along with that of the current/present semester. For the calculation of the final CGPA of clearing graduates, if the third digit after the decimal point is nonzero then its previous, that is, the second digit will be incremented by one. A student, if applicable, will also receive a separate CGPA for her/his Second Major courses.

7.2.3 F Grades: A student will be given an “F” grade if s/he fails or remains absent in the final examination of a registered course. If a student obtains an “F” grade, her/his grade will not be counted for GPA and s/he will have to repeat the course. An “F” grade will be in her/his record, and s/he will not be eligible for distinction, award, and scholarship of the university.

7.2.4 Course Improvement: A student will be allowed only once to improve maximum of 2 (two) theory courses for which s/he has obtained a B- grade or less in the previous level by registering in the semesters of the immediate next level. Such course grade

school of disciplines may follow any one of the following answer script evaluation system.

- (1) **Single Examiner system, SES:** The students will have two answer scripts to answer a separate set of questions during the final examination. Two examiners will grade the two answer scripts separately, and their given marks will be added together (examinee wise) for determining the Final Mark.
- (2) **Double Examiner system, DES:** The students will have a single answer script to answer questions during the final examination. The answer scripts will be evaluated by two examiners separately. For determining the Final Mark: (1) If the difference of two marks of the examiners is less than 20%, then these two marks will be averaged, and (2) If the difference of two marks of the examiners is 20% or more, the corresponding/concerned answer scripts will be examined by a third examiner and then the closer (by smaller difference) otherwise higher two marks of the three examiners will be averaged. Furthermore, if the total marks of two examiners differ by 15% or more in the case of 50% or more answer scripts of a course, then the whole set of answer scripts will be examined by the third examiner.

The examination committee will propose the name for appointing the third examiner(s) (not any member of the examination committee) to the respective Dean. The Dean will authenticate/approve the name and send it to the Controller of

improvement opportunity shall be given only for 100- 300 level courses. If the course grade does not improve then the previous course grade will sustain in grade count. In the case of the course grade improvement, this will be cited/noted in the concerned transcripts beside the grade count as “Improvement.”

8. Distinction

8.1 Distinction:

Candidates for 4/5 years’ programs will be awarded the degree with Distinction if her/his overall CGPA is 3.75 or above. However, a candidate/student will not be considered for Distinction and any kind of Awards if s/he has any one of the following:

- (a) s/he is not a regular student,
- (b) s/he has semester drop or incomplete courses in any semester,
- (c) s/he has an “F” grade in any course,
- (d) s/he has upgraded her/his GPA through improvement,
- (e) s/he is addicted to drugs,
- (f) disciplinary action(s) is taken against her/him.

9. Certificate of Practical Skill

For extraordinary and remarkable contribution in establishing lab(s)/new lab set ups, instrument making, developing software/algorithm/apps/device/technology/technique, designing research tools, etc., student (involved) will be awarded a certificate of excellence in practical skill based on the decisions of the discipline by the respective Dean.

Examination Ordinance for Semester System for Bachelor Degree

(This ordinance will replace other ordinances/resolutions etc. on the issues described here; however, it will not affect ordinances/resolutions on issues not mentioned here.)

1. Examinations and Results

University authorities will administer and publish the results of Bachelor's degree examinations.

Every examination will be identified by University Semester Number (USN).

2. Final Examination Dates, Rosters, and Registrations

2.1 Data Base Update: At the beginning (within the first 4 weeks) of every semester, the office of the registrar will update the valid list of students who have paid the tuition and got admitted to that semester. They will make necessary corrections to the available list of the teachers. The office of the controller of examinations will update the information of courses offered from the curriculum/syllabus in that semester identified by the USN.

2.2 Examination dates: The period/schedule for the final examination will be fixed/determined by the Academic Council according to the Semester System Ordinance (2.1 and 2.2). The fixed examination period/schedule cannot be changed or shifted without the prior approval of the Academic Council. However, in very special cases, the Vice-Chancellor may make decisions on the examination dates, but such an action must be reported to the next meeting of the Academic Council.

2.3 Examination Rosters: The examination rosters and centers will be prepared and selected by the respective disciplines before 3 (three) weeks of the beginning of the semester examination. The Head of the Discipline will notify the examinees and send the exam routines to the other relevant heads of the disciplines and the Controller of the Examinations.

2.4 Course registration: A student will be allowed to register her/his courses during the first 4 (four) weeks of the semester either by using

the internet-based system or by completing the prescribed forms. A student may be allowed to register within the next 2 (two) weeks with a late registration fee. The controller of examinations will make sure the registering students have paid the tuition and the examination fees and send each discipline the detailed registration list along with students admit cards at least 1 (one) week before the start of the semester final examination. The controller of examinations will send an updated list in case of a student register late. In case a student withdraws any course (Semester System Ordinance 4.4) 2 (two) weeks before the examination starts, the controller of examinations will send an updated list to the concerned discipline immediately so that it can be used during the result processing.

3. Examination Committee

3.1 Formation:

A committee consisting of all the teachers headed by the Head of the discipline will propose examination committees for all existing semesters to the respective Dean within 4 (four) weeks of the semester start. It is not necessary to form separate committees for students having incomplete courses at a particular level; the committee of the nearest level of the same year will be responsible to process the result of the students. But, for the clearing graduates, 4th year 2nd semester (5th year 2nd semester for architecture) committee of immediate past will process the results of left out students of 4th year 2nd semester (5th year 2nd semester for architecture) while 4th year 2nd (5th year 2nd semester for architecture) semester is not running.

3.2 Members:

The examination committees for different semesters will be comprised of the following members:

Chairman: A teacher not below the rank of Professor of the discipline. In absence of Professor of the discipline, an Associate Professor/Head of the discipline. Head of the Discipline will be the Chairman of the terminal semesters.

Internal Members: 4 (four) teachers of the discipline.

External members: One teacher/expert (not below the rank of professor or equivalent) of the Major field from other university/organization and one teacher from each of the disciplines offering the general education courses.

The respective Deans will ratify the list of the examination committees and send to the registrar for approval from the Academic Council.

3.3 Responsibilities:

The Examination Committee will be responsible for the moderation of question papers. External members from the disciplines offering the general education courses will be especially responsible for the moderation of the respective courses and, if necessary, for typing and printing the corresponding question papers. The chairman, internal members, and the external member of the major field will be responsible for conducting the viva-voce examination where applicable.

The Chairman and the internal members of the examination committee will be responsible for the preparation of all question papers, coding and decoding answer scripts (if applicable), detailed results for every course, and the final tabulation.

3.4 Change of Committee Members:

If for some genuine reason either the chairman or a member of the examination committee is needed to be changed, then the committee consisting of all the teachers headed by the Head of the discipline will send the nomination/proposal/recommendation to the respective Dean. The Dean will authenticate/approve the change and send it to the Controller of Examinations for book-keeping and to take the approval of the Vice-Chancellor.

4. Pre-Examination Preparation

The discipline must formulate a uniform policy to ensure equal opportunities to all the existing faculties to maintain the propriety of the participatory examination system. The Head of the Discipline will give that policy to all the examination committees to follow.

4.1 Database Update: The head of the discipline will make sure about the correct status of students, i.e. s/he is in the proper session and semester to write the exam and will also update the database with the information provided by the examination committee.

4.2 The Chairman and the internal members of the examination committee will make the list for:

- Question setters, internal examiners (Course teacher when available) and external examiners (within or outside the university) for the theoretical courses.
- Examiners for the laboratory/sessional courses, seminars, field works, monographs, term papers, theses, projects etc.
- Tabulators and scrutinizers (where applicable) from among the committee members.

The examination committee will send the list to the respective Dean for appointing examiners, tabulators, and scrutinizers (where applicable) before 8 (eight) weeks of the beginning of the semester final examination. The Dean will endorse the said appointment and send the list to the Controller of Examinations. The Controller of Examinations will do the needful for taking administrative approval of the Vice-Chancellor. The Controller of Examinations will then send out the appointment letters to the examiners subject to the approval of the Vice-Chancellor.

4.3 The Chairman of the examination committee will receive all the manuscripts of question papers. If anyone of the manuscript is not received within the stipulated time, the committee will suggest an alternative question setter and send it to the Dean for the appointment. The Dean will ratify the said appointment and send it to the Controller of Examinations. The Controller of Examinations will take approval of the Vice-Chancellor. The Controller of Examinations will then send out the appointment letters to the examiners subject to the approval of the Vice-Chancellor.

4.4 After receiving all the manuscripts of question papers, the examination committee will moderate the questions and will be responsible for security, typing, printing, and photocopying of the question papers. If for unforeseeable reasons, the external member of the Examination Committee is unable to show up during the moderation of the question papers, then the examination committee may recommend a senior teacher of the relevant field outside the

discipline to be the external member, and the Controller of Examinations will get it approved by the Vice-Chancellor.

4.5 The Controller of Examinations will be responsible for printing and supplying blank (main and extra) answer scripts, mark-sheets, and other relevant forms to the concerned disciplines.

4.6 The Controller of Examinations will send out the required blank (main and extra) answer scripts, mark sheets, envelopes, blank forms, instruction sheets, etc. as per the requisition of the head of the discipline well before the examination starts.

5. Conducting Final Examination

Discipline will not be allowed to conduct the semester final examination without publishing the results of previous semesters.

5.1 Before the semester final examination, the head of the discipline will assign the duties to the chief invigilator and invigilators. The chief invigilator will collect the question papers from the respective chairman of the examination committee before the examination starts. He will be responsible to conduct the examination with the help of invigilators as per the university rule (155th AC). The conduct of examination involves: (a) the distribution of answer scripts and question papers, (b) collecting signatures of the students on the attendance sheet, (c) collecting the answer scripts after the examination, (d) sorting the answer scripts, (e) completing the course wise top-sheet, and (f) returning the packet of the answer scripts to the chairman (on the same day or within the next working day) of the examination committee.

5.2 As per semester ordinance, the school may follow any one of the following systems:

- Single Examiner System (SES): Students will be answering a separate set of questions in two separates A and B answer scripts.
- Double Examiner System (DES): Students will be answering all questions in one single answer script.

The invigilators, accordingly, will ready separate packets for the regular and drop students.

5.3 Upon receiving the answer script from the chief invigilator, the chairman of the examination committee will deliver

- the two packets of the answer scripts (A and B) to the respective examiners under the single examiner system, SES.
- the packet of single answer scripts to the internal examiner under the double examiner system, DES.

It should be done within the next 3 (three) days since the examination of the concerned course has taken place. The chairman will make sure every packet has (a) top-sheet, (b) question paper, (c) blank mark sheet, (d) special envelopes, and (e) detailed instructions on the grading procedure.

5.4 In case a packet of answer scripts needs to be sent to an examiner outside the university, the chairman will send it to the office of the Controller of Examinations for reaching it to the proper destination. The Controller of Examinations will then send the packet along with the (1) topsheet, (2) question paper, (3) blank mark sheet, (4) special envelopes, and (5) detailed instructions on the grading procedure to the external examiner within 3 (three) working days requesting the examiner to return the examined scripts within 15 days.

5.5 If any student is apprehended for unfair means during the examination, then (a) the chief invigilator in case of the Final Examination and (b) the course teacher for the term test/practical examination will take the necessary steps to inform the Controller of Examinations as per the examination rule (155th AC). A separate disciplinary committee set up only for examination related misconduct will make a quick decision and inform the student. The Examination disciplinary committee shall be constituted as stated below:

Vice Chancellor	Chairman
All Deans	Member
Director of Institute (offering undergraduate/graduate program)	Member
One member of the Syndicate nominated by the Vice Chancellor	Member

Director of students counselling and guidance (DSCG)	Member
Proctor	Member
Controller of Examinations	Member Secretary

The nominated member shall hold office for a term of two years. The committee will dispose of all the issues within the 15 (fifteen) working days after the last exam of that semester has taken place, and the decision(s) has/have to be reported to the Syndicate.

5.6 If a student comes down with a contagious disease during the Final Examination, then s/he may apply to the Controller of Examination through the Head of the discipline to write the examinations in sickbed/sickbay. The Controller of Examinations will arrange the Examination under the guidance of the physician of the medical center.

6. Processing of the Result

6.1 Theory Courses: (If school follow Single Examiner System, SES)

6.1.1 The processing of the result starts at the end of the classes when the course teacher makes 3 (three) copies of the mark-sheets showing (a) the total number of attendance of each student, (b) the marks from Term-test, and (c) the marks from continuous assessments (assignments, quiz, report writing, and presentation). S/he will display one copy on the noticeboard, send one sealed copy to the Controller of Examinations, and one copy to the Chairman of the Examination Committee responsible for processing the result of that course before the beginning of the semester examination. The course teacher shall enter the attendance, class performances, and total marks of continuous assessments using the software so approved for result processing.

6.1.2 Two examiners will examine scripts A and B separately, grade the answer scripts properly making legible marks on the answer scripts, and put on the Marks on the mark-sheet within 12 (twelve) working days after the examination of the specified course. S/he will enter all the Marks using the software, send the original mark-sheet in a sealed envelope, and the packet of answer scripts to the Chairman of

the Examination Committee and one copy of the same in a sealed envelope to the Controller of Examinations.

6.1.3 If an examiner is from outside the university, s/he will grade the answer scripts within 15 (fifteen) days of receipt of the packet. S/he will send one copy of the mark-sheet in a sealed envelope and the packet of answer scripts to the Controller of Examinations and one copy of the same in a sealed envelope to the chairman of the Examination Committee. Upon receipt of the packet of the answer scripts the controller of examinations will send the packet to the chairman of the examination committee for scrutiny. The chairman and the tabulators of the examination committee will enter the marks of the external examiners using the software for result processing.

6.1.4 Upon receipt of the answer scripts and mark-sheets from the two examiners, the Chairman of the examinations committee will distribute the two packets of answer scripts A and B to the two scrutinizers. The scrutinizers will go through the answer scripts carefully (to see whether each of the answers has properly graded or not) and put on the marks from the answer scripts on a blank mark-sheet and prepare a report whenever discrepancies are visible/or found. S/he will send one copy of the mark-sheet in a sealed envelope along with the report and the packet of the answer scripts to the Chairman of the Examination Committee and one copy of the detailed mark sheet in a sealed envelope to the Controller of Examinations. The committee will tally the mark-sheets received from the examiners, respective scrutinizers, and judge the report. The committee, if discrepancies are reported, will take necessary steps to resolve it. The Chairman and Tabulators will also carefully check the marks so entered by the examiners and duly process the result for publishing.

6.2 Theory Course: (if school follow the Double Examiner System, DES)

6.2.1 The process of attendance, class performance, and continuous assessment is similar to section 6.1.1; however, the process of grading answer scripts shall be done according as in the following.

6.2.2 The internal examiner will examine the scripts thoroughly without making any marks on the answer scripts and put on the Marks on the mark-sheet within 15 (fifteen) days after the examination of that specified course. Then, s/he will send the original detailed mark-sheet in a sealed envelope and the packet of

answer scripts to the Chairman of the Examination Committee and one copy of the original mark sheet in a sealed envelope to the Controller of Examinations. S/he will enter the marks using the software so approved for result processing.

6.2.3 In case an examiner is from an outside university, s/he will examine the scripts thoroughly as per the instruction without making any marks on the scripts, put on the Marks on the marksheet within 15 (fifteen) days after the receipt of the answer scripts of the specified course. Then s/he will send one copy of the mark-sheet in a sealed envelope and the packet of answer scripts to the Controller of Examinations and the original mark sheet in a sealed envelope to the chairman of the Examination Committee. Upon receipt of the packet of the answer script, the chairman of the Examination Committee will send only the Packet to the Controller of Examinations for evaluation by the (outside) second examiner. The Chairman and Tabulators will do enter the marks of the external examiners using the approved software for result processing.

6.2.4 Upon receipt of the answer scripts and the Marks from the internal examiner, the chairman of the examinations committee will send the packet of the answer scripts along with the (a) the top-sheet, (b) question paper, (c) a blank mark sheet, (d) special envelopes, and (e) the detailed instruction of the grading procedure to the second examiner within the next 3 (three) working days.

6.2.5 The second (internal) examiner will examine the scripts thoroughly without making any marks on the answer script and put on the Marks on the mark-sheet within 15 (fifteen) days after the examination of the specified course. Then, s/he will send the original detailed mark- sheet in a sealed envelope and the packet of answer scripts to the Chairman of the Examination Committee and one copy of the original detailed mark-sheet in a sealed envelope to the Controller of Examinations. S/he will have to enter the marks using the approved software for result processing.

6.2.6 As soon as the chairman of the examination committee receives the envelopes of the marksheets from the two examiners of a course, s/he will send those two detailed mark- sheets to two members (not tabulators) of the examination committee for checking the sum of each total marks. The concerned members will check/scrutinize the sum of each total mark of the examiners and return the checked mark-sheets to the chairman within a working day. Then, the chairman and

tabulators will tally the total marks of the examiners and the respective members to ensure the obtained marks have been correctly put on and do the needful for any discrepancies.

- (1) If the examination committee finds genuinely for any answer script the difference between the two marks of the two examiners is 20% or more, then the committee will propose the name of the third examiner for the concerned course to evaluate such answer script(s) to the Dean for the appointment. The Dean will ratify that appointment and send it to the Controller of Examinations for the approval of the Vice-Chancellor.

The committee will send the answer scripts singled out for third examinations along with the (a) top-sheet, (b) question paper, (c) blank mark-sheet, (d) special envelopes, and (e) detailed instruction of the grading procedure to the third examiner.

- (2) If marks of two examiners differ by 15% or more in case of 50% or more answer scripts of a course, then the committee will propose the name of the third examiner for the concerned course to evaluate all the answer scripts to the Dean for the appointment. The Dean will ratify that appointment and send it to the Controller of Examinations for the approval of the Vice-Chancellor.

The third examiner should not be a member of the examination committee. S/he (third examiner) will send the original detailed mark-sheet in a sealed envelope and the packet of answer scripts to the chairman of the examination committee and one copy of the original detailed mark-sheet in a sealed envelope to the Controller of Examinations. S/he will have to enter the marks using the approved software for result processing.

6.2.7 Result processing of the theory courses shall be accomplished as in the following:

- the total marks of the two examiners in which the difference is less than 20% will be averaged.
- In the case of the third examination closer (by smaller difference) two marks, otherwise the higher (for equal differences) two marks of the examiners will be averaged.

- The final letter grades and grade points for the examinees of the specified course will be determined by taking the sum of (a) the marks from class attendance, (b) the marks from class performance and continuous assessment, and (c) average marks.

6.2.8 For every course, the committee (excluding members from the disciplines offering the general education courses) will make at least 3 (three) copies of the final grade points along with marks from the attendance, class performance, continuous assessments, and final examination. The committee has to authenticate them by their signatures, save one copy for the record, send a second copy to the Controller of Examinations, and the other copies to the concerned disciplines for which the course has been offered. The result must be signed by all the members for publishing. Any changes in the list of members of the examination committee must be stated in the resolution of the committee. The committee will announce only the grade points and letter grades of the students for all the courses on the department notice board.

6.3 Other Courses

6.3.1 For Lab/Sessional courses: (a) In the disciplines for which the evaluation of the lab/sessional examination is a continuous process, the designated teachers will determine the grades of the students for the lab/sessional course through a series of quizzes, assignments, viva, reports, etc. At the end of the semester, one of the assigned the lab/sessional teachers will display one copy of the result on the notice board and send one copy to the Chairman of the Examination Committee and the Controller of Examinations. S/he will also enter the marks using the result processing software.

(b) In the disciplines which conduct the final lab examination, the designated course teacher will be the chief invigilator and as per rule of the examination, invigilators will be assigned to conduct the lab/sessional examination. Invigilators will help the chief invigilator to determine the grades of the examinees. After the end of the lab examination, the lab teachers will display one copy of the result on the notice board and send one copy to the Chairman of the Examination

Committee and the Controller of Examinations. S/he will also enter the marks using the result processing software.

The examination committee will authenticate the result with their signatures, convert into the letter and numeric grades if necessary, and make at least three copies. The committee will save one copy for the record, send one copy to the Controller of Examinations and other copies to the discipline for which the course has been offered.

6.3.2 For Theses/Project reports/assignment (Industrial) reports/monographs, the supervisor will give an overall assessment for the student and on her/his thesis/project, which will count 30% of the total marks. Evaluation of the thesis/project/reports/monographs by the 2 (two) external examiners who are not involved in supervision/co-supervision will count 40% of the total marks, and from the final presentation in the presence of the examination committee, 30% of marks will be counted. The examination committee will enter the aggregated Marks of the examinees using the software and process the result.

6.3.3 The viva-voce examination will be conducted by the Examination Committee (excluding the members of the disciplines offering the general education courses). During the viva-voce, all the members have to be present (full time) and will grade separately/individually. The average of the marks of the members participating will be considered as the final mark for determining the grade. The chairman of the examination committee will enter the mark using the software for result processing.

6.3.4 For BNCC, examination will be administered by the ordinance approved in 99th Academic Council.

6.4 Preparation of final grade

For every course, the examination committee will calculate the Grade Point and corresponding Letter Grade as per the Semester System Ordinance (7.1) using the result processing Software, which will be published through the tabulation sheet.

6.5 Withholding of Results

In some special cases, results of the examinees could be withheld: (a) If the examinee has unpaid dues, (b) an objection from the residential halls; proctor office, (c) other obligations to the university, (d) If the

university has taken some form of disciplinary action against the examinee, and (e) If the syndicate decides to withhold the result for some specific reasons.

7. Preparation of Tabulation Sheet and Publication of Result

7.1 Four original tabulation sheets will be prepared by the tabulators and checked by the members. Finally, tabulation sheets have to be signed by the chairman, tabulators, and members of the examination committee. The tabulation sheets will contain the Grade Points of every course and the weighted average of the Grade Points (GPA) for every student at that level. For each of the examinees, CGPA will be calculated according to the process mentioned in the Semester System Ordinance (7.2.2) from the second semester onwards. The examination committee will send the tabulation sheets to the Controller of Examinations for her/his signature, and then for the approval of the Vice- Chancellor.

7.2 For the use and preservation of these four duly signed tabulation sheets: (a) one copy will be kept in the office of the Controller of examinations, (b) one copy will be kept in the Department, (c) one copy will be kept in the office of the respective Dean, and (d) one copy will be kept in the store of the Controller's Office.

7.3 The Controller of Examinations will publish the results taking permission of the Vice- Chancellor, subject to post-facto approval of the syndicate.

7.4 For the final semester, the Examination Committee will send a list of students graduating in that particular semester showing the total credits, CGPA, and state if any student is awarded Distinction. Also, the committee will declare in writing that they have thoroughly checked, scrutinized and correctly prepared the tabulation sheets as per rules. This list will be used as the result notification. Finally, the Controller of Examinations will take the approval for publishing the result.

7.5 The Controller of Examinations will issue the grade sheets and provisional certificates after 7 (seven) days of publication of the result. A student may collect the Provisional Certificate subject to the No Objection Certificate from the Librarian, Proctor, Student's Advisor, Treasurer (student's union), University Medical Officer, Provost, and head of the Discipline.

7.6 The original certificates will be signed by the Vice-Chancellor, Controller of Examinations, and will be issued to the graduates after the convocation. The graduate has to return her/his provisional certificate to collect the original one. If the convocation is not held on time then the Controller of Examinations may issue a student his original certificate in very special cases, subject to the permission of the Vice-Chancellor.

7.7 If a certificate or grade-sheet is lost or destroyed, a student may apply for a duplicate. However, s/he has to file a General Diary in the police station, publish in the newspaper about the loss, and attach a copy of the two documents along with the application to the Controller of examinations. If the certificate or grade-sheet is partly damaged, then the concerned student may have a duplicate by paying the required fee and returning the damaged certificate/grade-sheet to the office of the Controller of Examinations. Every duplicate certificate/mark-sheet has to be signed by the Controller of Examinations.

7.8 If a student has to correct the spelling of her/his own or her/his parent's name consistent with the SSC certificate he has to affidavit through Judicial Magistrate, publish the matter in a newspaper, and apply to Registrar through the Head of the discipline. Registrar will inform the Controller of Examinations after taking permission from the Vice-Chancellor. The Controller of Examinations will exchange his old certificate or mark-sheets with the corrected copies. The documents with affidavit will be signed and dispensed by the Controller.

7.9 The controller of Examinations will preserve the used answer scripts for 1 (one) year after an examination has taken place. The office may dispose of these answer scripts through an auction at the end of this period.

8. Payment of Bills

8.1 The syndicate, according to the recommendation of the Academic Council, will decide all the remunerations related to the examination process.

8.2 The Controller of Examinations will process the bills as per the work-schedule submitted by the chairman of the examination committee, check the authenticity, and submit to the office of the

Director of Accounts, which will take the necessary action for payment of the bills.

9. Examination Ethics

9.1 Everyone involved in the process of the examination shall guard the confidentiality of the question papers, examination grades, and results. The examinee, under any circumstance, cannot try to tamper with the examiners. Such attempts of the examinees shall be brought to the attention of the Controller of Examinations.

9.2 A student may never be asked any question that may hurt her/his religious or ethnic background/identity.

9.3 If someone involved in offering a course or in the examination process having the following relatives as examinees, s/he shall inform the head of the discipline and the Controller of Examinations or the controlling authority immediately.

(a) Husband/Wife (b) Son/Daughter (c) Brother in law/Sister in law (d) Son in law/Daughter in law (e) Nephew/Niece (f) Uncle/Aunt (g) First cousins (h) brother/sister.

10. Question Structure

Each discipline must follow one unique question structure for final examinations. For 3.00 (three) or 4.00 (four) credits theory courses: (a) the written (final) examinations will be conducted for 60 marks, (b) there will be six questions for Double Examiner System (three questions in each part (Part A and Part B) of the question paper for Single Examiner System), and the examinees will be asked to answer all of them, and (c) the examination time/duration will be 3 (three) hours. For 2.00 (two) credits theory courses: (a) the written (final) examinations will be conducted for 60 marks, (b) there will be four questions for Double Examiner System (two questions in each part of the question paper for Single Examiner System), and the examinees will be asked to answer all of them, and (c) the examination time/duration will be 2 (two) hours. However, in the case of a Double Examiner System, two questions with alternative questions will be given. In the case of a Single Examiner System, only one question with an alternative question will be provided in each part (Part A and Part B) of the question paper. The serial number, question number, assigned marks, related course learning outcome (CO), and Bloom's

level of the questions must match in both the main question and the corresponding alternative question (in cases where a question consists of multiple sub-questions). For instance:

Question Number	Question(s)	Consider these arbitrary		
		Assigned Marks	Related CO	Bloom's (BL) Level
X(a)	n1	CO m1	BL x1
X(b)	n2	CO m1	BL x2
X(c)	n3	CO m3	BL x5
–				
–				
OR				
X(a)	n1	CO m1	BL x1
X(b)	n2	CO m1	BL x2
X(c)	n3	CO m3	BL x5
–				
–				

OR

Question Number	Question(s)	Consider these arbitrary		
		Assigned Marks	Related CO	Bloom's (BL) Level
X(a)	n1	CO m1	BL x1
OR				
	n1	CO m1	BL x1
X(b)	n2	CO m1	BL x2
OR				
X(b)	n2	CO m1	BL x2
X(c)	n3	CO m3	BL x5

OR				
X(c)	n3	CO m3	BL x5
–				
–				

11. Compliance

A student (clearing graduate) may appeal to the Controller of Examinations for the reexamine of his/her answer scripts for a maximum of 2 (two) theory courses within 2 (two) weeks after publishing the result. In this case s/he must pay a fee determined by the AC filling the prescribed form supplied by the office of the Controller of Examinations. Then, based on the appeal, two examiners (except the previous examiners) will be appointed soon by the Grievance Cell, and the Controller of Examinations will take the approval from the Vice- Chancellor. In the case of the single examiner system (SES), two examiners will evaluate two answer scripts A and B (of the appealed course) separately, and their given Marks will be added together for obtaining the total mark. Whereas for the double examiner system (DES), two examiners will evaluate the single answer script (of the appealed course) separately, and then the two Marks will be averaged. If the present total/average mark is at least 10% less or higher than the previous total/average mark, only then, the Grievance Cell will ask the concerned Examination Committee and the Controller of Examinations to revise the grade of the applicant. Otherwise, her/his previous grade shall stand.

11.1. Grievance cell

In each discipline for exam-oriented compliance, a four/five members' committee as in the following will be formed:

Dean of the school

: Convener

Head of the discipline (if not examiner)

: Member

Two senior faculties (not examiners) nominated by the discipline :
Member

The Controller of Examinations
: Member secretary

12. General Instruction

- Disable (only handicapped) and slow learning students will be allowed 5 (five) minutes extra per hour during the examination.
- Disable (blind/without hand only) students will be allowed to take support in writing during the examination. But the writer should be junior and unfamiliar with the course for which the examinee is hiring her/him.
- Application for result correction may be accepted if it is submitted/lodged within the next 3 (three) months since the publication of the result. Chairman of the concerned examination committee/ Head of the discipline and the Controller of Examinations will do the corrections as per rules.
- The result/ tabulation sheet for course improvement will be signed by the examination committee of the present semester of the examinee.

13. Exam Hall structure:

For final examination of theory courses the number of invigilators will be as in the following.

For each exam hall:

- For 1 – 25 examinees, 2 (two) invigilators will be assigned.
- For 26 – 40 examinees, 3 (three) invigilators will be assigned.
- After 40 examinees, 1 (one) invigilator will be increased for each 20 examinees.
- For each course, one chief invigilator will be assigned to conduct the examination.

- (b) For Term Test of theory courses, the number of invigilators will be as in the following.

For each exam hall:

- For 1 – 25 examinees, 2 (two) invigilators will be assigned.
 - For 26 – 40 examinees, 3 (three) invigilators will be assigned.
 - After 40 examinees, 1 (one) invigilator will be increased for each 20 examinees.
 - For each course, one chief invigilator will be assigned to conduct the examination.
- (c) For continuous assessment, course teacher will do the needful and no other invigilators are required.

Session: 2023-2024

**OBE Curriculum of
Department of Architecture
Shahjalal University of Science and Technology, Sylhet, Bangladesh**

**OBE Curriculum of
Department of Architecture
Shahjalal University of Science and Technology, Sylhet, Bangladesh**

1. Title of the Academic Program

Bachelor of Architecture

2. Name of the University

Shahjalal University of Science and Technology, Sylhet

3. Vision of the University

To emerge as an institute of eminence in the fields of engineering, technology business and management in serving the industry and the nation by empowering students with a high degree of technical, managerial and practical competence.

4. Mission of the University

M1. To strengthen the theoretical, practical and ethical dimensions of the learning process by fostering a culture of research and innovation among faculty members and students.

M2. To encourage long-term interaction between the academia and industry through the involvement of the industry in the design of the curriculum and its hands-on implementation

M3. To strengthen and mould students in professional, ethical, social and environmental dimensions by encouraging participation in co-curricular and extracurricular activities.

5. Name of the Faculty offering the program

School of Applied Sciences and Technology

6. Name of the Department offering the program

Department of Architecture

7. Vision of the Department:

This program will strive to play an essential and innovative role in enhancing the living environment condition by promoting architecture education through professionals.

8. Mission of the Department:

The Bachelor of Architecture program offers students professional degree to practice architecture. Mission of this program is:

M1. To produce skilled professionals with cultural consciousness and artistic intellect, committed to society and culture.

PART A

**OBE Curriculum of
Department of Architecture
Shahjalal University of Science and Technology, Sylhet, Bangladesh**

M2. To empower the students to critically engage the complexities of society and the natural environment by inspiring the fundamental principles of design.

M3. To make the students proficient with the latest communication, representation and technical knowledge in professional practice and instill professional and ethical responsibility.

9. Name of the Degree / Program

Bachelor of Architecture (B. Arch)

10. Description of the Program

The Department of Architecture offers one distinct undergraduate degree, which is the five-year Bachelor of Architecture (B.Arch.). Curriculum centers on the design studio and culminates in a year-long research and design project. Computing, theoretical, technological, and historical issues are progressively integrated into the design projects beginning in the first year. Projects range in scale and form, but relate to issues in contemporary culture with a focus on globalization and urban contexts. The curriculum of the Department of architecture is based on the general requirements of higher education scientific faculties and, at the same time, draws from the particular social needs. The curriculum also focuses on design application and production as they evolve both in the immediate milieu of professional architectural practice in Bangladesh and abroad, under the influence of political, social, financial and cultural transformations.

11. Program Accreditation

Department of architecture, SUST is accredited by the Institute of Architects Bangladesh (IAB).

12. Graduate Attributes and knowledge area:

The Program provides students with training in architectural design and related technical and academic knowledge. Students are provided with knowledge from multiple disciplines related with Program Objectives and Intended Learning Outcomes. All the courses are designed to cover nine thematic areas including both lectures and practical sessions. The following areas are:

1. Design and planning
2. Presentation and communication
3. History, heritage and theory
4. Building technology
5. Environmental design
6. Urban design
7. Project management
8. Sustainable design
9. Professional ethics

13. Area of professional contribution

Major objective of the program is to train professional architects. Besides that, graduates can contribute in various field considering their own interest. Students graduating from program can contribute in different professional fields related to build environment. This program can also give students to develop skill in other creative sectors. After finishing this program graduates can achieve professional competence to work as (though not limited to):

1. Architect
2. Interior architect
3. Planner
4. Architectural conservator
5. Researcher
6. Community architect
7. Architecture education
8. Architectural critic
9. Environmental professional
10. Art and graphics designer
11. Construction/Project manager
12. Facility planner
13. Landscape designer
14. Visualization artist and photographer

14. Program Educational Objectives (PEO)

The Bachelor of Architecture program aims:

PEO 1: To equip students with necessary skills to practice context-based architecture with an emphasis on methodological design process, with deeper understanding on local environment, climate, society and economy.

PEO 2: To acknowledge architecture as a part of cultural study by growing intellectual awareness towards world history and civilization, allow students to recognize both tangible and intangible forces behind shaping architecture.

PEO 3: To make the students competent to apply state of the art computer technologies and tools in architectural design process and communication. Students will be trained with adequate fundamental knowledge in structural analysis and construction methods required for architectural design.

PEO 4: To aware the students of legislative issues of architectural design such as building laws, accreditation code and introduce ethical perspective of professional practice and train to be a responsible social being.

PEO 5: To promote students with creative skills and aesthetic perception towards various medium of arts related to build environment.

PEO 6: To develop leadership skill among students to work in a multidisciplinary scenario, prove as an effective team person with communication and presentation ability.

15. Program Learning Outcomes (PO)

The department have identified following Intended Program Learning Outcomes (PO) of graduated students. After successful completion of degree, students will be able:

Key Area		A. Fundamental Skills
PO 1	Theory	To possess sufficient fundamental skills to begin professional careers in architectural practice and related fields.
PO 2	Design Method	To understand diversity of needs, values, behavioral norms, economy, in process of architectural design.
PO 3	Research	To apply architectural research methods in design process and conduct research works by using qualitative and quantities analytical approach.
B. Social Skills		
PO 4	Ethics	To recognize and perform social and ethical responsibility through practice of creation and professional commitment.
PO 5	Leadership	To shows leadership skill to work in multidisciplinary environment and as an effective team member with various professionals.
C. Thinking Skills		
PO 6	Problem Solving	To achieve problem solving skills though design addressing social, cultural, environmental, technological diversity with relation to built environment.
PO 7	Critical Thinking	To demonstrate critical thinking in process of art and architectural design with references to other mediums or art.
D. Personal Skills		
PO 8	Technology	To comprehend Building Technology, including the technical aspects of design, computation application, systems and materials.
PO 9	Communication	To demonstrate competency in architectural representation from a selection of drawings, physical and digital models, written statements and verbal presentations.

16. Mapping of University's Mission with PEO

MISSION STATEMENTS	PEO1	PEO2	PEO3	PEO4	PEO5	PEO6
M1	3	1	3	3	2	1
M2	3	1	3	3	2	2
M3	1	1	1	3	3	3

17. Mapping of PEO with PO

No	Program Educational Objectives	PEO 1	PEO 2	PEO 3	PEO 4	PEO 5	PEO 6
PO 1	To possess sufficient fundamental skills to begin professional careers in architectural practice and related fields.	3	2	3	3	3	1
PO 2	To understand diversity of needs, values, behavioral norms, economy, in process of architectural design.	3	3	1	1	3	2
PO 3	To apply architectural research methods in design process and conduct research works by using qualitative and quantities analytical approach.	2	2	2	2	3	1
PO 4	To recognize and perform social and ethical responsibility through practice of creation and professional commitment.	3	1	1	3	3	3
PO 5	To shows leadership skill to work in multidisciplinary environment and as an effective team member with various professionals.	3	1	1	1	2	3
PO 6	To achieve problem solving skills though design addressing social, cultural, environmental, technological diversity with relation to build environment.	3	3	2	1	2	1
PO 7	To demonstrate critical thinking in process of art and architectural design with references to other mediums or art.	3	3	1	3	3	2
PO 8	To comprehend Building Technology, including the technical aspects of design,	2	1	3	1	1	1

	computation application, systems and materials.						
PO 9	To demonstrate competency in architectural representation from a selection of drawings, physical and digital models, written statements and verbal presentations.	3	2	3	2	1	1

PART B

OBE Curriculum of
Department of Architecture
Shahjalal University of Science and Technology, Sylhet, Bangladesh
Department of Architecture
 Undergraduate Program
Session 2023-2024

Structure of the B.Arch curriculum

Years Required for B Arch Degree	5	years
Total Semesters	10	semesters
No. of Course Streams	9	
Total Credits Required for B Arch Degree	180	credits
Core Courses Required	158	credits
Elective Courses Required	22	credits
General Education Courses Offered	52	credits
Total Credits Offered	236	credits
Total No. of Course	80	
Credits for B. Arch Thesis	14	credits
Total class weeks in a semester	14	weeks
Minimum CGPA requirements for graduation	2.00/4.00	
Maximum academic years for completion	5+2	years
Years Required for B Arch Degree	5	years
Total Semesters	10	semesters
No. of Course Streams	9	

B.Arch Program Course Streams

No	Area of Study	Offered in
Stream 1	General Education	44 credits
ENG 0231 1111A	English Language	1-1
ENG 0231 1112A	English Language (Lab)	1-1
MAT 0541 1113A	Mathematics	1-1
ART 0213 1115A	DT I: Aesthetics and Art Appreciation	1-1

PHY0533 1211A	Physics for Architects	1-2
SSS 0222 1213A	History of the Emergence of Independent Bangladesh	1-2
CEE 0732 2111A	Structure I - Basic Mechanics	2-1
ENV 0521 2115A	Ecology and Environment	2-1
ART 0211 2112A	Photography and Media studies	2-1
CEE 0732 2211A	Structure II - Mechanics of Solids	2-2
SOC 0314 2213A	Principles of Sociology	2-2
ECO 0311 2215A	Principles of Economics	2-2
ART 0211 2212A	Graphic Art and Design	2-2
CSE 0613 2214A	Introduction to Programming With Python	2-2
PHI 0223 2217A	Philosophy	2-2
CEE 0732 3111A	Structure III – Building Structures	3-1
MEE 0715 3113A	Building Services I- Mechanical	3-1
ANP 0314 3115A	Culture, Space and Place	3-1
STA 0542 3117A	Statistics for Architects	3-1
EEE 0713 3213A	Building Services II - Electrical	3-2
CEE 0732 4211A	Construction Management	4-2

Stream 2	History & Theory of Architecture	20 credits
ARC 0731 1121	Art and Architecture I: Ancient civilizations	1-1
ARC 0731 1221	Art and Architecture II: Medieval Europe and Renaissance	1-2
ARC 0731 1223	DT II: Theories and Methods in Architectural Design	1-2
ARC 0731 2121	Art and Architecture III: Modern and Contemporary Architecture	2-1
ARC 0731 2221	Art and Architecture IV: South Asian Architecture	2-2
ARC 0731 2222	Field Work I: Contemporary Architecture	2-2
ARC 07314121	Art and Architecture V: Society and Architecture of Bengal	4-1
ARC 0222 4122	Field Work II: Architecture of Bengal	4-1
ARC 0222 4123	Heritage Studies and Conservation	4-1
ARC 0222 5122	Documentation of Built Heritage	5-1

Stream 3	Design Studio	64 credits
ARC 0731 1132	Design Studio I	1-1
ARC 0731 1232	Design Studio II	1-2
ARC 0731 2132	Design Studio III	2-1
ARC 0731 2232	Design Studio IV	2-2
ARC 0731 3132	Design Studio V	3-1
ARC 0731 3232	Design Studio VI	3-2
ARC 0731 4132	Design Studio VII	4-1
ARC 0731 4232	Design Studio VIII	4-2
ARC 0731 5132	Design Studio IX	5-1
ARC 0731 5232	Thesis II: Design Studio X	5-2

Stream 4	Environmental Design	8 credits
ARC 0712 1241	ED I: Climate and Design	1-2
ARC 0712 2141	ED II: Design in the Tropics	2-1
ARC 0712 2241	ED III: Visual and Sonic Environment	2-2
ARC 0712 5142	Environmental Simulation Lab	5-1

Stream 5	Architectural Representation	13 credits
ARC 0732 1152	Architectural Graphics I: Basic Drawing	1-1
ARC 0732 1252	Architectural Graphics II: Advanced drawing	1-2
ARC 0211 2152	Computer Aided Design	2-1
ARC 0213 2154	Architectural Sketching and Modelling	2-1
ARC 0732 3152	Working drawing	3-1

Stream 6	Architectural Technology	11 credits
ARC 0732 2261	Construction Materials and Methods	2-2
ARC 0732 3263	Building Services III- Plumbing	3-2
ARC 0732 3262	Field Work III: Building Construction	3-2
ARC 0732 3264	Building Information Modelling	3-2
ARC 0532 4162	Computer Aided Spatial Analysis	4-1
ARC 0732 4261	Building Maintenance and Retrofitting	4-2
ARC 0732 5162	Cost Estimation and Specification	5-1

Stream 7	Design for the Built Environment	16 credits
ARC 0731 3171	Facilities Planning and Design	3-1
ARC 0212 3271	Interior Design	3-2
ARC 0313 3273	Behavior Studies in Architecture	3-2

ARC 0731 4171	Landscape Design	4-1
ARC 0212 4172	Interior Design Studio	4-1
ARC 0712 4173	Architecture for Sustainability	4-1
ARC 0731 4271	Vernacular Architecture and Settlements	4-2
ARC 0731 4272	Landscape Design Studio	4-2
ARC 0731 4274	Collaborative Design Studio	4-2

Stream 8	Planning and Management for the Built Environment	12 credits
ARC 0731 3181	Introduction to Spatial Planning	3-1
ARC 0731 3281	Urban Design	3-2
ARC 0731 4181	Housing	4-1
ARC 0731 4183	Rural Studies of Bangladesh	4-1
ARC 0731 4281	Community Architecture and Planning	4-2
ARC 0731 4283	Planning and Management for Disaster Resilience	4-2

Stream 9	Architectural Research and Practice	16 credits
ARC 0731 4291	Architectural Research Methodology	4-2
ARC 0731 5192	Thesis I: Research Development	5-1
ARC 0731 5194	Professional Practice I: Internship	5-1
ARC 0731 5196	Architecture in Dialogue: Seminar	5-1
ARC 0731 5291	Professional Practice II: Codes and Ethics	5-2
ARC 0731 5292	Thesis III: Dissertation	5-2

Category of Courses

Course Category	Code	Title	Type	Credit
GED	ENG 0231 1111A	English Language	Theory	2
GED	ART 0213 1115A	DT I: Aesthetics and Art Appreciation	Theory	2
GED	ENG 0231 1112A	English Language (Lab)	Sessional	1
GED	MAT 0541 1113A	Mathematics	Theory	2
GED	PHY 0533 1211A	Physics for Architects	Theory	2
GED	SSS 0222 1213A	History of the Emergence of Independent Bangladesh	Theory	3
GED	ENV 0521 2115A	Ecology and Environment	Theory	2
GED	ECO 0311 2215A	Principles of Economics	Theory	2

GED	CSE 0613 2214A	Introduction to Programming With Python	Sessional	3
GED	SOC 0314 2213A	Principles of Sociology	Theory	2
GED	ANP 0314 3115A	Culture, Space and Place	Theory	3
GED	STA 0542 3117A	Statistics for Architects	Theory	2
GED	CEE 0732 2111A	Structure I - Basic Mechanics	Theory	2
GED	CEE 0732 2211A	Structure II - Mechanics of Solids	Theory	2
GED	CEE 0732 3111A	Structure III – Building Structures I	Theory	2
GED	ARC 0732 3262	Field Work III: Building Construction	Field work	2
GED	CEE0732 4211A	Construction Management	Theory	2
GED	MEE 0715 3113A	Building Services I- Mechanical	Theory	2
GED	EEE 0713 3213A	Building Services II - Electrical	Theory	2
GED	ART 0211 2112A	Photography and Media Studies	Sessional	2
GED	ART 0211 2212A	Graphic Art and Design	Sessional	2
GED	PHI 0223 2217A	Philosophy	Theory	2

Core	ARC 0731 1121	Art and Architecture I: Ancient civilizations	Theory	2
Core	ARC 0731 1132	Design Studio I	Sessional	6
Core	ARC 0732 1152	Architectural Graphics I: Basic Drawing	Sessional	3
Core	ARC 0731 1221	Art and Architecture II: Medieval Europe and Renaissance	Theory	2
Core	ARC 0731 1223	DT II: Theories and Methods in Architectural Design	Theory	2
Core	ARC 0731 1232	Design Studio II	Sessional	6
Core	ARC 0712 1241	ED I: Climate and Design	Theory	2
Core	ARC 0732 1252	Architectural Graphics II: Advanced drawing	Sessional	3
Core	ARC 0731 2121	Art and Architecture III: Modern and Contemporary Architecture	Theory	2
Core	ARC 0731 2132	Design Studio III	Sessional	6
Core	ARC 0712 2141	ED II: Design in the Tropics	Theory	2

Core	ARC 0211 2152	Computer-Aided Design	Sessional	2
Core	ARC 0731 2221	Art and Architecture IV: South Asian Architecture	Theory	2
Core	ARC 0731 2222	Field Work I: Contemporary Architecture	Field work	2
Core	ARC 0731 2233	Design Studio IV	Sessional	6
Core	ARC 0712 2241	ED III: Visual and Sonic Environment	Theory	2
Core	ARC 0732 2261	Construction Materials and Methods	Theory	2
Core	ARC 0731 3181	Introduction to Spatial Planning	Theory	2
Core	ARC 0731 4121	Art and Architecture V: Society and Architecture of Bengal	Theory	2
Core	ARC 0731 3132	Design Studio V	Sessional	6
Core	ARC 0732 3152	Working drawing	Sessional	2
Core	ARC 0222 4122	Field Work II: Architecture of Bengal	Field work	2
Core	ARC 0731 3232	Design Studio VI	Sessional	6
Core	ARC 0731 4271	Vernacular Architecture and Settlements	Theory	2
Core	ARC 0731 3281	Urban Design	Theory	2
Core	ARC 0212 3271	Interior Design	Theory	2
Core	ARC 0731 4132	Design Studio VII	Sessional	6
Core	ARC 0212 4172	Interior Design Studio	Sessional	2
Core	ARC 0731 4181	Housing	Theory	2
Core	ARC 0731 4171	Landscape Design	Theory	2
Core	ARC 0731 4232	Design Studio VIII	Sessional	6
Core	ARC 0731 4272	Landscape Design Studio	Sessional	2
Core	ARC 0731 4291	Architectural Research Methodology	Theory	2
Core	ARC 0731 5132	Design Studio IX	Sessional	6
Core	ARC 0731 5192	Thesis I: Research Development	Sessional	2
Core	ARC 0731 5291	Professional Practice II: Codes and Ethics	Theory	2

Capstone	ARC 0731 5232	Thesis II: Design Studio X	Sessional	12
Capstone	ARC 0731 5292	Thesis III-Dissertation	Sessional	4
Internship	ARC 0731 5194	Professional Practice I: Internship	Internship	4

Elective	ARC 0213 2154	Architectural Sketching and Modelling	Sessional	2
Elective	ART 0211 2112A	Photography and Media Studies	Sessional	2
Elective	ART 0211 2212A	Graphic Art and Design	Sessional	2
Elective	PHI 0223 2217A	Philosophy	Theory	2
Elective	ARC 0731 3171	Facilities Planning and Design	Theory	2
Elective	ARC 0732 3263	Building Services III- Plumbing	Theory	2
Elective	ARC 0732 3264	Building Information Modelling	Sessional	2
Elective	ARC 0313 3273	Behavior Studies in Architecture	Theory	2
Elective	ARC 0532 4162	Computer-Aided Spatial Analysis	Sessional	2
Elective	ARC 0712 4173	Architecture for Sustainability	Theory	2
Elective	ARC 0731 4183	Rural Studies of Bangladesh	Theory	2
Elective	ARC 0731 4274	Collaborative Design Studio	Sessional	2
Elective	ARC 0222 4123	Heritage Studies and Conservation	Theory	2
Elective	ARC 0732 4261	Building Maintenance and Retrofitting	Theory	2
Elective	ARC 0731 4281	Community Architecture and Planning	Theory	2
Elective	ARC 0731 4283	Planning and Management for Disaster Resilience	Theory	2
Elective	ARC 0731 5196	Architecture in Dialogue: Seminar	Sessional	2
Elective	ARC 0732 5162	Cost Estimation and Specification	Sessional	2
Elective	ARC 0712 5142	Environmental Simulation Lab	Sessional	2
Elective	ARC 0222 5122	Documentation of Built Heritage	Sessional	2

Semester wise distribution of Courses

First Year: 1st Semester

Course No.	Course Title	Course Category	Hours/Week		Credits	Pre-req.
			Theory	Lab		
Compulsory course						
ARC 0731 1121	Art and Architecture I: Ancient civilizations	Core	2	0	2	-
ART 0213 1115A	DT I: Aesthetics and Art Appreciation	General Education	2	0	2	-
ARC 0731 1132	Design Studio I	Core	0	12	6	-
ARC 0732 1152	Architectural Graphics I: Basic Drawing	Core	0	6	3	-
ENG 0231 1111A	English Language	General Education	2	0	2	-
ENG 0231 1112A	English Language (Lab)	General Education	0	2	1	-
MAT 0541 1113A	Mathematics	General Education	2	0	2	-
Total Credits			8	20	18	

First Year: 2nd Semester

Course No.	Course Title	Course Category	Hours/Week		Credits	Pre-req
			Theory	Lab		
Compulsory course						
ARC 0731 1221	Art and Architecture II: Medieval Europe and Renaissance	Core	2	0	2	-
ARC 0731 1223	DT II: Theories and Methods in Architectural Design	Core	2	0	2	-
ARC 0731 1232	Design Studio II	Core	0	12	6	ARC 0731 1132 ARC 0732 1152
ARC 0712 1241	ED I: Climate and Design	Core	2	0	2	-

ARC 0732 1252	Architectural Graphics II: Advanced drawing	Core	0	6	3	ARC 0731 1132 ARC 0732 1152
PHY 0533 1211A	Physics for Architects	General Education	2	0	2	-
SSS 0222 1213A	History of the Emergence of Independent Bangladesh	General Education	3	0	3	-
Total Credits			11	18	20	

Second Year: 1st Semester

Course No.	Course Title	Course Category	Hours/Week		Credits	Pre-req
			Theory	La b		
Compulsory course						
ARC 0731 2121	Art and Architecture III: Modern and Contemporary Architecture	Core	2	0	2	-
ARC 0712 2141	ED II: Design in the Tropics	Core	2	0	2	-
ENV 0521 2115A	Ecology and Environment	General Education	2	0	2	-
ARC 0731 2132	Design Studio III	Core	0	12	6	ARC 0731 1232 ARC 0732 1252
ARC 0211 2152	Computer Aided Design	Core	0	4	2	-
CEE 0732 2111A	Structure I - Basic Mechanics	General Education	2	0	2	-
TotalCredits			8	16	18	

Optional course

* Required credits of optional courses from **Set A** is **6.0 (3 courses)**, which should be completed by **2nd year**

Second Year: 2nd Semester

Course No.	Course Title	Course Category	Hours/Week		Credits	Pre-req
			Theor y	La b		
Compulsory course						

ARC 0731 2221	Art and Architecture IV: South Asian Architecture	Core	2	0	2	-
ARC 0731 2222	Field Work I: Contemporary Architecture	Core	0	1w	2	-
ARC 0731 2232	Design Studio IV	Core	0	12	6	ARC 0731 2132
ARC 0712 2241	ED III: Visual and Sonic Environment	Core	2	0	2	-
ARC 0732 2261	Construction Materials and Methods	Core	2	0	2	-
CEE 0732 2211A	Structure II - Mechanics of Solids	General Education	2	0	2	-
Total Credits			8	12	16	
Optional course						
* Required credits of optional courses from Set A is 6.0 (3 courses) , which should be completed by 2nd year						

Third Year: 1st Semester

Course No.	Course Title	Course Category	Hours/Week		Credits	Pre-req
			Theory	Lab		
Compulsory course						
ARC 0731 3181	Introduction to Spatial Planning	Core	2	0	2	-
ARC 0731 3132	Design Studio V	Core	0	12	6	ARC 0731 2232
ARC 0732 3152	Working drawing	Core	0	4	2	-
CEE 0732 3111A	Structure III – Building Structures I	General Education	2	0	2	-
MEE 0715 3113A	Building Services I- Mechanical	General Education	2	0	2	-
TotalCredits			6	16	14	
Optional course						
* Required credits of optional courses from Set B is 4.0 (2 courses), which should be completed by 3 rd year						

Third Year: 2nd Semester

Course No.	Course Title	Course Category	Hours/Week		Credits	Pre-req
			Theory	Lab		
Compulsory course						
ARC 0212 3271	Interior Design	Core	2	0	2	-
ARC 0731 3281	Urban Design	Core	2	0	2	-
ARC 0731 3232	Design Studio VI	Core	0	12	6	ARC0731 3132
ARC 0732 3262	Field Work III: Building Construction	General Education	0	2	2	-
EEE 0713 3213A	Building Services II - Electrical	General Education	2	0	2	-
TotalCredits			6	14	14	
Optional course						
* Required credits of optional courses from Set B is 4.0 (2 courses) , which should be completed by 3rd year						

Fourth Year: 1st Semester

Course No.	Course Title	Course Category	Hours/Week			Pre-req
			Theory	Lab	Credits	
Compulsory course						
ARC 0731 4121	Art and Architecture V: Society and Architecture of Bengal	Core	2	0	2	-
ARC 0731 4132	Design Studio VII	Core	0	12	6	ARC0731 3232
ARC 0731 4171	Landscape Design	Core	2	0	2	-
ARC 0212 4172	Interior Design Studio	Core	0	4	2	-
ARC 0731 4181	Housing	Core	2	0	2	-
ARC 0222 4122	Field Work II: Architecture of Bengal	Core	0	1w	2	-
TotalCredits			6	16	16	
Optional course						

* Required credits of optional courses from **Set B** is **8.0 (4 courses)**, which should be completed by **4th year**

Fourth Year: 2nd Semester

Course No.	Course Title	Course Category	Hours/Week			Pre-req
			Theory	Lab	Credits	
Compulsory course						
ARC 0731 4232	Design Studio VIII	Core	0	12	6	ARC0731 4132
ARC 0731 4271	Vernacular Architecture and Settlements	Core	2	0	2	-
ARC 0731 4272	Landscape Design Studio	Core	0	4	2	-
ARC 0731 4291	Architectural Research Methodology	Core	2	0	2	-
CEE 0732 4211A	Construction Management	General Education	2	0	2	-
TotalCredits			6	16	14	

Optional course

* Required credits of optional courses from **Set C** is **8.0 (4 courses)**, which should be completed by **4th year**

Fifth Year: 1st Semester

Course No.	Course Title	Course Category	Hours/Week			Pre-req
			Theory	Lab	Credits	
Compulsory course						
ARC 0731 5132	Design Studio IX	Core	0	12	6	ARC0731 4232
ARC 0731 5192	Thesis I: Research Development	Core	0	4	2	ARC0731 4232
ARC 0731 5194	Professional Practice I: Internship	Internship	-	12w	4	-
TotalCredits			0	16	12	

Optional course

* Required credits of optional courses from **Set D** is **4.0 (2 courses)**, which should be completed by this semester and student can register maximum 3 courses from Set D

Fifth Year: 2nd Semester

Course No.	Course Title	Course Category	Hours/Week			Pre-req
			Theory	Lab	Credits	
Compulsory course						
ARC 0731 5232	Thesis II: Design Studio X	Capstone	0	24	12	ARC0731 5132 ARC0731 5192
ARC 0731 5291	Professional Practice II: Codes and Ethics	Core	2	0	2	-
ARC 0731 5292	Thesis III: Dissertation	Capstone	0	8	4	ARC0731 5132 ARC0731 5192
TotalCredits			2	32	18	

Optional course requirements for B. Arch. Degree:

Year/Session	Required optional courses/credits (Per Year)		Maximum allowable optional courses/credits from regular courses per Semester (Excluding drop courses)	
	Course	Credit	Course	Credit
2 nd Year 1 st Semester	2/3 (Set A)	6.0	1	2.0
2 nd Year 2 nd Semester			1	2.0
3 rd Year 1 st Semester	3/4 (Set B)	4.0	1	2.00
3 rd Year 2 nd Semester			1	2.00
4 th Year 1 st Semester	3/4 (Set C)	8.0	2	4.0
4 th Year 2 nd Semester			2	4.0
5 th Year 1 st Semester	2 (Set D)	4.0	2	4.0
Required		22.0		

Optional Courses

2nd year optional Courses					
Set A * Required credits of optional courses from Set A is 6.0 (2/3 courses) and student can register maximum 2 courses from each semester					
Course No.	Course Title	Course Category	Theory credit	Lab Credit	Hour /week
ARC 0213 2154	Architectural Sketching and Modelling	Elective	0	2	4
ART 0211 2112A	Photography and Media Studies	General Education	0	2	4
ART 0211 2212A	Graphic Art and Design	General Education	0	2	4
PHI 0223 2217A	Philosophy	General Education	2	0	2
CSE 0613 2214A	Introduction to Programming With Python (Lab)	General Education	0	3	6
SOC 0314 2213A	Principles of Sociology	General Education	2	0	2
ECO 0311 2215A	Principles of Economics	General Education	3	0	3
			07	9	25
3rd year Optional Courses					
Set B * Required credits of optional courses from Set B is 4.0 (2 courses) and student can register maximum 2 courses from each semester					
Course No.	Course Title	Course Category	Theory credit	Lab Credit	Hour /week
ARC 0731 3171	Facilities Planning and Design	Elective	2	0	2
ARC 0732 3263	Building Services III- Plumbing	Elective	2	0	2
ANP 0314 3115A	Culture, Space and Place	General Education	3	0	3
STA 0542 3117A	Statistics for Architects	General Education	3	0	3
ARC 0313 3273	Behavior Studies in Architecture	Elective	2	0	2

ARC 0732 3264	Building Information Modeling	Elective	0	2	4
			12	2	18

4th Year Optional Courses					
Set C * Required credits of optional courses from Set C is 8.0 (3/4 courses) and student can register maximum 2 courses from each semester					
Course No.	Course Title	Course Category	Theory credit	Lab Credit	Hour /week
ARC 0532 4162	Computer Aided Spatial Analysis	Elective	0	2	3
ARC 0712 4173	Architecture for Sustainability	Elective	2	0	2
ARC 0222 4123	Heritage Studies and Conservation	Elective	2	0	2
ARC 0731 4183	Rural Studies of Bangladesh	Elective	2	0	2
ARC 0731 4274	Collaborative Design Studio	Elective	0	2	4
ARC 0732 4261	Building Maintenance and Retrofitting	Elective	2	0	2
ARC 0731 4281	Community Architecture and Planning	Elective	2	0	2
ARC 0731 4283	Planning and Management for Disaster Resilience	Elective	2	0	2
			10	06	19

5th Year 1st Semester Optional Courses					
Set D * Required credits of optional courses from Set D is 4.0 (2 courses) and student can register maximum 3 courses from this semester					
Course No.	Course Title	Course Category	Theory credit	Lab Credit	Hour /week
ARC 0731 5196	Architecture in Dialogue: Seminar	Elective	0	2	4
ARC 0732 5162	Cost Estimation and Specification	Elective	0	2	4
ARC 0712 5142	Environmental Simulation Lab	Elective	0	2	4
ARC 0222 5122	Documentation of Built Heritage	Elective	0	2	4
			0	8	16

Requirements for receiving B. Arch. Degree

1. Credit requirement for B. Arch. degree at SUST is **180.0**
2. Students need to complete **158.0** credits compulsory courses with **22.0** credits optional courses.
3. Required credits of optional courses from each set must be completed.
4. Optional courses will be offered at the beginning of each semester (2nd year to 5th year).

PART C

OBE Curriculum of Department of Architecture Shahjalal University of Science and Technology, Sylhet, Bangladesh

First Year: 1st Semester

Course No.	Course Title	Course Category	Hours/Week		Credits	Pre-req.
			Theory	Lab		
Compulsory course						
ARC 0731 1121	Art and Architecture: Ancient civilizations	Core	2	0	2	-
ART 0213 1115A	DT I: Aesthetics and Art Appreciation	General Education	2	0	2	-
ARC 0731 1132	Design Studio I	Core	0	12	6	-
ARC 0732 1152	Architectural Graphics I: Basic Drawing	Core	0	6	3	-
ENG 0231 1111A	English Language	General Education	2	0	2	-
ENG 0231 1112A	English Language (Lab)	General Education	0	2	1	-
MAT 0541 1113A	Mathematics	General Education	2	0	2	-
Total Credits			8	20	18	

Year/ Semester	1 st Year 1 st Semester		
Course Title	Art and Architecture I: Ancient Civilizations		
Course Code	ARC 0731 1121	Module	2
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

This course intends to develop skills for cultural interpretation of built environment through survey and analysis of historic structures, which is an inherent part of architecture education.

COURSE OBJECTIVES

- To facilitate basic knowledge about the evolutionary process of early human society and architecture.
- To provide the knowledge of different political regimes and religious philosophy that influence development ancient civilizations.
- Acquaint students with the major drivers behind shaping any civilization and their influence of art and architecture development.
- Helping the students to develop skill towards art & architecture appreciation where students could identify architectural styles with relevance to age, time and location.

COURSE CONTENT

Overview of the perceptual process of evolution in the Art and Architecture of ancient civilizations. Critical evaluation of ancient architecture and settlement design of major four river valley civilizations: the Nile River valley (Ancient Egypt), the Tigris/Euphrates River valley (Ancient Mesopotamia), the Indus River valley (Ancient India) and the Huang He River valley (Ancient China).

Introduction to classical architecture of Greece and Rome; Critical evaluation of the classical Architecture of Greece and Rome from political, social and philosophical point of view. Aegean and the Etruscan influence on development of Greek and Roman architecture.

	After successful completion of the course, students will be able to:
CO 1	recognize the principal buildings of the various ancient civilizations
CO 2	identify the factors that influence the architectural traditions of each of the ancient civilizations through construction technique, material culture
CO 3	compare the architecture of the various civilizations in terms of design idea, social belief, religious philosophy
CO 4	develop an awareness of the inherent connections of the built environment to the natural environment, and the subsequent implications for cultural and environmental sustainability

CO 5 apply the language of architectural form, space and order in the design studio

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3		2						
CO 2						2		2	
CO 3		3				3			
CO 4		2				3			
CO 5		2				3			

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	Lecture with projector	Semester-End examination
CO2	Self-learning	Oral presentation, Semester-End examination
CO3	Class discussion/seminar/tutorial	Assignment(s), Semester-End examination
CO4	Lecture	Mid-semester examination, Semester-End examination
CO5	Self-learning	Semester-End examination

Books Recommended

- Fletcher B.:** A History of Architecture, Architectural Press; 20th edition (21 Sep 1996)
- Fazio M. A:** World History of Architecture, Publisher: McGraw-Hill Professional; 2nd Rev ed.
- Cole E.:** The Grammar of Architecture, Bulfinch
- Harvey, J. H.:** The Gothic World 1100-1600, London, 1950
- Francis D. K. Ching:** A Visual Dictionary of Architecture
- Murray, P.:** Architecture of the Renaissance, New York, 1971
- Million, Henry, A. (ed):** The Triumph of the Baroque Architecture in Europe 1600-1750, London, 1999
- Minor, V. H.:** Baroque and Rococo Art and Culture, London

Year/ Semester	1 st Year 1 st Semester		
Course Title	DT I: Aesthetics and Art Appreciation		
Course Code	ART 0213 1115A	Module	1
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

Art Appreciation presents with an elementary but thorough introduction to the world of art as a whole. Starting from the prehistoric artists and artisans, the course will progressively guide the learners through the ever-changing timescapes in art history, up to its contemporary trends and practices. The course will also combine the issues of method and technique with that of human perception and creativity in an attempt to know art as a communicative language, and more. Additionally, the basic technicalities and fundamentals of visual criticism are to be explored in this discourse.

COURSE CONTENT:

Aesthetics: Introduction to the subject matter and purpose of aesthetics; Aesthetics in the realm of art and design, its relation to the common people. Aesthetics and the act of creation, Aesthetic knowledge as a system; Methods of aesthetics; Aesthetic activity, Essence and principal forms of aesthetics, Theoretical models of Aesthetics; Aesthetics as meta category: the Mood, Rasa and the Style; Psychology of perception and creation; Developments of ideas and their trends in the field of aesthetic activity, the concept and the architectural concept, theory of criticism.

Art Appreciation: Criticism and Appreciation. Definition of art; Relationship between art & science; Art as social phenomenon; Function of art; The method of art; Branches of art; Evolution of different art forms; Introduction to concept, perception and development of art in different context. Characteristics of various forms of art, meaning of art, art as experience and expression, the language of visual art, typology of visual art, analysis of the work of art; theory of criticism.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	connect over various philosophical standpoints with global Art and Architecture
CO 2	initiate the process of visual thinking (instead of verbal thinking)
CO 3	work on the ability of identifying positive visual qualities, and also to learn the languages of criticism
CO 4	relate the media(s) and the method(s) to technical/technological advancement
CO 5	interpret the basic languages of Architecture

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2						3		
CO 2							3		
CO 3		2	2				3		
CO 4							3	2	
CO 5		2					2		3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	Lecture	Semester-End examination
CO2	Self-learning	Oral presentation, Semester-End examination
CO3	Field survey/demonstration	Assignment(s), Semester-End examination
CO4	Lecture	Mid-semester examination, Semester-End examination
CO5	Self-learning	Semester-End examination

Books Recommended

1. **Faulkner, R., Ziegfeld, E., and Smagula, H.:** Art Today.
2. **Lyas, Colin (2003);** Aesthetics; Routledge; London.
3. **Nelson, R.S. and Shiff, R.:** Critical Terms for Art History
4. **Read, H.:** The Meaning of Art.
5. **Yuri Borev:** Aesthetics (Sociological Aspect)
6. **Colin Lies:** Aesthetics (Philosophical Aspect)
7. **Herbert Read:** The Art of Sculpture (Sculpture)
8. **Ashok Mitra:** *Paschim Europer Chitrakala, Chhobi kake bole, Europe er vashkarjo.*
9. **Moin Choudhury:** *Shristir Siri.*
10. **Dhiman Das Gupta:** Composition, *Cinemat image.*
11. **Fleming, William (1994);** Arts and Ideas; Wadsworth Publishing; Boston
12. **Satyajit Roy:** *Bishoy Chalachitra.*
13. **Sunil Gangopadhyay:** *Chhobir deshe kobitar deshe, Onnodesher kobita*

Year/ Semester	1st Year 1st Semester		
Course Title	Design Studio I		
Course Code	ARC 0731 1132	Module	3
No. of Credits	6	Course Hour	12 hours/week

COURSE RATIONALE:

This is a foundation course for design. This course intends to develop fundamental skills for visual design to give a basis for architecture design education.

COURSE CONTENT:

Study of human senses and their relation to design; Introduction to visual composition through Elements of Design: Properties, qualities and characteristics of point, line, shape, form, color and texture, Understanding of forms in nature.

Study of material for design, Understanding the Principles of Design: Scale, Proportion, Balance, Harmony, Rhythm, Order and Contrast, Introducing the concept of Space in visual composition.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	Distinguish between point, line and shape as an aesthetic and visual design element
CO 2	interpret basic design idea and concepts verbally
CO 3	Generate creative idea in a methodological process and interpret it in design projects
CO 4	Critically evaluate self-works and other basic compositions based on composition principles
CO 5	Apply fundamental design principles (primary elements, composition of form and space, proportion and scale, ordering principles) in two-dimensional composition

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3							
CO 2	2						2		3
CO 3	2	3					2		
CO 4	2	2					3		
CO 5	2	3							2

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO 1	Project based learning	Continuous assessment, Summative Assessment
CO 2	Project based learning	Oral Presentation , Summative Assessment
CO 3	Project based learning	Continuous assessment, Summative Assessment
CO 4	Self-learning	Oral Presentation , Summative Assessment
CO 5	Project based learning	Continuous assessment, Summative Assessment

Books Recommended

1. Prammar V.S., Design fundamentals in Architecture, Somaiya Publications Pvt. Ltd., New Nelhi, 1973.

2. Francis D.K.Ching, "Architecture: Form, Space and Order, Van Nostrand Reinhold Co., (Canaa),1979.
3. Elda Fezei, Henny Moore, Hamlyn, London, New York, Sydney, Toronto, 1972.
4. Lawrence Bunchy C.: Acrylic for Sculpture and Design, 450, West 33rd Street, New York, N.Y.10001, 1972.
5. Exner V., Pressel D., "Basics Spatial Design", Birkhanser, 2009.
6. Snyder, James: Introduction to Architecture
7. Scot Foresman: Art.
8. Owen Cappleman & Michael Jack Jordon, Foundations in Architecture: An Amotated Anthology of Beginning Design Project, Van Nostrand Reinhold New York, 1993.
9. Charles Wallschlaggerm & Cynthia Busic-Snyder, Basic Visual Concepts and Principles for Artists, Architects and Designers, McGraw Hill, New York 1992

Year/ Semester	1 st Year 1 st Semester		
Course Title	Architectural Graphics I: Basic Drawing		
Course Code	ARC 0732 1152	Module	5
No. of Credits	3.0	Course Hour	6.0 hours/week

COURSE RATIONALE:

This course intends to inculcate the fundamental graphical language and principles to represent architectural drawings in the students.

COURSE CONTENT:

Line drawing quality; Study of scale; Lettering; Execution of plan, elevation and section; Execution of oblique, isometric and diametric drawings; Introduction to mechanical perspective.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Draw 2-dimensional architectural presentation drawings.
CO 2	Translate different graphical language and symbols.
CO 3	Utilize different architectural scales accordingly
CO 4	Use proper techniques and instruments for hand-drawn graphics
CO 5	Execute architectural drawing of a simple building

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3								3
CO 2	3								3
CO 3	3								2
CO 4	2							3	

CO 5	3								3
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MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Project, lecture	Continuous assessment, Summative Assessment
CO2	Project, lecture	Continuous assessment, Summative Assessment
CO3	Project, lecture	Continuous assessment, Summative Assessment
CO4	Project, lecture	Continuous assessment, Summative Assessment
CO5	Project, lecture	Continuous assessment, Summative Assessment

Books Recommended

1. Ching, F.D.K.: Architectural Graphics.
2. Gill, R.W.: Rendering with Pen & Ink.

Year/ Semester	1 st Year 1 st Semester		
Course Title	English Language		
Course Code	ENG 0231 1111A	Stream	1
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

This course is expected to develop two basic skills i.e. reading and writing. A variety of reading strategies and texts will be used to effectively develop first year students' academic reading skills thereby facilitating their future study. Also, the course focuses on developing the writing skills of students by familiarizing them with grammar rules, providing them with practice and enabling them to demonstrate the accurate use of grammar in their writing.

COURSE OBJECTIVES

- To enable students to write with accuracy.
- To facilitate effective and comprehensible writing.
- To raise awareness of common errors that occur in writing.
- To develop student's ability to understand write-ups on issues of general concern.
- To improve the vocabulary of learners for effective communication.

COURSE CONTENT

a) Reading

Different Reading Strategies
Guessing Meaning from the Context

Critical Reading (Analyze)
Critical Reading (Synthesize)
Critical Reading (Evaluate)
Annotation
Summary Writing

Material

A selection of 08-10 editorials and reports from newspapers/magazines/journals, etc.
Reading texts in New Headway Upper Intermediate Student's Book (Current edition)
Selected passages from recommended books
A selection of other material may be supplied as handouts as deemed necessary by the instructor

b) Writing

Forms and functions of different word categories (Noun, verb, adjective, etc.)
Aspects and uses of tense
Subject-verb agreement
Use of infinitive, gerund, present participle, past participle, modals, causatives, conditionals, subjunctives, modals.
Use of sentence connectors/ cohesion markers/ punctuation
Effective combination of sentences (simple, complex, compound)
Developing a paragraph

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to:	
CO 1	apply grammar rules
CO 2	produce grammatically correct meaningful sentences
CO 3	express oneself correctly by using appropriate words, phrases, sentences or ideas
CO 4	critically reflect on a text (grasp abstract ideas and interpret them effectively, arrive at well-reasoned conclusions and solutions)
CO 5	extract information from passages accurately

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1							2		3
CO 2									3
CO 3									3
CO 4							3		3
CO 5						2	2		3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
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CO1	Lecture	Midterm Examination, Semester-end examination
CO2	Self-learning using reference	Semester-end examination
CO3	Lecture	Midterm Examination, Semester-end examination
CO4	Self-learning using reference	Quiz, Semester-end examination
CO5	Student-led classroom - Teamwork in peer groups.	Assignment, Semester-end examination

Books Recommended

1. **Tibbits, E. E. ed.** Exercises in Reading Comprehension. Longman
2. **Liz and John Soars.** (Current edition). New Headway Upper Intermediate Student's Book
3. **Oxford:** Oxford University Press
4. **Cliff's TOEFL**
5. Other Resources recommended by course instructors

Year/ Semester	1 st Year 1 st Semester		
Course Title	English Language (Lab)		
Course Code	ENG 0231 1112A	Stream	1
No. of Credits	1.0	Course Hour	2.0 hours/week

COURSE RATIONALE

This course is designed to improve the speaking and listening skills of students in the English language. Emphasis is laid on proper pronunciation for accurate articulation and recognition of speech sounds as well as correct stress, intonation and language use in varied situations.

COURSE OBJECTIVES

- To enable students' understanding of the variations in pronunciation.
- To teach proper pronunciation and accurate articulation.
- To facilitate appropriate stress and intonation in speech.
- To encourage use of English effectively in everyday situations.
- To ensure overall improvement of oral communication through listening and speaking.

COURSE CONTENT

(a) Speaking

Articulators

English Phonetic Alphabet (British and American) and International Phonetic Alphabet (IPA)

Stress rules of English

Intonation rules and functions of intonation

Communication Styles and Cultural Context

Fluency, mistakes, misunderstandings, audience, taboos, self-esteem, confidence

Activities: dialogue, debate, extempore speech, interview, role-play

(b) Listening

Basics of listening

Various types of Pronunciation

IPA, RP, Transcription

Different accents and intonation patterns

Activities for Meaning-focused Listening, Information Transfer Strategies,

Listening Practice through selection of audio clips.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to:	
CO 1	Identify the symbols of the International Phonetic Alphabet used to represent the sounds of the English language.
CO 2	Distinguish between varied accents in English
CO 3	interpret information accurately
CO 4	apply appropriate intonation and stress patterns in English words and sentences
CO 5	produce continuous speech clearly and convincingly

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1							3		2
CO 2									3
CO 3							2		3
CO 4							2		3
CO 5					3				3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Midterm Examination, Semester-end examination
CO2	Self-learning using reference	Semester-end examination
CO3	Lecture	Midterm Examination, Semester-end examination
CO4	Self-learning using reference	Quiz, Semester-end examination
CO5	Class discussion/seminar/tutorial	Assignment, Semester-end examination

Books Recommended

1. **Anderson, A. & Lynch, T.** Listening. Oxford: Oxford University Press, 1988
2. **Hancock, Mark.** English Pronunciation in Use. New York: Cambridge University Press, 2004
3. **Anderson, Kenneth, et al.** Study Speaking. Cambridge University Press, 2007
4. **Hancock, Mark.** English Pronunciation in Use. Cambridge University Press, 2004

5. **Jones, Daniel.** Cambridge English Pronunciation Dictionary. Cambridge University Press, 2011
6. **Richards J, et al.** Person to Person. Oxford University Press, 2007
7. **Richards, Jack C, and David Bohlke.** Speak Now: 1. Oxford University Press, 2013
8. **Roach, Peter.** English Phonetics and Phonology. Cambridge University Press, 2009

Year/ Semester	1* Year 1* Semester		
Course Title	Mathematics		
Course Code	MAT 0541 1113A	Stream	1
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

This course intends to teach architecture students with fundamental knowledge of mathematical problem solving to prepare them for upper-level courses.

COURSE OBJECTIVES

- To give students fundamental knowledge of mathematical problem-solving skill.
- To teach importance and relevance of mathematics for architectural education and knowledge.
- To ensure a multidisciplinary approach for architecture education

COURSE CONTENT

Differential Calculus: Function; limit; continuity; differentiation; successive and partial differentiation; Rolle's theorem; mean value theorem; maxima and minima. Integral Calculus: Integration by various methods; standard integrals; definite integrals; length of curves; area bounded by plane curves; volumes and surface areas of solids of revolution.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	explain derivatives and applications
CO 2	solve exponential and logarithmic functions
CO 3	define integrals and its applications
CO 4	Relate the architectural design with mathematical basics.

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2								
CO 2		2							
CO 3	2								
CO 4	3	2					2	2	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Midterm Examination, Semester-end examination
CO2	Self-learning using reference	Assignment, Semester-end examination
CO3	Lecture	Midterm Examination, Semester-end examination
CO4	Self-learning using reference	Quiz, Semester-end examination

Books Recommended

1. **Thomas and Finney:** Calculus and Analytic Geometry
2. **E. W Swokowski:** Calculus with Analytic Geometry
3. **H. Anton:** Calculus
4. **Rahman and Bhattacharjee:** Co-ordinate geometry of two and three dimensions
5. **Loney, S. L.:** Coordinate Geometry of Two dimensions
6. **Smith, C.:** The Analytical Geometry of Conic Section

First Year: 2nd Semester

Course No.	Course Title	Course Category	Hours/Week		Credits	Pre-req
			Theory	Lab		
Compulsory course						
ARC 0731 1221	Art and Architecture II: Medieval Europe and Renaissance	Core	2	0	2	-
ARC 0731 1223	DT II: Theories and Methods in Architectural Design	Core	2	0	2	-
ARC 0731 1232	Design Studio II	Core	0	12	6	ARC 0731 1132 ARC 0732 1152
ARC 0712 1241	ED I: Climate and Design	Core	2	0	2	-

ARC 0732 1252	Architectural Graphics II: Advanced drawing	Core	0	6	3	ARC 0731 1132 ARC 0732 1152
PHY 0533 1211A	Physics for Architects	General Education	2	0	2	-
SSS 0222 1213A	History of the Emergence of Independent Bangladesh	General Education	3	0	3	-
Total Credits			11	18	20	

Year/ Semester	1 st Year 2 nd Semester		
Course Title	Art & Architecture II: Medieval Europe and Renaissance		
Course Code	ARC 0731 1221	Stream	2
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course intends to develop skills for cultural interpretation of built environment through survey and analysis of historic structures, which is an inherent part of architecture education.

COURSE CONTENT:

A critical evaluation of the architecture of Western civilization. Its roots in Etruscan and Roman architecture which developed through the ages of Early Christian, Byzantine and Romanesque periods resulting in the Gothic style. Moorish architecture in Spain. Climatic, geographical, religious and social influences on the architecture in these periods. Structural innovations and construction systems adopted in different periods.

Revival of classical thoughts in the Renaissance period and contribution of architects. Evolution of Renaissance philosophy through phases with relevance to works of Renaissance men, emphasizing development in Milan, Florence and Venice. Introduction to Baroque and Rococo style in art and architecture. Movement in Neoclassic style: Greek revival, Palladianism and influence of École des Beaux-Arts in development of early modernism.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Distinguish between various architectural styles emerged from 400 AD to 1800AD in Europe
CO 2	Identify phases of development of church architecture in Europe with relevance to structure, material culture and construction technique.

CO 3	Build a chronological framework for understanding the development of construction techniques
CO 4	Interpret verbally and in written, to questions regarding architectural history, design, and significance
CO 5	Apply critical thinking of the theories in the history of architecture (Evaluation).

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2								
CO 2	2						2	3	
CO 3	2					3		3	
CO 4	2						2		3
CO 5		2					3		

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Semester-end examination
CO2	Simulation/field demonstration	Assignment, Semester-end examination
CO3	Lecture	Mid-term examination, Semester-end examination
CO4	Self-learning	Oral Presentation, Semester-end examination
CO5	Self-learning	Semester-end examination

Books Recommended

1. **Fletcher. B A**; History of Architecture, Architectural Press; 20th edition (21 Sep 1996)
2. **Fazio. M A**; World History of Architecture, Publisher: McGraw-Hill Professional; 2nd Rev ed.
3. **Cole. E**; The Grammar of Architecture, Bulfinch
4. **Harvey. J. H.**; The Gothic World 1100-1600, London, 1950.
5. **Murray, P**; Architecture of the Renaissance, New York, 1971.
6. **Million, Henry, A. (ed)**; The Triumph of the Baroque Architecture in Europe 1600-1750, London, 1999.
7. **Minor, V. H.**; Baroque and Rococo Art and Culture, London

Year/ Semester	1 st Year 2 nd Semester		
Course Title	DT II: Theories and Methods in Architectural Design		
Course Code	ARC 0731 1223	Stream	2
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

Design Theory, as a theoretical discourse, is absolutely fundamental and relevant in the learning process of Architecture. It not only incorporates the study of the basic visual and aesthetic languages, and systems in architectural practice, but also introduces the learners to the immensely diversified aspects of human society. The course will progressively guide the beginners through various aspects of human behavior in relation to Architectural creations and its material and psychosomatic dimensions. It also intends to inculcate in the students the methodological approach of design development as a combined process.

COURSE CONTENT:

Theory: A critical evaluation on the cultural origins of architecture, the basic understanding of its theory and practice in various social-cultural settings, analogies in architecture and its environment-behavior studies. An introduction and definition to visual design, architectural syntax, a critical analysis of form and space, visual elements in architectural design, ordering principles of design, spatial organization and circulation, proportion and scale in architecture, etc.

Methods: Methodological approach for architectural design and design process; Understanding of concepts, notions, ideas, design considerations in architecture; Types of concepts; Methods for developing ideas and concepts in architecture. **Architectural Program formulation:** Collection, organization and presentation of data to develop architectural program; **Site planning:** introduce students to the site and context as prime generators of design decisions; **Spatial, behavioral and Perceptual context of site analysis and their relationship to the built environment.** Post occupancy evaluation (POE): technical, functional and behavioral evaluation.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:								
CO 1	apply theories and methodological approaches in architectural design								
CO 2	distinguish ideas, design considerations, notions and concepts								
CO 3	formulate design concepts by multiple processes								
CO 4	apply scientific methods to formulate architectural programs								
CO 5	Explain site-context relationship to the built environment.								

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	2						

CO 2	3	3					2		
CO 3	3	3				2			
CO 4			3			2			
CO 5		2				3			

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	Lecture	Semester-end examination
CO2	Lecture	Mid-semester examination, Semester-end examination
CO3	Workshops	Visual presentation, Semester-end examination
CO4	Self-learning	Mid-semester examination, Semester-end examination
CO5	Field survey/demonstration	Assignment(s), Semester-end examination

Books Recommended*Recommended:*

1. **Ching, Francis D.K.** (2007); *Architecture – Form, Space, and Order*; John Wiley and Sons; Boston
3. **Norberg-Schulz, Christian** (1965); *Intentions in Architecture*; MIT Press; Cambridge
4. **Snyder, James C. and Catanese, Anthony J.** (1979) eds.; *Introduction to Architecture*; McGraw-Hill Publishing Company; NY

Supplementary:

1. **Ching, Francis D.K.** (2011); *A Visual Dictionary of Architecture*; John Wiley and Sons; Boston
2. **Heath, Tom** (1984); *Method in Architecture*; Wiley; NJ
4. **Unwin, Simon** (2009); *Analysing Architecture*; Routledge; London
5. **Zelanski, Paul and Fisher, Mary P.** (1995); *Design Principles and Problems*; Cengage Learning Publishing; Boston
1. **Peter Zumthor**: *Thinking Architecture*
2. **Leland M. Roth, Amanda C. Roth Clark**: *Understanding Architecture: Its Elements, History, and Meaning*
3. **Andrea Simitch, Val Warke**: *The Language of Architecture: 26 Principles Every Architect Should Know*
4. **Holger Kleine**: *The Drama of Space*
5. **Francis D. K. Ching and James F. Eckler**: *Introduction to Architecture*
6. **Andrew Charleson**: *Precedents in Architecture: Analytic diagrams, Formative Ideas and Parts*

Year/ Semester	1st Year	2nd Semester
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Course Title	Design Studio II		
Course Code	ARC 0731 1232	Stream	3
No. of Credits	6	Course Hour	12.0 hours/week

COURSE RATIONALE:

This is a foundation course for architectural design. This course intends to develop fundamental skills for visual design to give a basis for architecture design education.

COURSE CONTENT:

Relationship of Form and Space in three dimensions. Basic composition with color schemes; Lines, planes, primary shapes. Platonic solids and other geometric forms. Introduction to the process of form making. Interaction of Form and Space. Exposure to the domain of an architecture with simple functions. Study of a simple Architectural space.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	distinguish between visual design elements of different 3d forms
CO 2	apply visual design principles in 3-D compositions using addition, subtraction, interlocking, and platonic solids
CO 3	interpret basic design ideas and concepts verbally and in writing
CO 4	critically evaluate self-works and other basic compositions based on composition principles
CO 5	formulate basic compositions based on their individual ideas

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3							
CO 2	2	3					2		
CO 3	2						2		3
CO 4					2		3		
CO 5	2	3							2

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO 1	Case-study, Project	Assignment, Summative Assessment
CO 2	Project	Assignment, Continuous assessment, Summative Assessment
CO 3	Workshop	Presentation, Summative Assessment

CO 4	Project	Continuous assessment, Summative Assessment
CO 5	Project	Presentation (Individual), Continuous assessment, Summative Assessment

Books Recommended

1. **Pramar V.S.:** Design fundamentals in Architecture, Somaiya Publications Pvt. Ltd., New Nelhi, (1973)
2. **Ching, Francis D.K.:** Architecture: Form, Space, & Order, 4th Edition, Wiley (2014)
3. **Lawrence Bunchy C.:** Acrylic for Sculpture and Design, 450, West 33rd Street, New York, (1972)
4. **Exner V., Pressel D.:** "Basics Spatial Design", Birkhäuser (2009)
5. **Snyder, James C., Catanese, Anthony J.:** Introduction to Architecture, McGraw-Hill College (June 1, 1979)
6. **Kleine, Holger:** The Drama of Space, Birkhäuser; 1st edition (2017)

Year/ Semester	1st Year 2nd Semester		
Course Title	ED I: Climate and Design		
Course Code	ARC 0712 1241	Stream	4
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

The course presents an overview of Global Climatic factors, elements of climates; focusing on tropical climates. It covers basically, studies on how climatic factors affect human comfort and analysis of climatic problems in the design process.

COURSE CONTENT

Introducing concept of environmental design; Global climatic factors, Elements of climate, Classification & characteristics of tropical climates; Site Climate; Understanding thermal comfort: Man and his response to climate; Thermal balance of the human body, Thermal comfort indices, Effective temperature, CET, Comfort zone. Understanding Solar geometry: Apparent movement of the sun, Sun path diagrams (solar chart), Solar angles, Shadow angles, solar shading masks; Means of thermal control: mechanical & structural controls, Designing shading devices. Introducing principles of thermal design in buildings: Thermal quantities, heat flow rate, conductivity (k-value) & resistivity, conductance through a multi-layered body, surface conductance, transmittance, calculation of U value, convection, radiation, concept of sol-air temperature & solar gain factor, thermal balance equation. Understanding Periodic heat flow in building: time lag & decrement factor & its application in selection of appropriate materials for walls & roof. Effect of Insulation & cavity on time lag & its practical use; Ventilation and air movement through and around the buildings.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	explain the impact of climate on building design process
CO 2	Integrate the climatic control devices in the design process
CO 3	analyze climatic factors that adverse or undermine human comfort in the living environment
CO 4	design context based architectural design with climatic considerations
CO 5	collect climatic data and process them for architectural design

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1		2				3			
CO 2	2	2				3			
CO 3	3	2							
CO 4		3				2			
CO 5		3	3		2				

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Semester-end examination
CO2	Simulation/field demonstration	Assignment, Semester-end examination
CO3	Lecture	Mid-term examination , Semester-end examination
CO4	Self-learning	Oral Presentation, Semester-end examination
CO5	Self-learning	Semester-end examination

Books Recommended

1. **O.H. Koenigsberger:** Climate: Design Manual of tropical climate.
2. **M.S. Ingersoll:** Manual of tropical climate.
3. **M. Evans:** Housing, Climate & Comfort.
4. **B. Givoni:** Man, Climate & Architecture.
5. **Donald Watson & Kenneth labs:** Climatic Design.
6. **Norbert Lechner:** Heating, Cooling, Lighting: Sustainable Design Methods for Architects.
7. **M.A Muktadir:** Designing Building in the Tropics.

Year/ Semester	1 st Year 2 nd Semester		
Course Title	Architectural Graphics II: Advanced Drawing		
Course Code	ARC 0732 1252	Stream	5
No. of Credits	3.0	Course Hour	6.0 hours/week

COURSE RATIONALE:

This course intends to inculcate advanced graphical language and principles to represent architectural drawings, in the students.

COURSE CONTENT:

Execution of mechanical perspective; Introduction to shades, shadows, and reflections; Presentation & rendering.

Execution of single view drawings such as Axonometric drawings, and mechanical perspectives; Introduction to shades, shadows, and reflections; Presentation & rendering. Presentation techniques in various media.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	cast shade and shadow on 2D and 3D architectural drawings
CO 2	draw 3-dimensional drawings of a building such as axonometric view, perspective, etc.
CO 3	utilize proper techniques and instruments for drafting with ink
CO 4	render architectural presentation drawings with drafting pen and ink
CO 5	present a complete sheet of complex architectural building drawings

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3								
CO 2	3								3
CO 3									3
CO 4	3								3
CO 5									3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO 1	Project & Tutorial	Assignment, Summative Assessment

CO 2	Project & Tutorial	Assignment, Continuous assessment, Summative Assessment
CO 3	Project, Tutorial	Assignment, Summative Assessment
CO 4	Project, Tutorial, Self-learning using reference books	Assignment, Continuous assessment, Summative Assessment
CO 5	Project, Tutorial, Self-learning using reference books	Presentation (Individual), Summative Assessment

Books Recommended

1. **Ching, Francis D.K.:** Architectural Graphics
2. **Gill, Robert W.:** Rendering with Pen & Ink

Year/ Semester	1 st Year 2 nd Semester		
Course Title	Physics for Architects		
Course Code	PHY 0533 1211A	Stream	1
No. of Credits	2.0	Course Hour	2.0

COURSE RATIONALE

This course intends to teach fundamental laws and principles of physics with emphasis on the application of physical principles to the problems of architecture.

COURSE OBJECTIVES

- To provide basic idea about physics in relation with architectural design.
- To introduce concepts of temperature, heat, heat engines, laws of thermodynamics.
- Teach theory of lights and its characteristics and relation with architectural lighting.

COURSE CONTENT

Heat: Temperature, Humidity, Temperature related vapor and humidity, Heat transmission; Thermal Conductivity of solid and liquids, heat flow through different medium, convection, conduction, radiation, ventilation, laws of radiation, short and long-wave radiations. Light: Photometry and illumination, measurements and units; Theories of light and its characteristics, Lamps, diffraction and polarization; defect of images. Sound: Simple harmonic motion, wave motion, transmission and intensity of sound waves, reflection, refraction and absorption of sound; units of sound intensity; building acoustics.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Explain how thermodynamics have impact on built environment.
CO 2	apply their fundamental knowledge of thermodynamics to next level courses
CO 3	relate the properties of light to making of space

CO 4 Explain the sound wave system and apply the basic of acoustic principles inside built environment.

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1						3			
CO 2		2	2					2	
CO 3		2						3	
CO 4		2				3		2	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Mid-term examination , Semester-end examination
CO2	Self-learning	Assignment, Semester-end examination
CO3	Lecture	Mid-term examination , Semester-end examination
CO4	Lecture	Oral Presentation, Semester-end examination

Books Recommended

1. **Halliday and Resnick:** Physics I and II.
2. **Brijlal:** Heat and Thermodynamics.
3. **Brijlal:** A text book of sound.
4. **Brijlal:** Optics.
5. **Beiser:** Perspectives of modern physics.

Year/ Semester	1 st Year 2 nd Semester		
Course Title	History of the Emergence of Independent Bangladesh		
Course Code	SSS 0222 1213A	Stream	1
No. of Credits	3.0	Course Hour	3.0 hours/week

COURSE RATIONALE

This course deals with the following interrelated themes and topics that are essential to understand the emergence of Bangladesh. These themes include land and people, politics, economy, governance, society, religion and culture, global connections as well as the basic topics on the freedom struggle and War of Liberation. Issues under each of the broad themes will be discussed from the perspective of historical evolution and contemporary significance.

COURSE OBJECTIVES

- Offer insight into the historical changes, the long struggle for freedom and above all the War of Independence led by the Father of the Nation Bangabandhu Sheikh Mujibur Rahman that have shaped today's Bangladesh.
- Describe impact of geographical features in Bengal
- Explore ethnic compositions of Bangladesh
- Understand the development of Bengali language and its impact in Bangladeshi culture
- Comprehend cultural syncretism and religious tolerance
- Realize distinctive identity of Bangladesh in the context of undivided Bangladesh

COURSE CONTENT

1. Description of the country and its people: Impact of Geographical features in Bengal, Ethnic composition of Bangladesh, Development of Bengali Language and its impact, Cultural syncretism and religious tolerance, Distinctive identity of Bangladesh in the context of undivided Bangladesh.
2. Proposal for undivided sovereign Bengal, the partition of the Subcontinent, 1947 and Foreshadowing Bangladesh: Rise of communalism under the colonial rule, Lahore Resolution 1940, The proposal of Suhrawardi and Sarat Bose for undivided Bengal: consequences, The creation of Pakistan 1947, Foundation of Awami Muslim League and Foreshadowing Bangladesh.
3. Pakistan: Structure of the state and disparity: Central and provincial structure, Influence of Military and Civil bureaucracy, Economic, social and cultural disparity.
4. Language Movement and quest for Bengali identity: Misrule by Muslim League and Struggle for democratic politics, The Language Movement: context, phases and International Recognition of Bengali Language, United front of Haque – Vasani – Suhrawardi: election of 1954, consequences.
5. Military rule: the regimes of Ayub Khan and Yahia Khan (1958-1971): Definition of military rules and its characteristics, Ayub Khan's rise to power and characteristics of his rule (Political repression, Basic democracy, Islamisation), Fall of Ayub Khan and Yahia Khan's rule.
6. Rise of nationalism and the Movement for self-determination: Resistance against cultural aggression and resurgence of Bengali culture, Sheikh Mujibur Rahman and the 6 points movement, Reactions: Importance and significance, The Agortola Case 1968.
7. The mass- upsurge of 1969 and 11-point movement: Background, Program, Significance.
8. Election of 1970 and its Impact: Legal Framework Order (LFO), Programmed of different political parties, Election result and centers refusal to comply
9. Non-Cooperation Movement and 7th March Speech, 1971: The non-cooperation movement, Speech of 7th March: Background of the speech, major characteristics of the speech, impact of this speech, International recognition of 7th March Speech as part of world heritage.
10. Declaration of Independence of Bangladesh: Operation Searchlight, declaration of Independence of Bangladesh by Bangabandhu, Beginning of the Liberation War of Bangladesh

11. The war of Liberation 1971:

- a) Genocide, repression of women, refugees, Formation of Bangladesh government and proclamation of Independence, The spontaneous early
- b) resistance and subsequent organized resistance (Mukti Fouz, Mukti Bahini,
- c) guerillas and thefrontal warfare), Publicity Campaign in the war of Liberation
- d) (Shdhn Bangla Betar Kendra, the Campaigns abroad and formation of public
- e) opinion), Contribution of students, women and the masses (Peoples war) and
- f) different political parties, The role of Great powers and the United Nations in
- g) the Liberation war, The contribution of India in the Liberation War, The Anti
- h) liberation activities of the occupation army, the Peace Committee, Al-Badar,
- i) Al-Shams, Rajakars, pro Pakistan political parties and Pakistani Collaborators
- j) killing of the intellectuals, Trial of Bangabandhu and reaction of the World
- k) Community, Formation of joint command and the Victory, The overall
- l) Contribution of Bangabandhu in the Independence struggle.
- m) The Bangabandhu Regime 1972-1975: Homecoming, Making of the constitution, Reconstruction of the war-ravaged country, Foreign Policy of Bangabandhu, The murder of Bangabandhu and his family and the ideological turn-around.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	A broader understanding and further curiosity of the rich history, culture and heritage of the country.
CO 2	Able to appreciate the importance and relevance of history as a bridge between the past, present and the future.
CO 3	Become familiar with the contribution of the Father of the Nation Bangabandhu Sheikh Mujibur Rahman during independent war and construction of Bangladesh.
CO 4	Realize the nationalism and self-determination
CO 5	Improve critical thinking on anti-Bangladeshi activities during liberation war and after the independence and present days

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1									
CO 2		2							
CO 3		2							
CO 4				2					
CO 5							2		

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Mid-term examination 1, Semester-end examination
CO2	Self-learning	Assignment, Semester-end examination
CO3	Lecture	Mid-term examination 2, Semester-end examination
CO4	Lecture	Semester-end examination
CO5	Self-learning	Oral Presentation, Semester-end examination

Books Recommended

1. Ahmed, Salahuddin and Bazlul Mobin Chowdhury (eds.): Bangladesh: National Culture and Heritage: An Introductory Reader (Dhaka: Independent University Bangladesh, 2004).
2. Harun-or-Roshid: The Foreshadowing of Bangladesh: Bengal Muslim League and Muslim Politics, 1906-1947 (Dhaka: The University Press Limited, 2012)
3. Jahan Rounaq: Pakistan: Failure in National Integration, (Dhaka: The University Press Limited, 1977)
4. Maniruzzaman Talukder: Radical Politics and the Emergence of Bangladesh, (Dhaka: Mowla, Brothers, 2003)
5. Muhith, A M A: History of Bangladesh: A Subcontinental Civilization, (Dhaka: UPL, 2016)
6. Samad Abdus: History of Liberation War of Bangladesh, (Dhaka: Aparajeyo Bangla Prakashani, 2019)
7. Milton Kumar Dev, Md. Abdus Samad, History of Bangladesh, (Dhaka: Biswabidyalaya Prokasoni, 2014)
8. Schendel, Willem Van: A History of Bangladesh (Cambridge: Cambridge University Press, 2009)
9. bxnvi iÄb ivqt evOvjxi BwZnm, (KjKvZvt t'ÖR cvewjwks, 1402 e¼vã)
10. mvjvnDwİb Avn#g` I Ab`vb` (m¼úvw`Z)t evsjv`#ki gyw³ msMÖv#gi BwZnm 1947-1971 (XvKvt AvMvgx cÖKvkbx, 2002)
11. Avejy gvj Ave`yj gywnZt evsjv`kt RvwZivó«i D™ce (XvKvt mvwnZ` cÖKvk, 2000)
12. wmivRyj Bmjvg (m¼úvw`Z)t evsjv`#ki BwZnm 1704-1971, 3 LÜ (XvKvt GwkqvwUK tvmvmbwU Ae evsjv`k, 1992)
13. gybZvwmi gvgyb I Ab`vb`t ^vaxb evsjv`#ki Af`y`#qi BwZnm (XvKvt myeY©, 2017)
14. W. Avey tgv. t`#jvqvi tnv#mbt ^vaxb evsjv`#ki Af`y`#qi BwZnm (XvKvt wek|we`vjv cÖKvkbx, 2014)
15. W. Avey tgv. t`#jvqvi tnv#mbt W. tgvnv#s` tmwjg (m¼úv`bv)t evsjv`k I ewnwe©#k| (XvKvt evsjv`k BwZnm mwgwZ, 2015)

16. W. Avey tgv. t`#jvqvi tnv#mbt evsjv`#ki BwZnm 1905-1971 (XvKvt wek|we`vjv cÖKvkbx, 2016)

Second Year: 1st Semester

Course No.	Course Title	Course Category	Hours/Week		Credits	Pre-req
			Theory	La b		
Compulsory course						
ARC 0731 2121	Art and Architecture III: Modern and Contemporary Architecture	Core	2	0	2	-
ARC 0712 2141	ED II: Design in the Tropics	Core	2	0	2	-
ENV 0521 2115A	Ecology and Environment	General Education	2	0	2	-
ARC 0731 2132	Design Studio III	Core	0	12	6	ARC 0731 1232 ARC 0732 1252
ARC 0211 2152	Computer Aided Design	Core	0	4	2	-
CEE 0732 2111A	Structure I - Basic Mechanics	General Education	2	0	2	-
TotalCredits			8	16	18	
Optional course						
* Required credits of optional courses from Set A is 6.0 (3 courses), which should be completed by 2 nd year						

Year/ Semester	2 nd Year 1 st Semester		
Course Title	Art and Architecture III: Modern and Contemporary Architecture		
Course Code	ARC 0731 2121	Stream	2
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course will explore the historical and philosophical considerations of Modernism movement, its emergence, contribution and declination, and The journey towards the Contemporary practice in architecture around the world, alongside parallel artistic, political and social movements, in order to synthesize a greater theoretical context of this present notion of architecture.

COURSE CONTENT:

Beginnings of modernity, Industrialization, World War and Urbanization, The Chicago school movement, Arts and Crafts movement, Art Nouveau, Prairie style, Adolf Loos and critique of ornamentation, Werkbund, Expressionism, Futurism, Constructivism, Cubism, De-Stijl, Modern architecture institutionalization: Bauhaus, Modernism in Scandinavia, International style, Significant works of Modernism architects: FL Wright, Le Corbusier, Mies Van Der Rohe, Alvaro Aalto and Louis I. Kahn. Spread of Modern architecture: Tradition and Identity in the developing World.

Crisis of Modernism, Postmodernism as a reaction to Modernism; Theories and concepts of contemporary architecture; Deconstruction, Traditionalism and critical regionalism, technological advancement, postmodern ecology and sustainable architecture. Impact of globalization and open market system; Significant works of contemporary architects; Contemporary architecture in South Asia. Trends of post-independence architecture, adaptation to modernism through works of early modernist architects. Study of Architectural identity and regionalism in architecture in refer to works of local masters in South Asian region.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	explain the historical, socio-cultural, geopolitical and philosophical notion of the time that influenced modern and contemporary architecture
CO 2	identify the factors that made the movement complex and flourish around the world
CO 3	recognize notable architects, their thoughts and master creations
CO 4	evaluate the role of the movements on the development of later trends of Architecture
CO 5	generate new ideas and mark footprint in this discourse

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1		3					3		
CO 2							3		
CO 3	3					2	2		
CO 4							3		
CO 5	2	2					2		2

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture using projector	Midterm Examination 1, Semester-end examination
CO2	Self-learning using reference	Midterm Examination 2, Semester-end examination
CO3	Lecture using projector	Semester-end examination

CO4	Guest lectures/field visit	Quiz, Semester-end examination
CO5	Field demonstration	Assignment, Semester-end examination

Books Recommended

1. **Kenneth Frampton**: Modern Architecture: A Critical History.
2. **William J. Curtis**: Modern Architecture since 1900.
3. **Manfredo Tafuri**: Modern Architecture.
4. **Leonardo Benevolo**: History of Modern Architecture.
5. **Miki Desai et. al**: Architecture and independence.
6. **Charles Jencks** Post Modern Architecture
7. **Steve Bowkett**: Archi doodles.
8. **Jens Müller**: Logo Modernism.
9. **Paul Sahre**: Two-dimension Man.
10. **Robert Bringhurst**: The Elements of Typographic Style.
11. **Frank Jacobus**: Archi-Graphic: An Info graphic Look at Architecture.

Year/ Semester	2 nd Year 1 st Semester		
Course Title	ED II: Design in the Tropics		
Course Code	ARC 0712 2141	Stream	4
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

ED-I provides the foundation knowledge of climatic aspects and thermal design. Implementing theoretical concepts and technical knowledge in practical application is important for architects. ED-II course helps the students to specify climatic zones and their characteristics and study their design responses. Also, it equips the students with the methodological skills to integrate climatic data with the design process and maintain a comfortable living environment in different tropical climates.

COURSE CONTENT:

Theories and concepts: Understanding climatic characteristics and traditional design responses in different climatic zones. Design considerations for warm-humid, hot-dry, composite and tropical upland climates. Geo-physical forces and response to climate. Built-form design and layout planning. Passive cooling for hot-dry and warm-humid climates. Passive solar planning: direct-gain, Trombe wall and sunspace system, thumb rules for maximizing passive solar.

Design Methods: Climate-responsive and environmental design process. Analysis, synthesis and evaluation of climatic data. The Mahoney tables: indicators and specifications. Forward analysis of design scheme. Interpretation of climatic data and

plan development. Climate-responsive building element design. Shading device design principles. Building performance modelling and analogues.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	determine design objectives for different climatic conditions.
CO 2	Apply climate-responsive design techniques for built-forms and their elements in different climatic zones.
CO 3	interpret climatic design strategies from traditional built-forms and planning techniques.
CO 4	analyze the climatic data in the environmental design process.
CO 5	simulate experiments with scaled models to evaluate building performance and energy efficiency.

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3					3			
CO 2	2	3				2		3	
CO 3		2						3	
CO 4			3			3			
CO 5			3					3	3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	Lecture with Projector, Documentaries	Midterm Examination 1, Assignment, Semester-end examination
CO2	Lecture with Projector, Documentaries	Midterm Examination 1, Assignment, Semester-end examination
CO3	Lecture with Projector, Documentaries	Midterm Examination 2, Assignment, Semester-end examination
CO4	Lecture with Projector, Workshop	Midterm Examination 2, Group Presentation, Semester-end examination
CO5	Tutorial, Simulation/Field Demonstration	Group Presentation, Semester-end examination

Books Recommended

1. Koenigsberger, O. H. et al. (1973). *Climatic Design: Manual of tropical housing and building*. Orient Longman Private Limited: Chennai, India

2. Lechner, Norbert (2015). *Heating, Cooling, Lighting: Sustainable Design Methods for Architects*. John Wiley & Sons, Inc.: New Jersey, USA
3. Koch-Nielsen, Holger (2002). *Stay Cool - A Design Guide for the Built Environment in Hot Climates*. Earthscan: London
4. Watson, Donald and Labs, Kenneth (1983). *Climatic Design: Energy-efficient Building Principles and Practices*. McGraw-Hill: New York, USA
5. Evans, Martin (1980). *Housing, Climate and Comfort*. Architectural Press LTD: London
6. Givoni, Baruch (1976). *Man, Climate & Architecture*. Applied Science Publishers, Ltd.: London
7. Bay, Joo-Hwa and Ong, Boon Lay (2006). *Tropical Sustainable Architecture*. Elsevier Ltd.: Oxford

Year/ Semester	2 nd Year 1 st Semester		
Course Title	Ecology and Environment		
Course Code	ENV 0521 2115A	Module	1
No. of Credits	2.0	Course Hour	2 hours/week

COURSE RATIONALE:

This course intends to improve knowledge and design-skills for ecological and environmental considerations in architecture. Understanding the environment and the eco-system is fundamental for built-environment design in urban and natural settings.

COURSE CONTENT:

Definition and Field of Ecology; Origin and development of ecological study; Levels of Organization in ecology; Types of Ecology, Ecological Network, Factors and Relationships; Organism, Evolution and adaptation; Ecological communities and interaction; Biosphere and biodiversity; Trophic levels and Flow of Energy.

Relationship of eco-systems with built-environment; Human ecology and resource management; Environmental pollution and mitigation measures; Global initiatives in ecological sustainability; Concepts of ecological conservation (soil, water, air and biodiversity); Applied ecology and Eco-centric design concepts e.g. bio-mimicry, cradle to cradle design, industrial ecology.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Explain the basic fundamentals of ecology and environment
CO 2	distinguish the relationship between architecture and its environment
CO 3	Identify the environmental issues, biodiversity and interrelations in local context
CO 4	Apply measures of ecological conservation and sustainability in design
CO 5	Conceptualize environmental techniques and awareness to ensure better future

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL	SOCIAL SKILL	THINKING SKILL	PERSONAL SKILL
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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2		2						
CO 2	2					3			
CO 3			2			3			
CO 4		2					2		
CO 5						3	2		2

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture using projector	Midterm Examination 1, Semester-end examination
CO2	Self-learning using reference	Midterm Examination 2, Semester-end examination
CO3	Lecture using projector	Semester-end examination
CO4	Guest lectures/field visit	Quiz, Semester-end examination
CO5	Field demonstration	Assignment, Semester-end examination

Books Recommended

1. **Eugene P. Odum and Gray W. Barret:** Fundamentals of Ecology
2. **David L. Jones:** Architecture and the Environment
3. **G E Thompson, F R Steiner:** Ecological Design and Planning
4. **A. Ambelu, B Deboch, D Lenjissa:** Ecology
5. **Peter D. Stiling:** Ecology- theories and Applications
6. **H.D. Kuma:** Modern Concepts of ecology

Year/ Semester	2 nd Year 1 st Semester		
Course Title	Design Studio III		
Course Code	ARC 0731 2132	Stream	3
No. of Credits	6.0	Course Hour	12.0 hours/week

COURSE RATIONALE:

This course is an introductory building design course for the architecture students as it teaches the students to implement architecture design methodologies and exercise multiple design project work through entire course

COURSE CONTENT:

Study of anthropometry and ergonomics; Study of relationship between man – space –form –function. Introduction to scale and proportion in architecture; Understanding of environmental features interacting in shaping the architecture. Learn how to

establish logic behind design decisions and exercise critical thinking to guide the spatial design.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Apply functional and ergonomic design process
CO 2	Formulate various spatial organizations and functional arrangements
CO 3	Translate conceptual sketches to design three-dimensional space
CO 4	Relate formal expressions with spatial sequences (indoor, semi-outdoor, outdoor, etc.) and their proportion
CO 5	Utilize site surroundings and site forces for generating architectural design

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3					2		
CO 2	3	3				2			
CO 3	2	3					2		2
CO 4	3	3					2		2
CO 5	2	3				3	2		

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Project, case study, workshop	Continuous assessment, Summative assessment
CO2	Project, self-learning	Continuous assessment, Summative assessment
CO3	Project, self-learning	Continuous assessment, Summative assessment
CO4	Project, self-learning	Continuous assessment, Summative assessment
CO5	Project, field demonstration	Continuous assessment, Summative assessment

Books Recommended

1. **De Chiara, J.:** Time Saver Standards for Building Types
2. **Pickard, Q. (ed):** The Architects Handbook
3. **Ching, Francis D.K.:** Architecture: Form, Space, & Order, 4th Edition, Wiley

Year/ Semester	2 nd Year 1 st Semester		
Course Title	Computer Aided Design		
Course Code	ARC 0211 2152	Stream	5

No. of Credits	2.0	Course Hour	4.0 hours/week
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COURSE RATIONALE:

This course intends to train students to apply digital tools for design drawings and presentation by developing skills in computer graphics software for image making, editing, post-processing and vector graphics illustration.

COURSE CONTENT:

Basic computer application; To understand and to use graphic software in Architectural presentation and design. Introduction to vector and raster graphics software (e.g., Photoshop, Illustrator, CorelDraw) and their application; Introduction to computer aided design, using suitable Computer Aided Design through Design projects, 2-D graphics and 3-D modeling with the help of software (e.g., AutoCAD, 3D studio Max, Sketch-up, Rhino); Rendering in different platforms (e.g., V-Ray, Lumion); Developing understanding of complex form, lighting conditions and material mapping in simulated environment.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	implement the technical aspects of computer graphics applications used in all visual formats.
CO 2	perform image editing and prepare presentation with graphic applications.
CO 3	visualize design ideas through illustrations with digital tools and digitally create, manipulate and edit 2D architectural drawings
CO 4	attain professionalism and communication skills through involvement of lab-based teamwork, sharing professional graphic design sample and competitive design projects
CO 5	apply computer-aided 3-D visualization as an efficient way of representation/ exhibition of the designed product.

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3							3	
CO 2								3	2
CO 3						2		3	2
CO 4				3					2
CO 5	2							3	3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture using projectors	Continuous assessment (CA), Summative assessment (SA)

CO2	Simulation/field demonstration	Presentation (Individual/group) /Viva voce, Summative assessment (SA)
CO3	Simulation/field demonstration	Presentation (Individual/group) /Viva voce, Summative assessment (SA)
CO4	Self-learning using reference book/research article/case study/other online materials	Assignment, Summative assessment (SA)
CO5	Simulation/field demonstration	Presentation (Individual/group) /Viva voce, Summative assessment (SA)

Books Recommended

1. Pradeep Mamgain: Autodesk 3Ds Max 2020: A Detailed Guide to Modeling, Texturing, Lighting, and Rendering, 2nd Edition.
2. Munir Hamad: AutoCAD 2020, Beginning and Intermediate.

Year/ Semester	2nd Year 1st Semester		
Course Title	Structure I - Basic Mechanics		
Course Code	CEE 0732 2111A	Stream	1
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

This course facilitates for gathering the basic knowledge about the effects of force on solid mass and to develop student's ability to visualize the distribution of forces on a solid body. This course will also offer knowledge of centroids, friction, moment of inertia and flexible chords. This knowledge is a prerequisite for many engineering courses offered in the subsequent semesters that capture the detailed analysis and design of engineering structures or structural components.

COURSE OBJECTIVES

- To introduce rigid body mechanics. Equivalent force systems: concepts of moment, couple, resultant. Equilibrium: free-body diagram; equations of equilibrium. Structural analysis: trusses by method of sections and method of integration,
- To develop skills to determine the location of the center of gravity and centroid for a system of discrete particles and a body of arbitrary shape,
- To develop the ability for determining the moment of inertia for areas of different geometric configurations, and
- To familiarize with the basic theory of Flexible cords and Flexible chords.

COURSE CONTENT

Statics of particles: This chapter is devoted to the study of forces contained in a single plane. The analysis of forces in three-dimensional space is also analyzed here.

Rigid bodies: Equivalent systems of forces. In this chapter, the effect of forces exerted on a rigid body, and how to replace a given system of forces with a simpler equivalent system is shown.

Centroids: Definitions, Center of gravity, Mass center and Centroid, Centroids of Areas, Principle of Symmetry, Integrating for Centroids (Arc of a Circle, Plane Triangle, Sector of Circle, Area without an axis of symmetry, Right circular cone), and Composite figures are discussed and determined in this chapter.

Moment of inertia of areas: Introduction, Rectangular moment of inertia, Polar moment of inertia, Radius of gyration, Determination of moment of inertia (Rectangle, Triangle, Circle), Transfer formula-parallel axes, Choice of the differential element, Composite areas, and Product of inertia are discussed and determined in this chapter.

Structural analysis: The forces in the members of a simple truss using the method of joints and the method of sections are determined in this chapter.

Fundamentals of friction: This chapter presents frictional force, limiting frictional force, coefficient of kinetic friction, laws of friction, angle of friction, and belt friction.

Fundamentals of flexible cords: This chapter shows how to solve and analyze the parabolic chord and the catenary.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Draw complete free-body diagrams and write appropriate equilibrium equations from the free-body diagram, including the support reactions on a structure
CO 2	Analyze various statically determinate systems such as beams, and trusses
CO 3	Locate the centroid of an area, center of mass, center of volume effectively
CO 4	Calculate the moment of inertia of areas for different geometric configurations
CO 5	Determine the coefficient of friction and the resultant tension of flexible chords

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3							2	
CO 2	3					3		2	
CO 3	3					3		2	
CO 4	3					3		2	
CO 5	3							2	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture with projector	Mid-term examination 1, Semester-end examination

CO2	Lecture, Self-learning	Assignment, Semester-end examination
CO3	Lecture with projector	Mid-term examination 2, Semester-end examination
CO4	Lecture with projector	Semester-end examination
CO5	Lecture with projector	Presentation, Semester-end examination

Books Recommended

1. Andy Ruina and Rudra Pratap, Introduction to Statics and Dynamics, Oxford University Press, 2011
2. F. P. Beer and E. R. Johnston, Vector Mechanics for Engineers, Vol I - Statics, Vol II – Dynamics, 9th Ed, Tata McGraw Hill, 2011.
3. H. Shames, Engineering Mechanics: Statics and dynamics, 4th Ed, PHI, 2002.
4. J. L. Meriam and L. G. Kraige, Engineering Mechanics, Vol I – Statics, Vol II –Dynamics, 6th Ed, John Wiley, 2008.
5. R. C. Hibbler, Engineering Mechanics: Principles of Statics and Dynamics, Pearson Press, 2006.
6. R.S. Khurmi, Engineering Mechanics, S.Chand and Co., 2001
7. V.M. Faires and S.D. Chambers, Analytic Mechanics, 3rd Ed, The Macmillan Company, 2001.

Second Year: 2nd Semester

Course No.	Course Title	Course Category	Hours/Week		Credits	Pre-req
			Theor y	La b		
Compulsory course						
ARC 0731 2221	Art and Architecture IV: South Asian Architecture	Core	2	0	2	-
ARC 0731 2222	Field Work I: Contemporary Architecture	Core	0	1w	2	-
ARC 0731 2232	Design Studio IV	Core	0	12	6	ARC 0731 2132
ARC 0712 2241	ED III: Visual and Sonic Environment	Core	2	0	2	-
ARC 0732 2261	Construction Materials and Methods	Core	2	0	2	-
CEE 0732 2211A	Structure II - Mechanics of Solids	General Education	2	0	2	-
Total Credits			8	12	16	
Optional course						

* Required credits of optional courses from **Set A** is **6.0 (3 courses)**, which should be completed by **2nd year**

Year/ Semester	2 nd Year 2 nd Semester		
Course Title	Art & Architecture IV: South Asian Architecture		
Course Code	ARC 0731 2221	Stream	2
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course intends to develop skills for cultural interpretation of built environment through literature survey and analysis of historic structures of Indian Sub-continent, as those are certainly the significant predecessors of modern-day architecture of Bangladesh.

COURSE CONTENT:

The course will include the basic essence of south Asian Architecture associating chronological development in the early age. Study of art and Architecture in the South Asia with special emphasis on the styles of the Vedic, Buddhist and Hindu periods up to the 17th century

Critical evaluation of the art and architecture under the Muslim rule in South Asia. The course will conclude with Sources of Muslim Architecture in South Asia Region; Imperial style; Sur or Pathan period; Mughal period. The emphasis will be laid on the medieval developments in continuation to its earlier roots.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to	
CO 1	distinguish key stylistic features and various architectural styles emerged from 800 - 1700AD in Indian sub-continent
CO 2	Analyze the architectural styles and its form, functions development in Indian sub-continent with relevance to structure, material culture and construction technique
CO 3	Critically evaluate the art and architecture of the Vedic, Buddhist, Hindu and Muslim periods in South Asia, including the ways in which they have evolved over time and been influenced by external discourses
CO 4	Explain the knowledge across time and context that how the indigenous and religious factors shaped the architecture
CO 5	Apply the knowledge to reconstruct history through social, political and the cultural diversity and complexity

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9

CO 1	2		3						
CO 2			3			3		2	
CO 3		2	3			3			
CO 4	2	2				3			
CO 5			3				3		

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	Lecture	Midterm Examination 1 Presentation (Individual/group), Semester-end Examination
CO2	Lecture	Midterm Examination 1, Semester-end Examination
CO3	Documentaries, Guest lectures	Semester-end Examination 2, Semester-end Examination
CO4	Lecture, Workshop	Semester-end Examination 2, Presentation (Individual/group), Semester-end Examination
CO5	Lecture	Semester-end Examination 2, Semester-end Examination

Books Recommended

1. Grover, S. (1980). *Buddhist and Hindu Architecture in India*.
2. Brown, P. (1965). *Indian Architecture (Buddhist and Hindu Period)*
3. Grover, S. (1996). *Islamic Architecture in India*.
4. Brown, P. (1965). *Indian Architecture (Islamic Period)*
5. Edwards, M. (1969). *Indian Temples and Palace*.
6. Koch, E. (1991). *Mughal Architecture*
7. Harle, J. C. (1994). *The art and architecture of the Indian subcontinent*

Year/ Semester	2 nd Year 2 nd Semester		
Course Title	Field Work I: Contemporary Architecture		
Course Code	ARC 0731 2222	Stream	2
No. of Credits	2.0	Course Hour	1 week

COURSE RATIONALE:

This course plays a supplementary role to the corresponding theory courses on modern and contemporary architecture in Bangladesh.

COURSE CONTENT:

Students will visit contemporary buildings in Bangladesh to acquire practical knowledge. Students have to submit a report based on their fieldwork experience.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to

CO 1	explain the development of Bengal architecture during the modern and contemporary periods from practical experience
CO 2	implement documentation and analytical process of historical /contemporary buildings.
CO 3	prepare verbal and visual presentations on contemporary Bengal architecture
CO 4	identify the contemporary construction techniques and building service design
CO 5	evaluate the contemporary architecture of Bengal with relation to socio-cultural, socio-political, environmental and ecological contexts

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1					2	2			
CO 2		2							
CO 3									3
CO 4		2				2			
CO 5		2				3			

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Workshop, Field visit	Assignment, Summative assessment
CO2	Documentaries, Guest lectures	Assignment, Summative assessment
CO3	Lecture	Presentation (Individual/group) /Viva voce, Summative assessment
CO4	Workshop, Field visit	Presentation (Individual/group) /Viva voce, Summative assessment
CO5	Workshop, Field visit	Presentation (Individual/group) /Viva voce, Summative assessment

Books Recommended

1. **Niklaus Graber, Andreas Ruby, Viviane Ehrensberger:** Bengal Stream- The Vibrant Architecture Scene of Bangladesh; CMV
2. **Saif Ul Haque, Raziul Ahsan, Kazi Khaleed Ashraf:** Pundra Nagar to Sherebangla Nagar; Architecture in Bangladesh; Chetana Sthapatya Unnayan Society

Year/ Semester	2nd Year 2nd Semester		
Course Title	Design Studio IV		
Course Code	ARC 0731 2232	Stream	3
No. of Credits	6.0	Course Hour	12.0 hours/week

COURSE RATIONALE

This course intends to teach the students climatic design aspects and passive control process through multiple design exercises.

COURSE OBJECTIVES

- To provide the knowledge of climate-responsive design and its application on architecture.
- To introduce the students with passive climatic controlling devices and methods.
- Applying the knowledge to determine the building orientation with respect to cardinal directions.
- Helping the students to understand context-based design and circulation design.

COURSE CONTENT

Case studies to comprehend the underlying relationship among function, form, space and technology in architecture. Analysis of function in order to formulate architectural program to generate site specific architectural form in three dimensions. Understanding of basic concepts of architectural forms and identification of spaces in term of exterior-interior; served-service; activity-circulation etc. Report writing based on literature survey and field studies. Design of buildings with simple functions. Emphasis will be given in how to address climate through design process. To understand and design building circulation by path-space relationship.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Develop the knowledge of site contexts and orientation with built-form and site planning
CO 2	explain energy-efficiency in environmentally integrated buildings and their properties
CO 3	apply passive heating and cooling, natural lighting and air ventilation inside the building
CO 4	articulate the façade design to achieve maximum comfort
CO 5	design circulation system for facilities buildings

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3							
CO 2		3						3	
CO 3	2	3						3	
CO 4	2	3							
CO 5	2	3							

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Project, case study, workshop	Group Presentation, Summative assessment
CO2	Project, case study, workshop	Group Presentation, Summative assessment
CO3	Project, self-learning	Continuous assessment, Summative assessment
CO4	Project, self-learning	Continuous assessment, Summative assessment
CO5	Project, field demonstration	Continuous assessment, Summative assessment

Books Recommended

1. **Joseph De Chiara:** Time Saver Standards for Building Types
2. **Quentin Pickard (ed):** The Architects Handbook
3. **O. H. Koenigsberger et al:** Manual of Tropical Housing and Building- Climate Design
4. **M.A. Muktadir:** Designing Building in the Tropics

Year/ Semester	2 nd Year 2 nd Semester		
Course Title	ED III: Visual and Sonic Environment		
Course Code	ARC 0712 2241	Stream	4
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

Light is an essential element of the environment to improve the visual experience and comfort. Studying the visual environment will increase the skill of students to admit natural lights and control unpleasant lighting in designed spaces. Acoustics in designed spaces is important to ensure an effective working environment. Studies on sound isolation, absorption, speech privacy and sound reinforcement will develop the capacity of students to design spaces with special attention to a comfortable sonic environment.

COURSE CONTENT:

Visual: Physical properties of the visual environment. Human responses to environmental vision factors. Non-visual effects of light - health and well-being. Natural light in buildings – sunlight, daylight and reflected light. Strategies for sidelighting, toplighting and atria. Prediction tools and techniques of supplementary and artificial lighting. Designing for daylight in the tropics. Lighting distribution strategies and indoor space quality. Lighting applications for office, museum, library and residential buildings.

Sonic: The concepts and problems related to architectural acoustics. Physical and biological properties of sound. The fundamentals of sound perception, absorption and isolation. The concept of noise and noise control. Criteria for noise control design and acoustical measurements. Principles of the acoustic design of rooms for lecture, music and multi-purpose use. Behaviour of sound in enCOsed spaces. Speech privacy:open

plan office, white noise, and background noise. Standards and codes: evaluation of acoustical performance.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to	
CO 1	develop strategies to improve spatial quality with natural light
CO 2	Apply controlled light in an indoor environment for visual comfort.
CO 3	design artificial indoor lighting for different tasks.
CO 4	design spaces with special attention to control sound through sound insulation and isolation of spaces with different sound levels.
CO 5	redirect, reinforce or distribute sound through architectural elements.

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3							
CO 2	2							3	
CO 3		2				3			
CO 4	2	3				2			
CO 5		2						3	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	Lecture	Midterm Examination 1, Semester-end Examination
CO2	Lecture, Documentaries	Midterm Examination 1, Semester-end Examination
CO3	Seminar /Tutorial, Guest Lectures, Field visit	Midterm Examination 2, Presentation (Individual/group), Semester-end Examination
CO4	Lecture, Workshop	Midterm Examination 2, Presentation (Individual/group) Semester-end Examination
CO5	Lecture	Midterm Examination 2, Semester-end Examination

Books Recommended

8. Egan, M. David and Olgyay, W. Victor (1983). *Architectural lighting*. McGraw Hill: New York, USA
9. Lechner, Norbert (2015). *Heating, Cooling, Lighting: Sustainable Design Methods for Architects*. John Wiley & Sons, Inc.: New Jersey, USA
10. Egan, M. David (1988). *Architectural acoustics*. McGraw Hill: New York, USA

11. Lechner, Norbert (2012). *Plumbing, Electricity, Acoustics: Sustainable Design Methods for Architects*. John Wiley & Sons, Inc.: New Jersey, USA
12. Koenigsberger, O. H. et al. (1973). *Climatic Design: Manual of tropical housing and building*. Orient Longman Private Limited: Chennai, India

Year/ Semester	2 nd Year 2 nd Semester		
Course Title	Construction Methods and Materials		
Course Code	ARC 0732 2261	Stream	6
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

The course aims to study the properties of traditional and contemporary building and finish material, their selection criteria and use of construction as well as their response to specific environment. This course is also designed for the introduction of basic principles of building construction, understanding the behavior of various components of buildings, general details of several types of construction system.

COURSE OBJECTIVES:

- To facilitate necessary knowledge about the properties, characteristics, strength, manufacture, processing and application of materials.
- Make the students understand the advantages and limitations of material according to types of building.
- To expose the students to the construction methods of several components of a structure such as foundation, brick work, floor, stair, door and windows etc.
- To enable the students to learn detailing of both structural and finishing works of a construction.
- Getting idea about the behavior of different elements of construction systems in relation to properties of materials.
- To make students familiar with detailed illustrations and specifications related to construction details and techniques.

COURSE CONTENT:

Construction materials: Introduction to different types of building and finish materials. Classification, properties, manufacturing, preparation, usage, application and different technical aspects of brick, cement, sand, mortar and plaster, concrete, steel, timber, etc. Classification of different types to finish materials. Selection, properties, preparation, application and maintenance of glass, plastic, tiles, roofing insulation, white/ color washing, paints, varnishes, distempers etc.

Construction methods: Introduction to construction surveying and layout- principles and techniques of physical surveys. Chain survey, traverse survey, plane table survey, levels and levelling, etc. Foundations, methods of determining bearing capacity of soil, types of foundations, their methods and techniques of construction. Brick masonry works, different types of brick bond and their procedure, Partition walls and cavity walls, Damp proofing and water proofing, their method and treatment. Lintels and arches, their construction technique. Stairs- classification depending on geometry

and material, technical aspects and construction technique of different stairs. Door-window and their classification. Types of floors and their construction method. Carpentry joints, Classification and construction technique of roof. Plastering and pointing system.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to	
CO 1	develop practical and advanced construction knowledge required to begin professional career in architectural practice and related fields
CO 2	recognize different types of construction methods of building components, different structural systems, conditions for the stability of a structure, application methods of different type of protective components and finish materials
CO 3	Compare the quality assurance measures and testing procedures related to material, workmanship and performance for the specific topic
CO 4	Apply the knowledge of context-based modern technology in construction, which can be helpful for architectural-technology based further research
CO 5	identify the format and procedures to prepare working drawings for building construction work

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3						3	
CO 2	2	2						3	
CO 3	2							3	
CO 4		2	3					3	
CO 5	2							3	2

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture, digital presentation	Semester-end examination
CO2	Lecture, digital presentation	Mid-term examination 1, Semester-end examination
CO3	Lecture, digital presentation, Self-learning	Class evaluation, Mid-term examination 1, Semester-end examination

CO4	Lecture, digital presentation	Mid-term examination 2, Semester-end examination
CO5	Lecture, digital presentation	Mid-term examination 2, Class evaluation, Semester-end examination

Books Recommended

1. **Aziz, M. A.:** Engineering Materials
2. **Sushil Kumar:** Building Construction.
3. **Smith, R. C.:** Materials of Construction
4. **Anders, C. K.:** Manufactures Manuals and Brochures
5. **Francis D. K. Ching:** Building Construction Illustrated, Wiley (2014)

Year/ Semester	2nd Year 2nd Semester		
Course Title	Structure II- Mechanics of Solids		
Course Code	CEE 0732 2211A	Stream	1
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

This course will develop basic knowledge and use the relevant physical properties and fundamental laws governing materials and structures' behavior. Students will learn how to solve various problems of interest in Structural Analysis. In this course, the emphasis is on the physical understanding of mechanisms underlying materials' mechanical and structural behavior.

COURSE OBJECTIVES

- To understand the concept of stress and strain in the members subjected to tension and compression force
- Help students conceptualize solid mechanics' fundamental theories to calculate forces, deflections, moments, stresses, and strains in engineering structures
- To introduce the shear force and bending moment diagrams to properly analyze statically determinate beams and frames
- To make them able to analyze indeterminate beam and buckling of columns.

COURSE CONTENT

Fundamental concepts of stress and strain: This chapter presents a review of the fundamental concepts of stress and strain. A brief discussion on axial stress, axial strain, shearing stress, shearing strain, and bearing stress, bearing strain. Stress calculation of thin-walled pressure vessels.

Mechanical properties of materials: This chapter deals with analyzing mechanical properties of materials, stress-strain diagram, Hook's law for axial and shearing deformation, and Poisson's ratio. Calculate the stress and strain of different members: Calculate stresses and strains in members subjected to tension, compression, shear, and temperature changes. Calculate stresses and strains of statically indeterminate members.

Joints- welded and riveted: Introduction, Types of riveted and welded joints, Strength of a simple Lap Joint: Bearing type connection, Strength of a complex Butt joint: Bearing type connection, Friction type connection, welded connection.

Shear force and bending moment diagrams for statically determinate beams and frames: Definition, determination of Shear force and bending moment for determinate beams and frames, Relation among load, shear and moment, Shear force, and bending moment diagram.

Flexural and shearing stresses in beams; Principal stresses: Introduction, Derivation of flexure formula, Economic section, Shearing stress at a loaded beam, Distribution of shearing stress, principal stress and strain.

Slopes and deflections in statically determinate beams: Introduction, Double integration method, Theorem of area moment method, conjugate beam method.

Indeterminate beam analyses: Introduction to statically indeterminate structure, Analysis of statically indeterminate beam using moment area and conjugate beam method.

Buckling of columns: Introduction, Types of end conditions of the column, Euler's formula to columns with different end conditions, Rankin's formula for long columns, and effect of eccentric loading on the Rankin's and Euler's formula for long columns are also discussed here.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to	
CO 1	Apply the theory of solid mechanics to analyze a wide variety of structural members subjected to tension, compression, shear, and temperature changes to solve real world problems
CO 2	Apply the concepts and methodologies of materials' mechanical properties to solve practical problems related to civil engineering structures
CO 3	Design riveted joints, as well as welded joints
CO 4	Present graphical variation of shear force and bending moment diagrams along the member's axis could be shown.

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2					2		3	
CO 2	2					2		3	
CO 3	2					2		3	
CO 4	2					2		3	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture with projector, Problem-based Learning	Mid-term examination 1, Semester-end examination
CO2	Lecture with projector, Problem-based Learning	Mid-term examination 1, Semester-end examination

CO3	Lecture with projector, Self-learning, Problem-based Learning	Class evaluation, Mid-term examination 2, Semester-end examination
CO4	Lecture, Self-learning, digital presentation	Mid-term examination 2, Class evaluation, Semester-end examination

Books Recommended

1. Pytel, A. and Singer, F.L. (1987), Strength of materials. Harper and Row, publishers, Inc. ISBN 0-0604531343
2. Popov, E.P. and Balan, T.A. (1998), Engineering mechanics of solids. Pearson Education, Inc. ISBN 81-7808-535-6
3. Khurmi, R.S. (1968), Strength of materials. S. Chad and Company Ltd. ISBN 81-219-2822-2
4. Beer, F.P., Johnston, E.R., Dewolf, J.T. and Mazurek, D.F. (2012) Mechanics of materials. McGraw-Hill Companies, Inc. ISBN 978-0-07-338028-5
5. Hibbler, R.C. (2012) Structural Analysis. Pearson Prentice Hall. ISBN-13: 978-0-13-257053-4

Third Year: 1st Semester						
Course No.	Course Title	Course Category	Hours/Week			Pre-req
			Theory	Lab	Credits	
Compulsory course						
ARC 0731 3181	Introduction to Spatial Planning	Core	2	0	2	-
ARC 0731 3132	Design Studio V	Core	0	12	6	ARC 0731 2232
ARC 0732 3152	Working drawing	Core	0	4	2	-
CEE 0732 3111A	Structure III – Building Structures I	General Education	2	0	2	-

MEE 0715 3113A	Building Services I- Mechanical	General Education	2	0	2	-
TotalCredits			6	16	14	

Optional course

* Required credits of optional courses from **Set B** is **4.0 (2 courses)**, which should be completed by **3rd year**

Year/ Semester	3rd Year 1st Semester		
Course Title	Introduction to Spatial Planning		
Course Code	ARC 0731 3181	Stream	8
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

The course aims to introduce the theory, concept and practices in physical planning through review and examination of city structures since the beginning of the earliest human settlements to the contemporary

COURSE CONTENT:

Definition and scope of planning, types of spatial planning. A short history of planning: Origin and evolution of settlements and cities, new thoughts and ideas in planning after the industrial revolution. The spatial structure of cities: concentric zone theory, sector theory, multiple nuclei theory. Planning Governance: Legislation framework, tools, instruments. Spatial planning methods: Preplanning, planning and implementation. Theories of zoning. Stakeholder engagement.

Planning culture of Bangladesh; History of town planning in Bangladesh; Urban planning system and local level planning; Planning law and governance; Problem and issues of land management system in Bangladesh. Concept of contemporary planning tools and process: Community Planning, Public-Private Partnership, Built Operate Transfer, Transit-Oriented Development.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to	
CO 1	distinguish various human settlements and identify their planning process
CO 2	Explain various socio-cultural, political, environmental and technological impacts to the growth of the cities throughout the globe
CO 3	Apply concepts in urban history and theory through both verbal and written presentations
CO 4	identify the limitations of planning and land management system in Bangladesh
CO 5	apply critical thinking in a range of corresponding fields of history and theory in architecture and urban planning

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALS KILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	2							
CO 2		2				3			
CO 3		2							3
CO 4	2	2		3					
CO 5		2				3		3	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture with projector	Mid-term examination 1, Semester-end examination
CO2	Lecture with projector	Mid-term examination 1, Semester-end examination
CO3	Lecture with projector	Class evaluation, Mid-term examination 2, Semester-end examination
CO4	Lecture with projector	Mid-term examination 2, Semester-end examination
CO5	Lecture with projector	Assignment, Mid-term examination 2, Semester-end examination

Books Recommended

Bardo, J.W. and Hartman, J.J., 1982: Urban Sociology – A Systematic Introduction, F.E. Peacock Publishers, Inc., New York

Bourne, L.S. (ed.), 1971: Internal Structure of the City – Readings on Space and Environment, Oxford University Press, Inc., New York

Carter, H., 1975: The Study of Urban Geography, Edward Arnold Ltd., London

Doxiadis, C.A., 1968: Ekistics – An Introduction to the Science of Human Settlements, Hutchinson and Co. (Publishers) Ltd., London

Elahi, K.M. and Rumi, S.R.A. (eds.), 2005: Nogor Bhugol – Shamprotik Dhara, Delta Books, Dhaka

Gallion, A.B. and Eisner, S., 2000: The Urban Pattern – City Planning and Design, CBS Publishers and Distributors, New Delhi

Hall, P., 1992: Urban and Regional Planning (third edition), Routledge, London

Rahman, G., 2008: Town Planning and the Political Culture of Bangladesh, A.H. Development Publishing House, Dhaka

Sultana, S., 1993: Rural Settlements in Bangladesh – Spatial Pattern and Development, Graphosman, Dhaka

Year/ Semester	3 rd Year 1 st Semester
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Course Title	Design Studio V		
Course Code	ARC 0731 3132	Stream	3
No. of Credits	6.0	Course Hour	12.0 hours/week

COURSE RATIONALE:

Students will study, understand and prepare presentations on different structural systems with relevant case studies. Students will also study and prepare reports on the fundamental services in a building such as mechanical, plumbing, and electrical installations.

This studio course will exercise students on exploring the detailed characteristics of different kinds of structural systems, such as post-lintel, post-slab, wall-slab, etc. in building design. The studio course will also emphasize on multi-functional integrated design approach including considerations of structural systems with detail construction and techniques.

COURSE CONTENT:

The principles and process behind generating architectural forms. Understanding the relationship of form and space to accentuate experiential qualities in architecture. Introduction of the basic relationship between structural logic and formal expression. Influence of technology in function, form, and space. Design exercises will focus on understanding the structural components of a building.

COURSE LEARNING OUTCOMES:

<i>After successful completion of the course, students will be able to</i>	
CO 1	Implement architectural design process with different structural systems
CO 2	Develop a proper structural system for different building types (residential, commercial, mixed-use, multistoried, factory, etc.)
CO 3	demonstrate and explain structural understanding through visual presentation (graphical and physical model making)
CO 4	design building service systems for facilities buildings (electrical, mechanical, plumbing, etc.)
CO 5	Generate or formulate an economical and rational design for low- and high-density complex buildings.

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALS KILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	2				3			
CO 2		2				3		3	
CO 3		2							3
CO 4		2			3			3	
CO 5		2	3			3		3	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	Assignment, research, case-study	Assignment, Summative Assessment
CO2	Project, Case-study	Assignment, Presentation (Individual/Group), Summative Assessment
CO3	Project, field visit	Presentation (Individual/Group), Summative Assessment
CO4	Assignment, research, case-study	Assignment, Summative Assessment
CO5	Project	Continuous Assessment, Individual Presentation, Summative Assessment

Books Recommended

- 1) **Angus J. Macdonald**; Structure and Architecture
- 2) **Mario G. Salvadori**; Structure in Architecture: The Building of Buildings
- 3) **Francis D.K.Ching**; Building Structures Illustrated: Patterns, Systems, and Design.
- 4) **Andrew Charleson**; Structure as Architecture: A Source Book for Architects and Structural Engineers
- 5) **J. E. Gordon**; Structures: Or Why Things Don't Fall Down
- 6) **Sigrid Adriaenssens and Philippe Block**; Shell Structures for Architecture: Form Finding and Optimization
- 7) **Asterios Agkathidis**; Biomorphic Structures: Architecture Inspired by Nature

Year/ Semester	3 rd Year 1 st Semester		
Course Title	Working Drawing		
Course Code	ARC 0732 3152	Stream	5
No. of Credits	2.0	Course Hour	4.0 hours/week

COURSE RATIONALE

This course will ensure students to make ready the necessary detail drawings for civil construction of a building.

COURSE OBJECTIVES

- To motivate and to prepare students more careful about building design.
- To make students capable to know the detail treatment of a building.
- To inspire student to design in a module for better spatial, structural, material-based design.
- To make students capable to prepare all necessary detail and easily readable drawing for civil construction works of a building.
- To be able to read structural, electrical, plumbing and fire safety drawings.
- To develop a complete book containing civil construction drawing.

COURSE CONTENT

Design and drawings specifying materials and instructions for construction, Understanding construction process and techniques. The construction drawing will include preparation of working and detail drawings of all building components. Details of drainage, plumbing features, damp-proofing and insulation. Bathroom and kitchen layouts. Application of building codes and by-laws.

Design and drawings specifying materials and instructions to manufacturers of building elements, components, fittings and fixtures which are industrially produced understanding manufacturing process to generate creative design. The production drawing will include designing with variety of materials and manufacturing process of a range of building components like door, window, fitting and fixture of functional and decorative nature.

COURSE LEARNING OUTCOMES:

<i>After successful completion of the course, students will be able to</i>	
CO 1	create a professional architectural presentation drawing
CO 2	Draw detail architectural working, structural, electrical, plumbing and fire safety drawings, as-built drawings of building projects
CO 3	Illustrate the detail architectural working drawing for civil construction
CO 4	formulate a module for working to reduce construction cost
CO 5	Illustrate complete working drawing books in a practical and professional manner

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2								3
CO 2	2	2			3				
CO 3	2				3				3
CO 4	2		3						
CO 5	2						2		3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	Case-study, Project	Assignment, Summative Assessment

CO2	Case-study, field visit	Assignment, Presentation (Individual/Group), Summative Assessment
CO3	Project, field visit	Presentation (Individual/Group), Summative Assessment
CO4	Project	Continuous Assessment, Summative Assessment
CO5	Project	Continuous Assessment, Summative Assessment

Books Recommended

1. **Ralph W. Liebing:** Architectural Working Drawings
2. **Annette Spiro (Ed) & David Ganzoni (Ed):** The Working Drawing: The Architect's Tool
3. **Ralph W. Liebing:** Handbook of Detailing: The Graphic Anatomy of Construction

Year/ Semester	3rd Year 1st Semester		
Course Title	Structure III – Building Structures I		
Course Code	CEE 0732 3111A	Stream	1
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

This course familiarizes students to the vertical load calculation for the components of a frame building. It also introduces students with deferent types of structures such as truss, arch, dome, shell, folded plate and shear wall. This course also deals with the fundamental design process of RCC and steel structures.

COURSE OBJECTIVES

- To introduce the vertical load calculation for the components of a building.
- Acquaint approximate analysis of multistoried buildings for vertical and lateral loads.
- To introduce students with deferent types of structures such as truss, arch, dome, shell, folded plate and shear wall.
- To make familiar with the knowledge of analysis and design of RCC and steel structures.

COURSE CONTENT

Vertical load calculation for the components of a building: Calculation of the load of wall, slab, beam, column, live load.

Approximate analysis of multistoried buildings for vertical and lateral loads: Portal method and cantilever method.

Introducing deferent types of structures: Truss, arch, dome, shell, folded plate, shear wall, etc.

Fundamental design process of RCC structures: Design of beam and slab in WSD and USD considering flexure, shear, torsion and deflection.

Fundamentals and design process of steel structures: Design of tension member, beam and column in ASD and LRFD.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to	
CO 1	Analyze horizontal and vertical loads on building
CO 2	Identify the load of different components of building
CO 3	Design and analyze RCC beam and slab
CO 4	Apply critical understanding of the theory and principles of design and solution of basic elements of steel structures

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2					2		3	
CO 2	2					2		3	
CO 3	2					2		3	
CO 4	2					2		3	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture, Text book, Problem-based learning	Mid-term examination 1, Semester-end examination
CO2	Lecture, Text book	Mid-term examination 1, Semester-end examination
CO3	Lecture, Text book, Problem-based learning	Mid-term examination 2, Semester-end examination
CO4	Lecture, Text book, Problem-based learning	Mid-term examination 2, Class evaluation, Semester-end examination

Books Recommended

- 1) Khurmi, R. S. (2013), Strength of Material. S. Chand Ltd. ISBN-13: 978-81-219-0533-6
- 2) Pytel A., and Singer F. L. (1987), Strength of Materials. 4th Ed., Harpers Collins College Div. ISBN-13: 978-0-06-045313-8
- 3) Arthur H. Nilson, David Darwin, Charles W. Dolan (2010), Design of Concrete Structures. 14th Ed., McGraw Hill. ISBN-007-123260-5
- 4) George Winter, Leonard Church, Charles Edward O'Rourke, Arthur H. Nilson (1964), Design of Concrete Structures. 7th Ed., McGraw Hill. ISBN-007-123260-5
- 5) M. Nadim Hassoun, Akthem Al-Manaseer (2008), Structural Concrete. 4th Ed., John Wiley and Sons, Inc. ISBN- 978-0-470-17094-6.

- 6) Housing and Building Research Institute, Bangladesh (2006), Bangladesh National Building Code (BNBC- 2006)
- 7) American Concrete Institute, ACI Codes, 2003

Year/ Semester	3 rd Year 1 st Semester		
Course Title	Building Services I- Mechanical		
Course Code	MEE 0715 3113A	Stream	1
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

The intent of the subject is to make the students learn about the advanced mechanical services with special reference to lighting and acoustics.

COURSE OBJECTIVES

- To understand the basic concept of thermodynamics so that students are able to understand psychrometry and air conditioning systems.
- To introduce the fundamental principles and different methods of air conditioning.
- To make student able to apply psychrometric charts in calculating psychrometric properties.
- To make students understand the basic air conditioning processes on psychrometric charts, calculate cooling load for its applications in comfort and industrial air conditioning.
- To introduce various equipment-operating principles, operating and safety controls employed in air conditioning systems.
- Getting idea about fire-fighting methods in application of building service.
- To familiarize different vertical transportation system employed in building structures.

COURSE CONTENT

Thermodynamics, Introduction: Definition and applications of thermodynamics, Basic concept and definition: Systems and control volume, state and equilibrium, process and cycles, thermodynamic properties, forms of energies, Laws of thermodynamics.

Psychrometry: Definition, psychrometric properties, psychrometric chart, and its application.

Air-conditioning: importance application of air-conditioning, air-conditioning systems, basic refrigeration cycle: Basic concept, vapor compression cycle for air-conditioning, air-conditioning equipment, cooling load calculation;

Duct system design: Concept, importance and objectives of duct system design, air handling and distribution, different types of supply and return duct systems, duct design methods;

Fire hazards, fire- tetrahedron, different classes of fire and corresponding extinguishers, sprinkler system.

Vertical Transportation: Types of elevators, Determination of size and quality of elevators, Incoming and outgoing traffic handling, Escalators and moving ramps.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to	
CO 1	Explain fundamental laws and concepts of thermodynamics,
CO 2	Design duct systems for the application of air handling in building systems.
CO 3	Calculate cooling load for air conditioning systems used for various condition.
CO 4	Explain different vertical transport systems for the application in building service.
CO 5	Design fire-fighting system in multi-storied buildings

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2				2			3	
CO 2	2				2			3	
CO 3	2				2			3	
CO 4	2				2			3	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture, Text book	Mid-term examination 1, Semester-end examination
CO2	Lecture, Text book, Problem-based learning	Mid-term examination 1, Semester-end examination
CO3	Lecture, Text book, Problem-based learning	Mid-term examination 2, Semester-end examination
CO4	Lecture, Text book, Project-based learning	Mid-term examination 2, Class evaluation, Semester-end examination

Books Recommended

- Grondzik, Kwok, Stein and Reynolds. *Mechanical and Electrical Equipment for Buildings* 11th Edition (Basic Books. 2009)
- Hundy, Trott & Welch (2008), *Refrigeration & Air-conditioning*, Butterworth-Heinemann
- Ameen (2006), *Refrigeration & Air-conditioning*, Prentice Hall

Third Year: 2nd Semester

Course No.	Course Title	Course Category	Hours/Week		Credits	Pre-req
			Theory	Lab		
Compulsory course						
ARC 0212 3271	Interior Design	Core	2	0	2	-
ARC 0731 3281	Urban Design	Core	2	0	2	-
ARC 0731 3232	Design Studio VI	Core	0	12	6	ARC0731 3132
ARC 0732 3262	Field Work III: Building Construction	General Education	0	2	2	-
EEE 0713 3213A	Building Services II - Electrical	General Education	2	0	2	-
TotalCredits			8	12	14	
Optional course						
* Required credits of optional courses from Set B is 4.0 (2 courses) , which should be completed by 3rd year						

Year/ Semester	3 rd Year 2 nd Semester		
Course Title	Interior Design		
Course Code	ARC 0212 3271	Stream	7
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

Interior design is more than an aesthetic. It is about to find the best solution for interior environment considering clients health, safety, comfort, aesthetic and functional feasibility. As integrated part of architecture interior design also plays vital role for involving human and built space.

COURSE OBJECTIVES:

- To help students to conceptualize basic theories of interior design and find out the scope of design.
- Make the students understand the vocabulary and principles of interior design.
- To help them to realize the environmental entities of interior space that plays significant role in interior design.
- To develop professional skills to work in a team.
- Helping the students to understand and maintain the professional ethics and design code during working process.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Explain interior design vocabulary and practice to develop the professional skills
CO 2	Apply the design principles in real interior projects

CO 3 Analyze color, texture, furnishing, acoustics and material of interior elements to understand the contextual idea of interior space

CO 4 Apply the interior design process for conducting research work and professional field as well

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2								
CO 2	2	2							
CO 3	2	2							
CO 4	2		3			2			

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Mid-term examination 1, Semester-end examination
CO2	Simulation/field demonstration, Project-based learning	Mid-term examination 1, Assignment, Semester-end examination
CO3	Lecture	Mid-term examination 2, Semester-end examination
CO4	Lecture, Workshop	Mid-term examination 2, Assignment, Semester-end examination

Books Recommended

- John E. Flynn et al: **Architectural Interior Systems; Lighting, Acoustics, Air**
- Francis D. K. Ching, Corky Binggeli: **Interior Design Illustrated**
- Joseph De Chiara, Julius Panero, and Martin Zelnik: **Time-Saver Standards for Interior Design and Space Planning**
- Flynn J: **Conditioning**
- Ladau R: **Color in Interior Design and Architecture**

Year/ Semester	3rd year 2nd semester		
Course Title	Urban Design		
Course Code	ARC 0731 3281	Stream	8
No. of Credits	2.0	Course Hour	2 hours/week

COURSE RATIONALE:

The course aims to familiarize students with the theories that explain the formation of cities and urban spaces. Additionally, it provides an opportunity to explore the principles that are useful in practicing urban design. Furthermore, the course allows architecture students to comprehend cities on different scales.

COURSE CONTENT:

Introduction to urban design covers its aims, scope, and objectives. Transformation and evolution of cities and urban spaces in different times of history. The course introduces elements and domains of urban design, perception, and meaning of urban spaces such as scale, form, order, and time-space relationships.

The course will cover the principles and techniques of urban design, including the responsive environment. This involves aspects such as connectivity, permeability, variety, legibility, appropriateness, richness, personalization, and image of the city. The course will also introduce the urban design process and analysis that is commonly used in professional practice. Additionally, it will provide insights into contemporary practices and trends, as well as new urbanism.

COURSE LEARNING OUTCOMES:

<i>After successful completion of the course, students will be able to</i>	
CO 1	Understand the Fundamentals of Urban Design: Demonstrate a solid understanding of the aims, scope, and objectives of urban design, including its role in shaping cities and urban spaces across different historical periods.
CO 2	Analyze Urban Spaces: Critically analyze the transformation and evolution of cities, identifying key elements such as scale, form, order, and the relationship between time and space in urban environments.
CO 3	Apply Urban Design Elements: Apply core elements and domains of urban design, including perception and meaning, to assess and improve the functionality and aesthetics of urban spaces.
CO 4	Utilize Principles and Techniques: Employ urban design principles such as connectivity, permeability, variety, legibility, appropriateness, and personalization to create responsive and user-centered environments.
CO 5	Conduct Urban Design Analysis: Use professional techniques for urban design analysis, including site evaluation and contextual assessment, to develop informed design strategies.

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2								
CO 2		2							
CO 3						3			
CO 4	2		3	3		2		3	
CO 5						2		3	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture, digital presentation	Mid-semester examination 1, Semester end examination
CO2	Lecture, digital presentation	Mid-semester examination 1, Semester end examination
CO3	Lecture, digital presentation	Quiz, Assignment, Mid-semester examination 2, Semester end examination
CO4	Lecture, digital presentation	Mid-semester examination 2, Semester end examination
CO5	Lecture, digital presentation	Assignment, Semester end examination

Books Recommended

1. **Spreiregen, P. D:** Urban Design: The Architecture of Towns and Cities
2. **Howard, S.E:** Garden Cities of Tomorrow
3. **Hou, J., Spencer, B., Way, T. and Yocom, K. eds.:** Now Urbanism: The future city is here. Routledge
4. **Mostafavi, M. and Doherty, G. eds.:** Ecological urbanism. Lars Müller Publishers
5. **Cho, I.S., Heng, C.K. and Trivic, Z.:** Re-framing urban space: Urban design for emerging hybrid and high-density conditions. Routledge
6. **Hall, P.:** Cities of tomorrow: an intellectual history of urban planning and design since 1880. John Wiley & Sons
7. **Rowe, C. and Koetter, F.:** Collage city. MIT press
8. **Utopia, E.:** Architectural Provocations 1956-76. New York, NY: Prestel Pub
9. **Lynch, K.:** Reconsidering the image of the city. Springer, Boston, MA
10. **Routledge;** Responsive environments: A manual for designers

Year/ Semester	3 rd Year 2 nd Semester		
Course Title	Design Studio VI		
Course Code	ARC 0731 3232	Stream	3
No. of Credits	6.0	Course Hour	12.0hours/week

COURSE RATIONALE:

Aim of this course is to understand structures and services in the design of a complex building in the urban context with emphasis on integrated design approach to achieve high building performance considering highest usability and aesthetics.

COURSE CONTENT:

Preparing and presenting literature and site survey reports addressing design issues of high-rise building and public building. There will be two projects. Project one will cover designing public buildings with multiple built form and functional complexity. Project two will be designing tall building (skyscraper) with advanced design features. Comprehensive design exercise to understand the underlying complexity of building forms by exploring the characteristics of materials, structural systems, construction methods, building services and environmental requirements in relation to their creative formal expression. The designs should be aesthetically pleasing, responsive to the surroundings and achieve realistic detailing to make it buildable.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Demonstrate understanding of complex structural systems and fit the functional needs with the building structure
CO 2	Develop complex design ideas through the characteristics of structural systems
CO 3	Develop systems to accommodate complex functions and building safety in multiple built forms and multilayer structure
CO 4	Apply design skills to achieve highest usability, iconic character and response to the city context
CO 5	Utilize structure and building construction to appraise spatial order and architectural expression

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3						3	
CO 2	2	3				3			
CO 3	2	3				3		3	
CO 4	2	3				3		3	
CO 5	2	3						3	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Project, case study, workshop	Continuous assessment, Summative assessment
CO2	Project, case study, self-learning	Continuous assessment, Summative assessment
CO3	Project, case study, self-learning	Continuous assessment, Summative assessment
CO4	Project, case study, self-learning	Continuous assessment, Summative assessment

CO5	Project, case study, self-learning	Continuous assessment, Summative assessment
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Books Recommended

1. **De. Chiara & Callender:** Time Saver Standards for Building types
2. **Campi. ETH Zurich:** Skyscrapers
3. **Robert M:** Planning & Design of Airports
4. **Francis D.K.Ching:** Building Structures Illustrated: Patterns, Systems, and Design.
5. **J. E. Gordon:** Structures: Or Why Things Don't Fall Down

Year/ Semester	3rd year 2nd semester		
Course Title	Field Work III: Building Construction		
Course Code	ARC 0732 3262	Stream	1
No. of Credits	2.0	Course Hour	4.0 hours/week

COURSE RATIONALE

The intent of the subject is to give students a hands-on experience of building construction process.

COURSE OBJECTIVES

- To understand the various stages of the building construction process through practical experience.
- To develop skills in site management, safety protocols, and construction techniques.
- To learn how to interpret construction drawings and specifications on-site.
- To foster teamwork and communication skills in a construction environment.

COURSE CONTENT

This course provides hands-on experience in the building construction process, allowing students to apply theoretical knowledge in real-world scenarios. Students will engage in various stages of construction, from site preparation to project completion, gaining practical skills and insights into industry practices. Students will take part in field trips with teacher to visit ongoing construction sites.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	Understand various phases of construction process
CO 2	Recognize details of construction techniques, material applications.
CO 3	Evaluate construction quality and identify site challenges
CO 4	Communicate with construction workers on site

Year/ Semester	3rd year 2nd semester
Course Title	Building Services II - Electrical

Course Code	EEE 0713 3213A	Stream	1
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

The intent of the subject is to make the students learn about the advanced electrical services with special reference to lighting and acoustics.

COURSE OBJECTIVES

- Help the students understand basic theories in conception of electrical units and standards.
- Make the students understand electrical drawing system, layout and estimation.
- To develop skills to design illumination and lighting System.

COURSE CONTENT

Electrical units and standards, Ohm's law, KVL and KCL, Basics of AC circuits, Introduction to electrical wiring, wiring system design, Fitting and Fixture layout, Conduit layout, drafting, and estimation. Design for illumination and lighting. Design for intercom, public address systems, telephone system and LAN. Design of security systems including CCTV, fire Alarm, smoke detector, burglar alarm, and sprinkler system. A design problem on a single/multi-storied building/structure.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to

CO 1	Draw electrical wiring drawings
CO 2	Distinguish different electrical system ad instruments
CO 3	Illustrate simple electrical layout of single/ multi-storied structures
CO 4	Place lighting fixtures appropriately in a building

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2								2
CO 2	2	2							
CO 3	2	2			2				
CO 4	2	2							

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture, Problem-based learning	Mid-semester examination 1, Semester end examination

CO2	Lecture, self-learning	assignment, Mid-semester examination 1, Semester end examination
CO3	Lecture, Problem-based learning	assignment, Mid-semester examination 2, Semester end examination
CO4	Lecture, self-learning, Problem-based learning	Presentation (Group/Individual) Mid-semester examination 2, Semester end examination

Books Recommended

1. **S.L. Uppal and G.C.Grag:** Electrical Wiring Estimating and Costing
2. Lechner, Norbert (2012). **Plumbing, Electricity and Acoustics: Sustainable Design Methods for Architecture.** John Wiley & Sons, Inc., Hoboken, New Jersey.

Fourth Year: 1st Semester

Course No.	Course Title	Course Category	Hours/Week			Pre-req
			Theory	Lab	Credits	
Compulsory course						
ARC 0731 4121	Art and Architecture V: Society and Architecture of Bengal	Core	2	0	2	-
ARC 0731 4132	Design Studio VII	Core	0	12	6	ARC0731 3232
ARC 0731 4171	Landscape Design	Core	2	0	2	-
ARC 0212 4172	Interior Design Studio	Core	0	4	2	-
ARC 0731 4181	Housing	Core	2	0	2	-
ARC 0222 4122	Field Work II: Architecture of Bengal	Core	0	1w	2	-
TotalCredits			6	16	16	
Optional course						
* Required credits of optional courses from Set B is 8.0 (4 courses), which should be completed by 4 th year						

Year/ Semester	4 th Year 1 st Semester		
Course Title	Art and Architecture V: Society and Architecture of Bengal		
Course Code	ARC 0731 4121	Stream	2
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course will explore the historic structure and philosophical aspects of Bengal architecture. This course also intends to develop skills for context based cultural interpretation of built environment through survey and analysis of historic structures of Bengal.

COURSE OBJECTIVES

- Helping the students to understand the chronological changes in the society of Bengal and their belief.
- To facilitate necessary knowledge about the cultural history of human development in different areas of this region.
- To develop skills to study cultural force on architectural development through Bengal focusing on religious architecture.
- To provide the knowledge of construction techniques, structural evolution, material cultural through different age of Bengal architecture with emphasis on architecture and their planning.
- Acquaint students with the influence of Bengal heritage on development art and architecture in Modern era and their practices.

COURSE CONTENT

Study of society, culture and Architecture of Bengal through the ages: Mauryan, Pala, Sena, Sultanate and Mughal periods. Language, custom, art and literature, and their relevance to Architecture and planning.

Study of society, culture and Architecture of Bengal through the ages: Colonial and post-colonial Bengal. Language, custom, art and literature, and their relevance to Architecture and planning. Contemporary architecture of Bangladesh – analyzing the roots and global forces.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	distinguish between various architectural styles emerged from Buddhist architecture to Muslim Architecture in Bengal
CO 2	Critically analyze the different phases of development in architecture of Bengal with relevance to their structure, material culture and construction technique
CO 3	build a chronological framework for further research in the development of Society of Bengal in the medium of Secular and Religious Architecture
CO 4	identify the impact of religious philosophy along with political ideology on society and architectural of Bengal
CO 5	formulate the theories in the history of Architecture of Bengal with relation to socio-cultural, socio-political, environmental and ecological contexts

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3							
CO 2		2				3			

CO 3		2	3						
CO 4		2					3		
CO 5			3		2	3			

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	Lecture	Midterm Examination 1, Semester-end Examination
CO2	Lecture, Documentaries	Midterm Examination 1, Quiz, Semester-end Examination
CO3	Seminar, Guest lectures	Midterm Examination 2, Presentation (Individual/Group), Semester-end Examination
CO4	Lecture, Workshop, Guest lectures	Midterm Examination 2, Presentation (Individual/Group), Semester-end Examination
CO5	Lecture, Guest lectures	Midterm Examination 2, Semester-end Examination

Books Recommended

1. **Nazimuddin Ahmed:** Discover the monuments of Bangladesh
2. **Nazimuddin Ahmed:** Buildings of the British Raj in Bangladesh
3. **H Dani:** Muslim Architecture of Bengal, Cultural Survey of Bangladesh by Asiatic Society
4. **A B M Hossain:** Architecture, Cultural Survey of Bangladesh by Asiatic Society
5. **Sufi M Rahman:** Archaeological Heritage, Cultural Survey of Bangladesh by Asiatic Society
6. **A S M Ahmed:** Mosque Architecture in Bangladesh
7. **Perween Hasan:** Sultans and Mosques: The Early Muslim Architecture of Bangladesh

Ahmed Babu, Chowdhury Nazly, Alam Shafiqul: Selected Hindu temples of Bangladesh

Year/ Semester	4th year 1st semester		
Course Title	Design Studio VII		
Course Code	ARC 0731 4132	Stream	3
No. of Credits	6.0	Course Hour	12.0 hours/week

COURSE RATIONALE:

This studio introduces urban issues to the students. They learn to investigate socio-economic issues and attempt to make sustainable proposals. During urban survey the students come to direct interaction with stakeholders and learn to design spaces

sensibly. The projects intend to teach how to be more responsive to local context and work for greater benefit of people from different social classes. Conservation of buildings and places with historical and cultural significance is also practiced during the studio projects.

COURSE CONTENT:

Perception of urban context and the emergent forces that shape a city; Understanding urban activities, movement and environmental aspects to attain livability in cities and quality of life; Understanding urban design process – from program formulation to urban design interventions. Designing spaces between the buildings vis-à-vis urban masses respond to human needs and scale. Articulation of architecture into the public realm through design of building complexes at urban scale.

COURSE LEARNING OUTCOMES:

CO 1	Conduct urban structure survey; land-use, infrastructure, transportation, environment, socio-cultural, socio-economic survey
CO 2	Analyze and Interpret numeric and social data in visual presentation and further research
CO 3	Develop rational design solutions and respect the context in urban design
CO 4	Apply urban design techniques and strategies
CO 5	Create detailed area plan and design open urban and neighborhood space with collaborative way

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	2							
CO 2		2	2					2	3
CO 3	2					3			
CO 4	2					3			
CO 5	2	2			3				

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Case study, Field Survey	Group Presentation, Summative Assessment
CO2	Project, lecture	Continuous Assessment, Summative Assessment
CO3	Project, lecture	Continuous Assessment, Summative Assessment

CO4	Project, lecture	Continuous Assessment, Summative Assessment
CO5	Project, lecture	Summative Assessment

Books Recommended

1. **Gehl, J.:** Cities for people. Island press.
2. **Jacobs, J.:** The death and life of great American cities. 1961. New York: Vintage.
3. **Gindroz, R.:** The urban design handbook: techniques and working methods. WW Norton & Company.
4. **Alexander Garvin ;** The Planning Game – Lessons from Great Cities
5. **Kevin Lynch :** The image of the city.
6. **Jeff Speck ;** walkable city
7. **Charles Montgomery :** Happy City: Transforming Our Lives Through urban design

Year/ Semester	4 th Year 1 st Semester		
Course Title	Landscape Design		
Course Code	ARC 0731 4171	Stream	7
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course offers landscape design theories, principles, concepts, planning and design process to organize the outdoor spatial and environmental aspects from both object and system-based approaches.

COURSE CONTENT:

Introduction to the Landscape Architecture and its necessity in the built environment. Historical development of landscape/ garden/ parks design. The elements, basic principles, process and narratives of landscape design. Concepts and techniques of environmental and ecological design for various eco-system (e.g., wetland, forest, grassland...). The landscape profiles of biosphere, eco-system, context, flora and fauna. Vegetation design: Planting and gardening. Sustainability concept in landscape design (e.g., productive landscape, urban agriculture...).

Landscape character and scale, visual landscape: spatial quality and forms, circulation and linkages, location and sequence of outdoor activity. Study of site analysis, site selection, site development, plane surveying, topography, soils, grading, drainage, site utilities and maintenance. Environmental assessment for landscape planning and design.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	Explain the basics principles and elements of landscape design
CO 2	demonstrate an ability to implement design process into landscape design projects

CO 3	identify and analyze the existing landscape networks and contextual issues related to urban landscape through different methods
CO 4	Critically evaluate the local and regional framework related to landscape design with collaboration approaches
CO 5	Implement landscape design approaches for site-specific problems

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3							
CO 2	2	3							
CO 3						3			
CO 4					2	3			
CO 5		2				3			

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Mid-term examination 1, Semester-end examination
CO2	Lecture	Mid-term examination 1, Semester-end examination
CO3	Lecture	Mid-term examination 2, Semester-end examination
CO4	Demonstration	Assignment, Mid-term examination 2, Semester-end examination
CO5	Lecture	Assignment, Semester-end examination

Books Recommended

- 1 **John O. Simonds, S. Barry**, *Landscape Architecture: A Manual of Environmental Planning and Design*. Fourth Edition, McGraw-Hill Education, 2013
- 2 **D. Catherine**, *Form & Fabric in Landscape Architecture: A Visual Introduction*. London and New York, 2001
- 3 **Ian L. McHarg**, *Design by Nature*. New York: J. Wiley, 1995
- 4 **Turner T.**: *City as Landscape*, Taylor & Francis, 1995
- 5 **Alexander C. et al**: *A Pattern language*, Oxford University Press, 1977

Year/ Semester	4th Year 1st Semester
Course Title	Interior Design Studio

Course Code	ARC 0212 4172	Stream	7
No. of Credits	2	Course Hour	4 hours/week

COURSE RATIONALE:

This course is the first approach to the profession of interior design for architecture student. Students will be introduced to the design process, elementary design vocabulary and various presentation skills and techniques. Professional practices and responsibilities, trade resources, and the value of design organizations will be discussed. Through a series of projects and activities and an exPoration of the work of notable interior designers and architects, students will begin to identify the various aspects of interior design to which they personally respond.

COURSE OBJECTIVES:

- Acquaint students with the scope of interior design and basic theories about interior design.
- Helping the students to develop ability in applying the design method and principal of interior design based on contextual issues.
- Apply the knowledge of the method of local practice and resource available for interior design.
- To develop the skill of verbal and technological representation of the interior design project.

COURSE CONTENT:

Preparation of interior design drawings for different types of spaces such as office, studio, bank, restaurant, club and shop. Detailed specifications of finish materials for floor, ceiling and wall. Natural and artificial lighting and ventilation. Fixed and movable furniture, decorative element, upholstery, drapery, art work, interior plantation, fountain, automation device.

COURSE LEARNING OUTCOMES:

CO 1	apply the knowledge in order to perform professional skill
CO 2	apply the design method and principles in any real interior design project
CO 3	draw professional drawing required to communicate for an interior design project
CO 4	Analyze the material quality and their specification used in interior project and to apply the appropriate one according to contextual feasibility
CO 5	Calculate the cost-estimation in interior projects and to be acquainted with the market regarding material cost

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	2							

CO 2	2					3			3
CO 3	2				3				
CO 4	2	2				3			
CO 5	2	2							

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Project, lecture	Group Presentation, Summative Assessment
CO2	Project, lecture	Continuous Assessment, Summative Assessment
CO3	Project, lecture	Continuous Assessment, Summative Assessment
CO4	Project, lecture	Continuous Assessment, Summative Assessment
CO5	Project, lecture	Summative Assessment

Books Recommended

1. **John E. Flynn et al:** Architectural Interior Systems; Lighting, Acoustics, Air
2. **Francis D. K. Ching, Corky Binggeli:** Interior Design Illustrated
3. **Joseph De Chiara, Julius Panero, and Martin Zelnik:** Time-Saver Standards for Interior Design and Space Planning
4. **Flynn J:** Conditioning
5. **Ladau R:** Color in Interior Design and Architecture

Year/ Semester	4 th Year 1 st Semester		
Course Title	Housing		
Course Code	ARC 0731 4181	Stream	8
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

Access to suitable living accommodations is essential for human survival. This course provides comprehensive knowledge on all aspects of housing systems, enabling students to design housing that meets the requirements of occupants.

COURSE CONTENT:

Introduction to housing, concept, and definition of housing domains. Transformation and development of housing through various ages. Interpret Theories and principles; human-environment relationship in housing focusing on southern urbanism.

Discuss various typologies of housing including elements and components. Housing practice; housing challenges, process, finance, entrepreneurs, policy focusing government venture in Bangladesh.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Explain the historical evolution and theoretical underpinnings of housing.
CO 2	Identify and analyze different typologies of housing and their components.
CO 3	Understand the dynamics of housing practice, including development processes, finance models, and policy frameworks.
CO 4	Evaluate housing challenges and propose sustainable solutions, particularly in the context of Bangladesh.
CO 5	Apply critical thinking and problem-solving skills to address complex housing issues.

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2							
CO 2	3	3	2			3			
CO 3		2	2	1		3		1	
CO 4		2	2		1	3	3		3
CO 5	2		1			3	3		2

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Mid-term examination 1, Semester-end examination
CO2	Lecture	Mid-term examination 1, Semester-end examination
CO3	Lecture, Demonstration	Oral presentation, Assignment, Mid-term examination 2, Semester-end examination
CO4	Lecture, Demonstration	Assignment, Mid-term examination 2, Semester-end examination
CO5	Lecture, Demonstration	Assignment, Semester-end examination

Books Recommended

1. **Adams, T.,** 'The Design of Residential Area', Harvard University Press, 1934.
2. **Aldersons, S.,** 'Housing', Penguin, 1962,
3. **Hamdi, N.:** Housing Without Houses: Participation, Flexibility, Enablement, 1995
4. **Turner, C., John,** 'Housing Priorities, Settlement Pattern and Urban Development in Modernizing Countries', 1968.
5. **Basu, A. R.:** Urban Squatter Housing in the Third World, 1988

6. **Wittkauer, R.**, 'Architectural Principles and the Age of Humanism', Tiranti, 1952.
7. **Schoenauer, N.**: 6,000 Years of Housing
8. **Ameen, Shahidul, Rahaman, M.**, 'Transformation Properties in Shelter Generation: Study of a Government Built Low-Cost Housing Development Scheme', (Housing Development and Management, Center for Built Environment, 1996, ISBN-86699.00-7)

Year/ Semester	4 th Year 1 st Semester		
Course Title	Field Work II: Architecture of Bengal		
Course Code	ARC 0222 4122	Stream	2
No. of Credits	2.0	Course Hour	1 week

COURSE RATIONALE

This course plays a supplementary role to the corresponding theory course on society and Bengal architecture.

COURSE OBJECTIVES

- Acquaint students with the influences of heritage, religion, culture, politics and climate on the development of Bengal architecture.
- Helping the students to acquire practical experience of the heritage building sites of Bengal.
- To facilitate the students with a scope to meticulously explore construction details of the heritage buildings.

COURSE CONTENT

Students will visit historical buildings and structures in Bangladesh relevant to the course. Through the field work students will be engaged with activities relating with historic building documentation and analysis. Students are required to submit a report / travel blog after finishing the trip.

LEARNING OUTCOMES:

	After successful completion of the course, students will be able to		
CO 1	explain the development of Bengal architecture from Buddhist to later periods from practical experience		
CO 2	Illustrate verbal and visual presentations on heritage architecture		
CO 3	identify the heritage construction techniques and details		
CO 4	evaluate the heritage architecture of Bengal with relation to socio-cultural, socio-political, environmental and ecological contexts		
CO 5	write and publish travel blog/ documentary in website		

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2					3			
CO 2									3

CO 3		2					3		
CO 4		2				3			
CO 5							2		3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture with projector, Self-learning	Assignment, Summative assessment
CO2	Documentaries, Guest lectures, Self-learning	Presentation (Individual/group), Summative assessment
CO3	Workshop, Field visit	Presentation (Individual/group) /Viva voce, Summative assessment
CO4	Workshop, Field visit	Presentation (Individual/group) /Viva voce, Summative assessment
CO5	Workshop, Field visit	Presentation (Individual/group), Publication, Summative assessment

Books Recommended

1. **Nazimuddin Ahmed**: Discover the monuments of Bangladesh
2. **A B M Hossain**: Architecture, Cultural Survey of Bangladesh by Asiatic Society

Fourth Year: 2nd Semester

Course No.	Course Title	Course Category	Hours/Week			Pre-req
			Theory	Lab	Credits	
Compulsory course						
ARC 0731 4232	Design Studio VIII	Core	0	12	6	ARC0731 4132
ARC 0731 4271	Vernacular Architecture and Settlements	Core	2	0	2	-
ARC 0731 4272	Landscape Design Studio	Core	0	4	2	-
ARC 0731 4291	Architectural Research Methodology	Core	2	0	2	-
CEE 0732 4211A	Construction Management	General Education	2	0	2	-
TotalCredits			6	16	14	
Optional course						
* Required credits of optional courses from Set C is 8.0 (4 courses), which should be completed by 4 th year						

Year/ Semester	4 th Year 2 nd Semester		
Course Title	Design Studio VIII		
Course Code	ARC 0731 4232	Stream	3
No. of Credits	6.0	Course Hour	12.0 hours/week

COURSE RATIONALE:

This studio introduces students to various processes of urban design required for particular problem-solving strategies in urban areas. Students are introduced to a large block development process by addressing contextual issues. Designing a housing project in a particular context is an exercise for students that ensure skills and knowledge regarding large scale and community design. Understanding the process in order to design housing for a community and their impact on the environment.

COURSE CONTENT:

Study of city image, people perception of urban environment, physical development and municipal services through simulation, mapping and physical investigation. Projects focusing on urban renewal, regeneration, conservation, redevelopment and rehabilitation for urban areas. Investigation, analysis and design of housing/communities with specific themes and their impact on the social, cultural and natural environment.

COURSE LEARNING OUTCOMES:

CO 1	Distinguish various process of urban design as urban renewal, rehabilitation, regeneration and conservation
CO 2	Apply the urban design method based on contextual issues for a particular problem in urban area
CO 3	Analyze the data collected for understanding the community specially its social, infrastructural, economic, and other aspects
CO 4	Design a housing project for thematic community through addressing social, economic, and environmental framework
CO 5	Illustrate physical master plan of a housing project and other detail through computer technology for communication

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3							
CO 2		2				3			
CO 3		2			2	3			

CO 4						3			
CO 5								2	3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Case study, Field Survey	Group Presentation, Summative Assessment
CO2	Field Survey, Project, lecture	Continuous Assessment, Summative Assessment
CO3	Project, lecture	Continuous Assessment, Summative Assessment
CO4	Project, lecture	Continuous Assessment, Summative Assessment
CO5	Project, lecture	Summative Assessment

Books Recommended

1. **Gehl, J.:** Cities for people. Island press.
2. **Jacobs, J.:** The death and life of great American cities. 1961. New York: Vintage.
3. **Gindroz, R.:** The urban design handbook: techniques and working methods. WW Norton & Company.
4. **Alexander Garvin ;** The Planning Game – Lessons from Great Cities
5. **Kevin Lynch :** The image of the city.
6. **Jeff Speck ;** walkable city
7. **Charles Montgomery :** Happy City: Transforming Our Lives Through urban design
8. **David Levitt ;** The Housing Design Handbook A Guide to Good Practice
9. **Bernard Leupen, Harald Mooij ;** Housing Design A Manual
10. **Graham towers ;** Introduction to Urban Housing Design

Year/ Semester	4 th Year 2 nd Semester		
Course Title	Vernacular Architecture and Settlements		
Course Code	ARC 0731 4271	Stream	7
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

To inculcate an appreciation of vernacular architecture; as an expression of local identity and indigenous traditions of the culture.

COURSE CONTENT:

Defining vernacularism; House form in relation to culture, Vernacular architecture and settlement and its evolution; Concepts and approaches to the study and analysis

of vernacular architecture. Vernacular architecture around the world: Symbolism and cultural expression generating vernacular building form and texture. Vernacular architecture study and survey methods. Change facing vernacular architecture in the contemporary context.

Different Geo-climatic regions of Bangladesh and impact on architectural types and its uses. Understanding vernacular architecture of Bangladesh: from aspects of Microclimate and its impact on the local architecture, local construction methods, material culture and craftsmanship detail. Influence of cultural and social belief in formation of vernacular architecture in Bangladesh. Ecology and environmental aspects of traditional built forms and settlement systems. Issues of Housing and institutional building design in vernacular context in Bangladesh. Learning from vernacular architecture: Site & Context; Self-help and community-based approaches. Future directions and prospects.

COURSE LEARNING OUTCOMES:

<i>After successful completion of the course, students will be able to</i>	
CO 1	Apply vernacular architecture as a reasonable tool for a novice to understand the triangular relationship of society, architecture and physical context and its impact on design
CO 2	analyze regional variety of architectures logically stemming from the geo-climatic forces, human and material resources, and techniques that satisfy the socio-cultural needs and desires of a given people
CO 3	Distinguish the vernacular settlement type of different geo-climatic regions of Bangladesh
CO 4	Formulate research and conduct surveys on vernacular built-forms in appropriate methods
CO 5	Utilize and implement lessons learned from the self-built architecture, in achieving sustainability and decisions that conserve natural and built resources, in future design studio projects

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	2				2			
CO 2		2				2			
CO 3	2	2							
CO 4			3						
CO 5			3			2		3	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture using projector	Mid-semester examination 1, Semester end examination
CO2	Lecture, assignment	Mid-semester examination 1, Assignment, Semester end examination

CO3	Lecture, self-learning	Mid-semester examination 2, Semester end examination
CO4	Lecture, self-learning	Mid-semester examination 2, Semester end examination
CO5	Lecture, self-learning	Presentation, Semester end examination

Books Recommended

1. Amos Rapoport: House form and culture
2. Bernard Rudofsky: Architecture Without Architects
3. Paul Oliver: Dwellings
4. Willi Weber(ed): Lessons from Vernacular Architecture
5. R. W. Brunskill: Vernacular Architecture: An Illustrated Handbook
6. Henry Glassie: Vernacular Architecture (Material Culture)
7. K. Iftekhar Ahmed: Up to the waist in Mud!
8. A.K.M. Kausarul Islam: Patterns and Changes of Vernacular Architecture in Bangladesh
9. Johan Van Lengen: The Barefoot Architect
10. K. Iftekhar Ahmed, Salek M. Seraj: Building Safer Houses in Rural Bangladesh (2004)
11. John May: Handmade houses & other buildings: the world of vernacular architecture
12. Sandra Piesik: Habitat! Vernacular Architecture for a Changing Planet

Year/ Semester	4th Year 2nd Semester		
Course Title	Landscape Design Studio		
Course Code	ARC 0731 4272	Stream	7
No. of Credits	2.0	Course Hour	4.0 hours/week

COURSE RATIONALE:

This course offers a studio-based landscape design study, concepts, tools and techniques to organize/design the outdoor environment from both object and system-based approaches.

COURSE CONTENT:

Study of landscape area, natural and manmade elements, spatial aspects, drawings and outdoor elements and environment.

Analysis of a given case site and preparing a report on landscape study. Landscape graphics; Application of the principles and techniques of landscape design through

design exercises of site planning and area development. Design of utility, maintenance and services.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Explain the spatial aspects of landscape design in terms of natural and manmade landscape elements
CO 2	Distinguish landscape design and functional requirements of scale-specific projects
CO 3	Analyze the existing landscape networks and contextual issues related to urban landscape
CO 4	Formulate integrated design approaches according to local and regional framework.
CO 5	Illustrate landscape plans and develop 3D models for landscape projects

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3							
CO 2	2	3							
CO 3		2				3			
CO 4		2			2	3			
CO 5								2	3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Case study, Field Survey	Group Presentation, Summative Assessment
CO2	Project, lecture	Continuous Assessment, Summative Assessment
CO3	Project, lecture	Continuous Assessment, Summative Assessment
CO4	Project, lecture	Continuous Assessment, Summative Assessment
CO5	Project, lecture	Continuous Assessment, Summative Assessment

Books Recommended

- 6 **John O. Simonds, S. Barry**, *Landscape Architecture: A Manual of Environmental Planning and Design*. Fourth Edition, McGraw-Hill Education, 2013
- 7 **D. Catherine**, *Form & Fabric in Landscape Architecture: A Visual Introduction*. London and New York, 2001
- 8 **Ian L. McHarg**, *Design by Nature*. New York: J. Wiley, 1995
- 9 **Turner T.**: *City as Landscape*, Taylor & Francis, 1995
- 10 **Alexander C. et al**: *A Pattern language*, Oxford University Press, 1977

Year/ Semester	4th year 2nd semester		
Course Title	Architectural Research Methodology		
Course Code	ARC 0731 4291	Stream	9
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

The course explains various methods for conducting meaningful inquiry and research in the field of built environment. In particular, the difference between research and design expresses the process in built environment research. Students will gain an overview of research intent and design, methodology and technique, format and presentation, and data management and analysis. The course will develop each student's ability to use this knowledge to become more effective in the field of architecture research.

COURSE CONTENT:

Introducing research as a tool for architectural design. Scope and importance of academic research in the design process. Distinguish between research by design and design by research approach. Illustration of literature review and research question. Step wise methods of architectural design research. Architecture research strategies ; historical research, qualitative research, correlation research and case study research. Methods for architectural program formulation. Analogy and concept selection and development of an architectural program. Development of design guidelines and checklists. Design development strategy in a specific context / site. Writing skills and Referencing, as well as Verbal and Written presentation skills and techniques would be assessed throughout the semester. Research design, Data collection, analysis and decision-making process.

COURSE LEARNING OUTCOMES:

CO 1	explain the fundamentals of research and architecture research process.
CO 2	application of literature review to find research problems and generating hypotheses.
CO 3	evaluation of various architecture research methods and strategies.
CO 4	application of data collection and survey processes.
CO 5	able to write thesis paper and formulate programs for architecture design

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALS KILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3							
CO 2			2			3			
CO 3			2			3			
CO 4		2				3			
CO 5		2							3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	lecture, paper review	Assignment
CO2	lecture, digital presentation	Oral Presentation
CO3	lecture, paper review	Assignment
CO4	lecture, paper review	Assignment
CO5	lecture, digital presentation	Oral Presentation

Books Recommended

1. Groat, L. N. and Wang, D. (2013) *Architectural Research Methods*. 2nd edition. The USA: John Wiley & Sons, Inc.
2. Kothari, C. R.. (2004) *Research Methodology*. 2nd revised edition. New Delhi, India: New Age International (P) Ltd., Publishers.
3. Cohen, U. and van Ryzin, L. (1979) 'Research in Architecture' in Snyder J. C. (ed.) *Introduction to Architecture*. The USA: Mcgraw Hills, pp. 401-411.

Year/ Semester	4 th Year 2 nd Semester		
Course Title	Construction Management		
Course Code	CEE 0732 4211A	Stream	1
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

This course will familiarize the students with the basic knowledge of developing skills of understanding basic project management principles and practices. This knowledge is essential to manage projects from initiation to commissioning achieving projects' basic objectives such as time, cost, quality, and safety.

COURSE OBJECTIVES

- To introduce management tools and techniques for successful project completion
- To acquaint with project time, cost, quality, and safety management
- To make them understand project risks and uncertainties and their management strategies

- To introduce with the PMBOK and the project management manual

COURSE CONTENT

Introduction: Principles of project management and construction management, triple constraints (time-cost-quality) to achieve project goals, basic concepts of contract management, project safety and risk management.

Planning and Scheduling: Work Breakdown Structure (WBS), Gantt Chart, Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), comparison and applications of CPM and PERT in various projects.

Project Delivery System and Contract Management: Basic concepts of project procurement, Project Delivery Methods: Design-Bid-Build (DBB), Design and Build, Construction Management Contract (CMC), Alliancing, Public Private Partnership (PPP),

Engineering Procurement and Contract (EPC), Build, Operate and Transfer (BOT); Contract types: Lump Sum, Unit Price, Cost Plus or Cost Reimbursable, guaranteed Maximum Price (GMP).

Project Schedule and Cost Management: Cash flow analysis, earn value management (EVM), S-curve, payback period, cost-benefit ratio, internal rate of return (IRR).

Project Quality Management: Deming's 14 points to achieve project quality, ISO 9000, Cost of Quality (CoQ), seven quality control tools, Total Quality Management (TQM), Quality Management in PMBoK.

Project Safety and Risk Management: Safety management: Safety practices at construction site from BNBC, personal and site safety, Risk management: planning for risk management, risk register, risk evaluation, risk assessment, risk control, risk residual, planning for risk response, monitoring and control risks during project execution phases.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to:	
CO 1	Develop a project's plan and schedule
CO 2	Prepare cash flow and financial report
CO 3	Formulate quality assurance plan and risk response strategy
CO 4	Analyze project performance and report project status to the top management

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALS KILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2					2		3	
CO 2	2					2		3	
CO 3	2					2		3	
CO 4	2					2		3	

Books Recommended

1. Project Management Body of Knowledge (PMBOK)-PMI

- Kenzer, H. (2013), Project management: a system approach to planning, scheduling, and controlling. John Wiley and Sons. ISBN-13:978-1-118-41855
- Lewis, J.P. (2005), Project planning, scheduling, and control, 4th Ed., McGraw-Hill Pub. ISBN-13:978-0-07-146037-8
- Gitlow, Howard S. "Quality Management" Third Edition, McGraw Hill
- Hinze, J. W., Construction Planning & Scheduling, Essex, UK: Prentice, 3rd Ed., 2008.
- BNBC – construction safety code chapter

Fifth Year: 1st Semester

Course No.	Course Title	Course Category	Hours/Week			Pre-req
			Theory	Lab	Credits	
Compulsory course						
ARC 0731 5132	Design Studio IX	Core	0	12	6	ARC0731 4232
ARC 0731 5192	Thesis I: Research Development	Core	0	4	2	ARC0731 4232
ARC 0731 5194	Professional Practice I: Internship	Internship	-	12w	4	-
TotalCredits			0	16	12	
Optional course						
* Required credits of optional courses from Set D is 4.0 (2 courses) , which should be completed by this semester and student can register maximum 3 courses from Set D						

Year/ Semester	5 th Year 1 st Semester		
Course Title	Design Studio IX		
Course Code	ARC 0731 5132	Stream	3
No. of Credits	6.0	Course Hour	12.0 hours/week

COURSE RATIONALE:

This course will ensure students to deal a complex building project in a complete practical and professional manner.

COURSE CONTENT:

Exercise on professionally comprehensive work including all design phases from formulation of architectural program to preparation of working drawings; Identifying design task to specific realistic problems; applying the existing codes and bylaws, and concentrating on the most significant contemporary environmental and professional challenges.

COURSE OBJECTIVES

- To prepare students with the practical and professional manner to deal a complex building project.
- To make students capable to analyze FAR and to prepare Project Contract Proposal for the given project.

- To develop skills to integrate project feasibility, program, architect-client ambitions and concept in a single frame with satisfaction and perfection.
- To make students capable to design following the structural and brick module to decrease investment cost for construction.
- To enable to prepare RAJUK Approval Sheet, Fire Safety Approval Sheet and Working (construction) Drawing.
- To develop student's network and communication skill to deal with multi-professionals and project management.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to:	
CO 1	Design and execute a building project in a practical and professional manner
CO 2	Analyze FAR and BNBC for all types of building projects
CO 3	Illustrate the RAJUK approval sheet, authority sheets, fire safety approval sheet and project agreement paper
CO 4	Design according to the client aspiration with a practical and professional point of view
CO 5	Conduct professional apprenticeship at an architectural consultancy firm

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3							
CO 2	2	3						2	
CO 3	2	3		2					3
CO 4	2	3			3	2			
CO 5	2	3							

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Case study, FAR Analysis	Individual Presentation, Summative Assessment
CO2	Survey, Project	Continuous Assessment, Summative Assessment

CO3	Project	Continuous Assessment, Summative Assessment
CO4	Project	Continuous Assessment, Summative Assessment
CO5	Project	Summative Assessment

Books Recommended

- 1 Bangladesh National Building Code [BNBC]-2020
- 2 Imarat Nirman Bidhimala [FAR]-2008
- 3 Project Declaration and information Proposal
- 4 Professional RAJUK Approval Sheet, Fire Safety Approval Sheet, Working (construction) Drawing and Project Contract paper

Year/ Semester	5 th Year 1 st Semester		
Course Title	Thesis I: Research Development		
Course Code	ARC 0731 5192	Stream	9
No. of Credits	2	Course Hour	4.0 hours/week

COURSE RATIONALE

This is a preparatory course for developing thesis proposal of B Arch students.

COURSE OBJECTIVES

- To acquaint students with different phases of project proposal submission methods.
- To help the students to develop basic research question from a project context for further investigation.
- To enable them to develop research methods to address a thesis research question.

COURSE CONTENT

This course is the first phase of thesis stream where students will work to prepare their thesis proposal followed by adequate theoretical and physical survey. In this semester, students should go through series of individual assessments from thesis selection and research framework development. Students will be supervised by a thesis supervisor assigned by the department. At the end of this course students have to present their elaborated research proposal through thesis title defense.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Formulate the phases of thesis proposal development
CO 2	Develop a complete thesis proposal that will guide them for future thesis project
CO 3	Develop research questions from their thesis proposal

CO 4	Create the aim and objectives of the research
CO 5	Develop a work schedule for the upcoming thesis project

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2			2		3			
CO 2	2			2		3			
CO 3				2					
CO 4				2					
CO 5		2							

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	lecture, paper review	Assignment, Summative Assessment
CO2	lecture, digital presentation	Individual Presentation Summative Assessment
CO3	lecture, paper review	Assignment, Summative Assessment
CO4	lecture, paper review	Assignment, Summative Assessment
CO5	lecture, digital presentation	Individual Presentation Summative Assessment

Books Recommended

- 1 Groat, L.N. and Wang, D.: Architectural Research Methods
- 2 London,K. and Ostwald,M.: Architectural Research Methods
- 3 Sanoff, H.: Methods of Architectural Programming
- 4 Kumar, R.: Research Methodology.

Year/ Semester	5 th Year 1 st Semester		
Course Title	Professional Practice I: Internship		
Course Code	ARC 0731 5194	Stream	9
No. of Credits	4.0	Course Hour	12 weeks

COURSE RATIONALE

This course will ensure the environment for the students to work practically and professionally held at a recognized architectural consultancy firm and thus develop architectural skill, network and communication.

COURSE OBJECTIVES

- To motivate and to prepare students with the practical and professional manner.

- To make students capable to understand professionalism and management.
- To help them integrate project client dealings, design development, project management, execution and site supervision.
- To make students confident enough to take social responsibilities.
- To enable the students to take new challenges with limited resources.
- To develop student's network and communication skill to deal with multi-professionals and project management.

COURSE CONTENT

The student is required to work in an Architectural firm under an authorized Architect/s for a minimum of 12 weeks to gain practical experience. After completing app. 140 credits, a student may opt to acquire professional experience on part time basis under a member of Institute of Architects. The student shall submit a portfolio of his professional works at his convenience before final term to be evaluated by a board of examiners for a satisfactory certificate.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Develop the self attitude like a professional architect
CO 2	Build and cope up with professionalism
CO 3	Explain all necessary aspects of a building project practically and professionally
CO 4	Realize the social responsibilities, scopes and abilities of an architect keeping with Close contact off
CO 5	take forward a practical building project confidently and develop a professional network and communication skill within the industry

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1				2					3
CO 2				2	3				
CO 3				2	3				
CO 4				2	3				
CO 5				2	3				

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-learning (TL) strategy	Assessment Strategy
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LECTURE WITH PROJECTOR	Appreciate Students to work practically and professionally	Continuous assessment (CA)
Assignment/ Workshop	Understand to client dealings, design development, project management, execution and site supervision	Report
	Specific instructions	Viva
	Make practical knowledge/solutions to solve	Summative Assessment (SA)
		Projects/details submission

Books Recommended

- 1 BNBC-2006 and FAR-2008
- 2 Project Declaration and information Proposal, Project Contract paper Professional RAJUK Approval Sheet, Authority Drawing, Fire Safety Approval Sheet, Working (construction) Drawing, As Built Drawing

Fifth Year: 2nd Semester

Course No.	Course Title	Course Category	Hours/Week			Pre-req
			Theory	Lab	Credits	
Compulsory course						
ARC 0731 5232	Thesis II: Design Studio X	Capstone	0	24	12	ARC0731 5132 ARC0731 5192
ARC 0731 5291	Professional Practice II: Codes and Ethics	Core	2	0	2	-
ARC 0731 5292	Thesis III: Dissertation	Capstone	0	8	4	ARC0731 5132 ARC0731 5192
TotalCredits			2	32	18	

Year/ Semester	5th Year 2nd Semester		
Course Title	Thesis II: Design Studio X		
Course Code	ARC 0731 5232	Stream	3

No. of Credits	12.0	Course Hour	24.0 hours/week
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COURSE RATIONALE:

This is a thesis by design studio. The participants in this studio will develop research-based architectural projects as a requisite for their B.Arch degree.

COURSE CONTENT:

This course guides students in developing a comprehensive architectural thesis project. It focuses on research methods, design principles, and presentation skills, culminating in a final project that highlights each student's unique architectural exploration and creativity. Students will identify viable development proposals for their thesis projects and prepare complete design solutions based on the investigation and analysis of the physical and contextual aspects of the problem. The course emphasizes appropriate design considerations related to building materials, structure, and form. Attention is given to the objective analysis of relevant factors and transforming these into a tangible architectural solution of professional quality. Design exercises will involve realistic complexities, underscoring professional competence. Students will formulate architectural programs, prepare and develop design solutions through various phases, and present their completed work for final evaluation.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	develop skills to address basic research questions through architectural design
CO 2	develop skills to evaluate various site and/or contextual scenarios in relation to the proposed program
CO 3	deal with broader design problems in terms of society, culture, economy and environment using extensive research methods
CO 4	demonstrate presentation skill on public level
CO 5	apply critical thinking in the process of architectural creation

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3							
CO 2	2	3						3	
CO 3	2	3	3			3			
CO 4	2	3							3
CO 5	2	3				3			

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
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CO1	Scheduled assessment	Design review
CO2	Scheduled assessment	Design review
CO3	Scheduled assessment	Design review
CO4	Scheduled assessment	Design review
CO5	Scheduled assessment	End-semester review
CO6	Scheduled assessment	End-semester review

Books Recommended

1. **Groat, L. and Wang, D.,** (2002); *Architectural Research Methods*; John Wiley & Sons.; NY
2. **Sanoff, H.,** (2018); *Methods of Architectural Programming*; Routledge; NY

Year/ Semester	5th Year 2nd Semester		
Course Title	Professional Practice II: Codes and Ethics		
Course Code	ARC 0731 5291	Stream	9
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course is offered to the outgoing students of B.Arch. Before the beginning of their career as professional architects, this course intends to provide necessary ideas on the practice field. It is important to make them conscious of the inter-person relationship between different relevant professionals.

COURSE CONTENT:

The role of the Architect in the building industry and process; duties, responsibilities, and obligations of the Architect; general conditions of the contract; owner-Architect relationship; Architectural services; the Architect and the public; legal responsibilities of the Architect; Architects code of Conduct. Ethics.

The Architect's office; administration of construction; Competitions; the Architect and his consultants; official correspondence; professional organizations: local and international. The regulatory system: planning and design controls, building code, and approval process. Management principles and practices for the range of architectural practice.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to:

CO 1	explain the roles and responsibilities of an architect
CO 2	manage office and contractual systems
CO 3	follow code of conduct and ethics
CO 4	concern about regulatory and legal systems
CO 5	practice according to the accurate conception of the building codes and standards

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2			3					
CO 2	2				3				
CO 3				3					
CO 4				3					2
CO 5	2			3					2

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Mid-term examination 1, Semester-end examination
CO2	Lecture	Mid-term examination 1, Semester-end examination
CO3	Lecture	Mid-term examination 2, Semester-end examination
CO4	Lecture	Mid-term examination 2, Semester-end examination
CO5	Lecture	Oral Presentation, Semester-end examination

Books Recommended

1. **Namavati, R.:** Principles of Professional Practice.
2. **IAB:** Code of Ethics and Professional Conduct.
3. **American Institute of Architect:** The Architecture Student's Handbook of Professional Practice.
4. Imarat Nirman Bidhimala, 2008
5. Bangladesh National Building Code (BNBC)

Course Title	Thesis III: Dissertation		
Course Code	ARC 0731 5292	Stream	9
No. of Credits	4.0	Course Hour	8.0 hours/week

COURSE RATIONALE

This course intends to teach the students about the preparation of report to supplement the various aspects of the thesis project of Arc 534, Design Studio X.

COURSE OBJECTIVES

- To introduce the students with the process of documentation and writing a thesis dissertation.
- To develop skills to write a thesis dissertation.
- To provide the knowledge about ethics associated with the dissertation writing process.

COURSE CONTENT

This is the third phase of thesis stream. Here students approach to report writing as a part of design effort. Preparation of report to supplement the various aspects of the thesis project of Arc 534, Design Studio X. The report should reflect the student's research in areas related of the thesis, comparative analysis and case studies. This should lead to the formation of criteria and conceptual approaches, design program and guidelines for design of the thesis in Arc 534: Design Studio X (Thesis)

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	outline the basic structure of a thesis dissertation
CO 2	write research proposals, abstract, research methodology, objectives and outcomes
CO 3	review case studies and relevant research articles
CO 4	apply the knowledge in writing further research papers
CO 5	maintain professional ethics and abstain from plagiarism

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1				2			2		3
CO 2			2	2			2		3
CO 3							2		
CO 4							2		
CO 5				3					

Books Recommended

- 1 **Iain Borden:** The Dissertation: An Architecture Student's Handbook, 2006
- 2 **Groat, L.N. and Wang, D.:** Architectural Research Methods
- 3 **London, K. and Ostwald, M.:** Architectural Research Methods

Optional Courses

2nd year optional Courses					
Set A * Required credits of optional courses from Set A is 6.0 (2/3 courses) and student can register maximum 2 courses from each semester					
Course No.	Course Title	Course Category	Theory credit	Lab Credit	Hour /week
ARC 0213 2154	Architectural Sketching and Modelling	Elective	0	2	4
ART 0211 2112A	Photography and Media Studies	General Education	0	2	4
ART 0211 2212A	Graphic Art and Design	General Education	0	2	4
PHI 0223 2217A	Philosophy	General Education	2	0	2
CSE 0613 2214A	Introduction to Programming With Python (Lab)	General Education	0	3	6
SOC 0314 2213A	Principles of Sociology	General Education	2	0	2
ECO 0311 2215A	Principles of Economics	General Education	3	0	3
			07	9	25

Year/ Semester	2 nd Year		
Course Title	Architectural Sketching & Modelling		
Course Code	ARC 0213 2154	Stream	5
No. of Credits	2.0	Course Hour	4.0 hours/week

COURSE RATIONALE:

Sketching and model-making are integral part of architectural communication. This course intends to teach the students efficient ways to communicate through using these media.

COURSE CONTENT:

Introducing sketching and modelling as means of architectural communication. Provide the student with the knowledge, skills and aptitude required to use a range of fundamental architectural sketching and modeling skills based on observation of the physical world, in particular the built world. Sketching as a tool for design idea development and architectural representation. Students will be encouraged to maintain a sketchbook to record all their visual and conceptual research, and in which to draw on regular basis as a means to develop ideas and technical proficiency.

Methods of model making with different materials and tools. Students will be assigned in different studio projects to develop skill in 3d model making. In addition to architectural scaled model making, students will be engaged to life scale installations to learn the techniques of using wood, steel, brick, concrete, clay and other building materials to create innovative structures.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to:	
CO 1	Improve hand-eye coordination and line quality
CO 2	Draw perspective with innovative tools (string, table, etc.)
CO 3	Apply rendering techniques of 3D sketch.
CO 4	Making architectural scaled models
CO 5	Build small-scale Parametric 3D installation and human-scale installation

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1		2						3	3
CO 2		2						3	3
CO 3		2						3	3
CO 4		2						3	3
CO 5		2						3	3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Workshop, self-learning	Continuous assessment, Summative assessment
CO2	Workshop, self-learning	Continuous assessment, Summative assessment
CO3	Workshop, self-learning	Continuous assessment, Summative assessment
CO4	Workshop, project, self-learning	Continuous assessment, Summative assessment
CO5	Workshop, project, seminar	Continuous assessment, Summative assessment

Books Recommended

- 1) **Gabriel Campanario:** The Urban Sketching Handbook: Architecture and Cityscapes
- 2) **Harold Speed:** The Practice and Science of Drawing
- 3) **Arthur Wesley Dow:** Composition
- 4) **Betty Edwards:** Drawing on the right side of the brain
- 5) **Léon Krier, James Howard Kunstler:** Drawing for Architecture

6) **Stephanie Travis:** Sketching for Architecture + Interior Design

Year/ Semester	2 nd Year		
Course Title	Photography and Media Studies		
Course Code	ART 0211 2112A	Stream	5
No. of Credits	2.0	Course Hour	4.0 hours/week

COURSE RATIONALE:

The course aims to introduce the theory, history, concepts and practices in photographic art and explores its technique(s) as an essential component to the visual basics in the architectural learning process.

COURSE CONTENT:

Introduction to photographic art, photography as an independent stream of art, basic conception of image making and processing, importance of photography in architectural study and documentation, operations of camera, types of camera, technicalities of a camera, and experimentations through various photographic projects – techniques and style.

Examining the relationship between architecture and media, critical examination of the historical and contemporary modes in which architecture engages with media and its study, media(s) in architectural presentation, photography as a media, and so on.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	develop skills to examine the chronological advancement of photography as a technology and an independent branch of art
CO 2	Explain the technical aspects, modes and methods of photography and photographic reproduction
CO 3	apply the knowledge to incorporate photography as a tool and representational technology in architecture
CO 4	develop the ability to integrate visual communication skills and interpret the basic visual languages of photography
CO 5	apply critical thinking in the process of visual creation

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1		2							
CO 2									3
CO 3		2					2		3
CO 4									3
CO 5							2		3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	Lecture	Summative assessment
CO2	Project demonstrations	Assignment(s), Summative assessment
CO3	Project demonstrations	Assignment(s), Summative assessment
CO4	Project demonstrations	Assignment(s), Summative assessment
CO5	Project demonstrations	Assignment(s), Summative assessment

Books Recommended

1. **Barnbaum, B.** (1994); *The Art of Photography: An Approach to Personal Expression*; Rocky Nook; US
2. **Carroll, H.** (2014); *Read This If You Want to Take Great Photographs*; Laurence King Publishing; US
3. **Lenman, R.** (2008); *The Oxford Companion to the Photograph*; Oxford University Press; UK
4. **NGS US** (2011); *National Geographic – Complete Photography*; NGS; US

Year/ Semester	2 nd Year		
Course Title	Graphic Art and Design		
Course Code	ART 0211 2212A	Stream	5
No. of Credits	2.0	Course Hour	4.0 hours/week

COURSE RATIONALE:

This course intends to teach the students the application of graphical reproduction in architecture and related design media.

COURSE CONTENT:

Basic techniques used in graphic art. Selection of drawing instruments, surfaces, typography. Graphic reproduction techniques and the pros and cons of the different systems to achieve the most effective presentation. Design of posters, products, display, portfolio.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	apply the knowledge to incorporate Graphic Art as a tool and representational technology in collaborative environments

CO 2	distinguish various graphical media and their application in Architecture
CO 3	develop skills to problem-solving through enhancing visual communication
CO 4	
CO 5	Illustrate book covers and magazines
CO 6	Create 2D, 3D product design and portfolio

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	2					2		
CO 2									3
CO 3									3
CO 4							2		
CO 5							2		3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Project, lecture	Continuous assessment, Summative assessment
CO2	Project, lecture	Continuous assessment, Summative assessment
CO3	Project, lecture	Continuous assessment, Summative assessment
CO4	Project, lecture	Continuous assessment, Summative assessment
CO 5	Project, lecture	Continuous assessment, Summative assessment

Books Recommended

1. **Steve Bowkett:** Archi doodles.
2. **Jens Müller:** Logo Modernism.
3. **Karen Lewis:** Graphic Design for Architects: A Manual for Visual Communication.
4. **Paul Sahre:** Two-dimension Man.
5. **Robert Bringhurst:** The Elements of Typographic Style.
6. **Frank Jacobus:** Archi-Graphic: An Info graphic Look at Architecture

Year/ Semester	2nd Year		
Course Title	Philosophy		
Course Code	PHI 0223 2217A	Stream	7

No. of Credits	2.0	Course Hour	2.0 hours/week
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COURSE RATIONALE:

Different socio-political era of human civilization. Students are able to know the basic constituents of philosophy and the thought process of philosophers. Students will be able to realize, recognize and compare the trends and traits of iconic philosophical thoughts of the world.

COURSE CONTENT:

Introduction to philosophy, definition of philosophy, purpose of philosophy. Fundamental of philosophy; Nature of philosophical enquiry; Relationship of philosophy to science, history, politics, religion and especially to architecture. Historical overview of Ancient, Medieval and Modern philosophy, both Oriental and Occidental. From Socrates to Sartre and beyond.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Explain various notions, attributes of basic terms and definition of philosophy
CO 2	Develop the knowledge with the geo-political context and philosophical thoughts of different human civilizations
CO 3	Compare the various school of thoughts, from east to west, from ancient to modern era
CO 4	Apply the Philosophy to concept generation in Architecture

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2			3					
CO 2				3	2	3			
CO 3					2	3			
CO4		2			3				2

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	assessment, Mid-term examination 1, Semester-end examination
CO2	Lecture	assessment, Mid-term examination 1, Semester-end examination
CO3	Lecture	assessment, Mid-term examination 2, Semester-end examination

CO4	Lecture	Quiz, Semester-end examination
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Books Recommended

1. **Carson D. (1999);** *Fotografiks*; Gingko Pr. Inc., NY.
2. **Lenman R.(2008);** *The Oxford Companion to the Photograph*; Oxford University Press, UK.
3. **NGS US (2011);** *National Geographic – Complete Photography*; NGS, US.

Year/ Semester	2 nd Year		
Course Title	Introduction to Programming With Python (Lab)		
Course Code	CSE 0613 2214A	Stream	1
No. of Credits	3.0	Course Hour	6.0 hours/week

COURSE RATIONALE:

In this current world, most of the research works require computational data analysis of corresponding fields. This requirement has emphasized the necessity of a knowledge of computer programming for all the researchers. For research-related purposes, computer programming using Python is one of the best choices. This course is designed with the purpose to make students acquainted with programming using python and make them comfortable to deal with computational data analysis.

COURSE OBJECTIVES:

- Help them conceptualize basic theories of computer programming
- Make the students understand fundamental components of python programming
- To develop skills for writing computer programs using all necessary branches of Python
- Accumulate basic ideas about data structures and data manipulations

COURSE CONTENT:

Laboratory works based on theory classes and basic problem solving from rosalind.info using Pycharm, Jupyter, and Anaconda IDEs.

Computer Basics: Concept on Computer Hardware, Software and its classification, Compiler vs Interpreter. **Using the Python Interpreter:** Invoking the Interpreter, Argument Passing, Interactive Mode, The Interpreter, and Its Environment, Source Code Encoding; **An Informal Introduction to Python:** Using Python as a Calculator- Numbers, Strings, Lists. First Steps Towards Programming; **More Control Flow Tools:** if Statements, for Statements, The range() Function, break and continue Statements, and else Clauses on Loops, pass Statements, Defining Functions; **More on Defining Functions:** Default Argument Values, Keyword Arguments, Arbitrary Argument Lists, Unpacking Argument Lists, Lambda Expressions, Documentation Strings, Function Annotations, **Intermezzo:** Coding Style; **Data Structures:** More on Lists- Using Lists as Stacks, Using Lists as Queues, List Comprehensions, Nested List Comprehensions, The del statement, Tuples and Sequences, Sets, Dictionaries, Looping Techniques, More on Conditions, Comparing Sequences and Other Types; **Modules:** More on Modules- Executing modules as

scripts, The Module Search Path, Compiled” Python files, Standard Modules, The dir() Function, Packages- Importing * From a Package, Intra-package References, Packages in Multiple Directories, matplotlib, numpy, other common necessary packages; **Input and Output:** Fancier Output Formatting, Old string formatting, **Reading and Writing Files:** Methods of File Objects, Saving structured data with JSON; **Errors and Exceptions:** Syntax Errors, Exceptions, Handling Exceptions, Raising Exceptions, User-defined Exceptions, Defining Clean-up Actions, Predefined Clean-up Actions. **Classes:** A Word About Names and Objects, Python Scopes and Namespaces, Scopes and Namespaces Example, A First Look at Classes, Class Definition Syntax, Class Objects, Instance Objects, Method Objects, Class and Instance Variables, Random Remarks, Inheritance, Multiple Inheritance, Private Variables, Odds and Ends, Iterators, Generators, Generator Expressions.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to	
CO 1	Design solutions of real-life problems using necessary components of Python
CO 2	Identify errors from a program and use exception handlers to handle errors and exceptions
CO 3	Implement Object Oriented Programming and modular concepts
CO 4	Design basic data structures to solve efficient data storage issues
CO 5	Apply knowledge of programming in data analysis and manipulation

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1		2						2	
CO 2						2			
CO 3		2				2			
CO 4						2			
CO 5						2			

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	Class Lectures, Textbook, Online Resources, Group Discussion	Assignment, Lab Examination
CO2	Class Lectures, Textbook, Online Resources, Group Discussion, Problem-based Learning, Project-based Learning	Assignment, Lab Examination, Programming Problems

CO3	Class Lectures, Textbook, Online Resources, Problem-based Learning, Project-based Learning	Assignment, Programming Problems, Projects
CO4	Group Discussion, Problem-based Learning, Project-based Learning, Blended Learning	Viva-voce, Presentation, Report Writing, Projects
CO5	Group Discussion, Problem-based Learning, Project-based Learning, Blended Learning	Viva-voce, Presentation, Report Writing, Projects

Books Recommended

1. Learning Python, By Mark Lutz, 5th Edition
2. Think Python, By Allen B. Downey
3. The Python Tutorial, Official documentation of Python

Year/ Semester	2nd Year		
Course Title	Principles of Sociology		
Course Code	SOC 0314 2213A	Stream	1
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

The course is organized to provide students from the ARC department with the fundamentals of sociological knowledge. It intends to teach students core but basic topics of sociology including theories and methods, culture, society, social organization, social stratification, and social change. Above all, it provides students from the IPE with the skills to understand society's basic ideas and concepts from sociological points of view.

COURSE OBJECTIVES

- Teach students basic sociological concepts including society, community, social process, culture, and social structure.
- Provide students with knowledge of the major theoretical approaches and methods in sociology.
- Help students gain knowledge on social institutions of human society including the family, marriage, kinship, and religion.
- Help students develop insight to address crime, deviance, and social control.
- Provide students with basic knowledge on global environmental issues and population

COURSE CONTENT

Introduction to Sociology: Definition, Nature, Scope, Origin & Development of Sociology

Doing Sociology: Scientific Method & Techniques for Sociological Investigation

Basic Concepts and Social Processes: Society, Community, Association, Institution, Group, Cooperation, Conformity, Competition, Conflict, Assimilation, and Accommodation

Culture: Development of culture, components of culture, Cultural integration, Cultural variation, Culture, and sociological perspectives

Types of Society: From Hunting Gathering to Industrialization.

Social Institutions: Family, Religion, Perspectives.

Social Stratification: Systems & Perspectives, Social Mobility, Class Structure.

Social Change: Factors & Theories.

Collective Movement: Group, Crowd & Mob.

Population & Environment: Population Growth, Ecology, Ecosystem, Threats to Global Environment

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	Demonstrate an understanding of key sociological concepts and theories of reality;
CO 2	Explain primary ideas and methods of sociological research;
CO 3	Analyze social stratification, systems, and different forms of social inequality;
CO 4	Draw connections between society and different environmental issues; and
CO 5	Apply sociological concepts and theories in analyzing real social lives.

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1		2				2			
CO 2					2	2			
CO 3		2				3			
CO 4					2	3			
CO 5		2				3			

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture and Visual Presentation	Mid-term examination 1, Semester-end examination
CO2	Lecture and Class Discussion	Mid-term examination 1, Semester-end examination
CO3	Lecture, Visual Presentation, and Class Discussion	Quiz, Semester-end examination
CO4	Lecture, Visual Presentation, and Group Discussion	Mid-term examination 2, Semester-end examination

CO5	Lecture, Visual Presentation, and Class Presentation.	Mid-term examination 2, Semester-end examination
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Books Recommended

1. Bottomore, T. B. (1964). Sociology: A Guide to Problems and Literature. London: George Allen & Unwin, Ltd.
2. Henslin, J. M. (2004). Sociology: a down-to-earth approach (3rd ed.). NSW: Pearson Australia.
3. Giddens, A. (2009). Sociology (6th ed.). Cambridge: Polity Press.
4. Inkles, A. (1964). What Is Sociology? an Introduction to the Discipline and Profession (7th ed.). Denver: Prentice Hall.
5. MacIver, R. M., & Page, C. H. (1965) Society. London: Macmillan and Company, London
6. Robertson, I. (1997). Sociology: A Brief Introduction. New York: Worth Publishers, Inc.
7. Schaefer, R. T., & R.P. Lamm, R. P. (1997). Sociology: A Brief Introduction (2nd ed). New York: McGraw Hill.
8. Zanden, J. W. V. (1995). Sociology: The Core (4th ed). New York. NY: McGraw-Hill College.

Year/ Semester	2 nd Year		
Course Title	Principles of Economics		
Course Code	ECO 0311 2215A	Stream	01
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

This ECO105A course provides an introduction to the main ideas and concepts involved in modern economics and attempts to provide students with an understanding of how the economy works, what type of problems economists attempt to solve, and how they set about trying to solve them. The course is primarily concerned with the analysis of individual decision-making agents, the behaviour of firms and industries in the economy (microeconomics), on the economy as a whole (macroeconomics) and the inherent problems facing underdeveloped and developing countries (economic development).

COURSE OBJECTIVES

- Helping the students to understand economics as a forceful factor of architectural development.
- To provide an introduction to macroeconomic analysis outlining how the national income is measured and determined.
- To provide students with an understanding of economic theories and analysis in the field of development economics.
- To provide the knowledge of the impact of GDP, growth and development, socio-economic development on building industry in Bangladesh.

COURSE CONTENT

ExpOring Subject Matter of Economics: Economics – Definition and Scope; understanding economic principles; economic resources-allocation and distribution problems; economic models-circular flow diagram and production possibilities frontier, concept of opportunity cost.

Introduction to Macroeconomics: Key macroeconomic indicators and their performance measurement - GNP, GDP, inflation, unemPOyment.

Money and banking: functions of money, function of commercial and central bank, monetary policy; fiscal policy and structure of govt. budget.

Development and related issues: Growth and development; concept of poverty and poverty measures; HDI; key human-socio-economic development indicators of Bangladesh, Sustainable Development Goals (SDG).

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to:	
CO 1	Explain the analysis of individual decision-making agents, the behaviour of firms and industries in the economy
CO 2	Explain the concept of elasticity quantitatively and qualitatively in economic analysis and differentiate between different types of markets
CO 3	Explain macroeconomic concepts and use simple economic models to interpret the behaviour of key macroeconomic variables
CO 4	Explain monetary and fiscal policy and Government budget
CO 5	Confront the underdeveloped and developing countries

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2		3						
CO 2								2	
CO 3			3						
CO 4			3						
CO 5			3					2	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Mid-term examination 1, Semester-end examination
CO2	Lecture, Self-learning	Assignment, Semester-end examination
CO3	Lecture	Mid-term examination 2, Semester-end examination
CO4	Lecture	Assignment, Semester-end examination
CO5	Lecture	Presentation, Semester-end examination

Books Recommended

1. Arnold, R. A. (2014): Economics, South Western Publishing Company,

- Eleventh Edition
- Bangladesh Economic Review relevant issues.
 - Mankiw, N. G. (2012): Principles of Economics, Thomson South Western Publishing, Sixth Edition
 - Samuelson, P. A. and Nordhaus, W. D. (2009): Economics, McGraw-Hill USA, Nineteenth Edition.
 - Todaro, M. P. and Smith, S. C. (2012): Economics of Development in the Third World, Longman, Eleventh Edition

3rd year Optional Courses					
Set B * Required credits of optional courses from Set B is 4.0 (2 courses) and student can register maximum 2 courses from each semester					
Course No.	Course Title	Course Category	Theory credit	Lab Credit	Hour /week
ARC 0731 3171	Facilities Planning and Design	Elective	2	0	2
ARC 0732 3262	Field Work III: Building Construction	Elective	0	1w	2
ARC 0732 3263	Building Services III- Plumbing	Elective	2	0	2
ANP 0314 3115A	Culture, Space and Place	General Education	3	0	3
STA 0542 3117A	Statistics for Architects	General Education	3	0	3
ARC 0313 3273	Behavior Studies in Architecture	Elective	2	0	2
ARC 0732 3264	Building Information Modeling	Elective	0	2	4
			12	2	18

Year/ Semester	3rd Year		
Course Title	DT IV: Facilities Planning and Design		
Course Code	ARC 0731 3171	Stream	7
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course intends to inculcate in the students the fundamental design principles and planning process of various facilities planning and design.

COURSE OBJECTIVES:

- Make the students to understand the planning process of different facilities.
- Helping the students to acquire rudimentary knowledge on programming, planning and designing of facilities.

- To develop skills to analyze and compare multidisciplinary approaches related to facilities planning.

COURSE CONTENT:

Approaches to facilities planning and design. Philosophy, policies, objectives, hierarchy and process of facilities planning from different perspectives. Site-planning design. Fundamentals of programming, planning and design of different facilities for architecture with specialized functions.

Facilities planning and design for educational facilities, health facilities, commercial facilities, industrial facilities and miscellaneous projects.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to	
CO 1	Distinguish the approaches of facilities planning and their principles
CO 2	identify and compare historical references of facilities planning
CO 3	design different facilities for specialized building types such as healthcare, educational, industrial, commercial, etc.
CO 4	integrate the needs of all stakeholders to optimize the effectiveness of facilities planning process
CO 5	Apply or conduct further multidisciplinary research on facilities design

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	2							
CO 2	2								
CO 3	2	3				3			
CO 4	2	3			3		3		
CO 5	2		3		3				

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture, Text book	Mid-term examination 1, Semester-end examination
CO2	Lecture, Text book	Mid-term examination 1, Semester-end examination
CO3	Lecture, Problem-based learning	Class evaluation, Mid-term examination 2, Semester-end examination
CO4	Lecture, Self-learning	Mid-term examination 2, Semester-end examination
CO5	Lecture, Self-learning	Assignment, Semester-end examination

Books Recommended

1. **Tompkins, White, Bozer, Tanchoco:** Facilities Planning
2. **Garcia Diaz, J. MacGregor Smith:** Facilities planning and Design
3. **Joseph De Chiara:** Time-Saver Standards for Building Types
4. **Ernst Neufert, Peter Neufert:** Neufert Architects' Data
5. **C. Kenneth Tanner and Jeffery A. Lackney:** Educational Facilities Planning: Leadership, Architecture, and Management
6. **Robin Guenther & Gail Vittori:** Sustainable Healthcare Architecture
7. **Jargen Adam:** Industrial Buildings (Design Manuals)
8. **Donald Watson, Michael J. Crosbie:** Time Saver Standards for Architectural Design

Year/ Semester	3 rd Year		
Course Title	Building Services III- Plumbing		
Course Code	ARC 0732 3263	Stream	6
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course intends to teach the students the design and application of plumbing and drainage systems inside and outside the buildings.

COURSE OBJECTIVES:

- To provide the knowledge of the basic concepts of water supply system.
- To introduce the students with sanitation and water treatment systems in buildings.
- Applying the knowledge to determine water requirements and capacity.
- Helping the students to understand the solid-waste management and drainage system of different buildings.

COURSE CONTENT:

Water Supply: sources, demand, treatment and distribution of water. Sources of water supply, Plumbing system types for various buildings. Quality of potable water. Calculation of water requirements for various building types. Water treatment methods– Screening, Aeration, Sedimentation, Filtration, Disinfection, Softening. Storage and distribution of water. Choice of pipe materials, types of fixtures and fittings. Sanitation: Introduction to various sanitary pipes, joints, fittings and fixtures, their function, placement and constructional details. Principles of storm water drainage. Types of drain pipes. Storm water gutter / Storage sumps. Study of storm water disposal at site and settlement level. Rain water harvesting system. Recycling of water. Waste water treatment and disposal methods. Solid waste, collections, treatments and disposal. Biogas system and Modern renewable energy system.

Application: Layout design and construction. Layout design and details of water supply distribution system in a Campus. Layout design and details of sewage and drainage system for different building types. Storm water drainage and rain water harvesting system design for a building project. Study of internal & external drainage

system of various buildings including small residences, apartments, public buildings etc. Single stack system, one pipe and two pipe systems, Gradients used in laying drains and sewers.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to:	
CO 1	Calculate water use, requirements and capacity
CO 2	Explain waste water treatment and disposal methods
CO 3	Design storm water drainage & rain water harvesting system
CO 4	Implement the knowledge about solid waste collections, treatments and disposal
CO 5	Distinguish appropriate plumbing fixtures and fittings for multi-storied buildings

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	2							
CO 2	2								
CO 3	2							3	
CO 4	2							3	
CO 5	2	2							

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture, problem-based learning	Mid-term examination 1, Semester-end examination
CO2	Lecture, self-learning	Mid-term examination 1, Semester-end examination
CO3	Lecture, project-based learning	Assignment, Mid-term examination 2, Semester-end examination
CO4	Lecture, digital presentation	Mid-term examination 2, Semester-end examination
CO5	Lecture, project-based learning	Assignment, Semester-end examination

Books Recommended

1. Lechner, Norbert (2012). **Plumbing, Electricity and Acoustics: Sustainable Design Methods for Architecture**. John Wiley & Sons, Inc., Hoboken, New Jersey.
2. B.C. Punmia (2009). **Waste Water Engineering**, Laxmi Publications.
3. S.J. Arceivala (2008). **Waste Water Treatment for Pollution Control**. Tata McGraw Hills Publication.

4. K.N. Duggal (2010). **Elements of Environmental Engineering**, Chand & Co.
5. Charanjeet S. Shah (2015). **Water Supply and Sanitation**; Galgotia Publication.

Year/ Semester	3 rd Year		
Course Title	Culture, Space and Place		
Course Code	ANP 0314 3115A	Stream	1
No. of Credits	3.0	Course Hour	3.0 hours/week

COURSE RATIONALE

Space and place are closely interlinked. Culture has a vital role in place-making. This course has been designed to introduce graduates to the field of socio cultural anthropology, the study of vibrant human cultures and their relation with the making of the built environment. It presents an alternative approach to look at architecture and other forms of place-making and provides a framework to critically assess historical, social, and cultural significances. Anthropology considers urban design and planning from diverse social and cultural contexts. Urban planning is a crucial form of managing urban populations and spaces. An anthropological approach to urban planning focuses on the gap between envisioned utopias and actual everyday lives in the planned spaces. Thus, anthropological studies of urban planning often document how local populations engage with and rework such urban plans. Therefore, this course aims to expose graduates to some of the core concepts of anthropology like fieldwork, ethnography, and explores the questions that guide socio cultural and anthropological influences on architecture and space.

COURSE OBJECTIVES

- Help students with the necessary knowledge about key concepts in anthropology
- Acquaint graduates with the basic knowledge about culture, place and space
- Acquaint graduates with alternative methods and tools appropriate for design investigation and communication in a culturally sensitive way
- Orient with necessary knowledge on urban design and planning keeping cultural issues in consideration.
- Equip graduates to conduct design exercise based on information collected from the cultural reading of place-making practice inside a society

COURSE CONTENT

Introductory Discussion: (Key issues such as culture, ethnography, urban anthropology). Ethnographic approach :(Participant observation, cultural logic, pattern) .Place and spaces:(definition, relation of place and places, place making process, neighborhood, urban settlement). Urban planning and design: (social and cultural context of urban planning and design, historical perceive of urban planning, formation of city, types of city, factors associated with city planning and designed) .Theories and methods : (Theories of place and space, Foucault on space and power, ethnography and other relevant methods).

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	Explain key anthropological terms related to culture, space, and place
CO 2	distinguish alternative methods and tools appropriate for design investigation and communication in a culturally sensitive way
CO 3	apply cultural context in urban planning and design
CO 4	formulate a conscious “think anthropologically” to have a deeper understanding of nature, culture, and architecture
CO 5	explain which socio-cultural-environmental features can contribute to a better architectural design

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2								
CO 2		2	2			3			
CO 3		2					2		
CO 4	2					3			
CO 5	2		3						

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture and Visual Presentation	Quiz, Mid-term examination 1, Semester-end examination
CO2	Lecture and Visual Presentation	Quiz, Mid-term examination 1, Semester-end examination
CO3	Lecture, Visual Presentation and Class Discussion	Quiz, Class evaluation, Mid-term examination 2, Semester-end examination
CO4	Lecture and Visual Presentation	Mid-term examination 2, Semester-end examination
CO5	Lecture, Visual Presentation and Group Discussion	Assignment, Mid-term examination 2, Semester-end examination

Books Recommended

1. Ester, GisbertAlemnay (2016) An Architecture by means of Anthropology: Beyond learning the tools of social science.
2. Haviland, William (2006) Cultural Anthropology, Holt, Rinehart and Winston.
3. Jaffe Rivke and KoningAnouk de.2016. Introducing Urban Anthropology. Routledge

4. Setha M. Low, Denise Lawrence-Züniga (edt.) 2003. Anthropology of Space and Place: Locating Culture.
5. Setha M. Low 2005. Theorizing the City: The New Urban Anthropology Reader.
6. Stender, Marie.2016. Towards an Architectural Anthropology—What Architects can Learn from Anthropology and vice versa.
7. Victor Buchli. 2013. An Anthropology of Architecture. Berg Publishers

Year/ Semester	3 rd Year		
Course Title	Statistics for Architects		
Course Code	STA 0542 3117A	Stream	1
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

This course intends to acquire knowledge to analyze applied data.

COURSE OBJECTIVES

- Provide the basic knowledge of statistical tools,
- Equip the students for analyzing the data using the tools of descriptive and inferential statistics.

COURSE CONTENT

Part A: **Statistics:** definition, nature and scope of statistics for architecture. Nature of statistical data. Attributes and variables, population and sample, parameter and statistic, tabulation, frequency distribution, graphical representations

Measures of central tendency: Mean median, mode, geometric mean, weighted mean and truncated mean.

Measures of dispersion: range, standard deviation, variance, coefficient of variation, skewness and kurtosis. Probability distributions: uses, applications and properties of Binomial, Poisson, Normal distribution and standard normal distribution.

Part B: Brief discussion on sampling distributions- χ^2 , t and F distributions.

Basic concepts of sampling techniques: simple random sampling, stratified sampling and cluster sampling.

Test of hypothesis: about mean, variance, proportion, confidence intervals for mean, variance, proportions, and sample size determination.

Correlation and Regression: definition, measure, interpretation and significance, simple linear regression model with underlying assumptions.

Elements of Research; Research process, Questionnaire design. Introduction to SPSS (Brief description of data processing, Editing and Analysis)

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to

CO 1	Explain basic concepts of statistics and describe various statistical tools;
CO 2	Construct frequency distribution and present data graphically;
CO 3	Compute and interpret different measures of central tendency, location, dispersion, and shape characteristics;
CO 4	Demonstrate a solid understanding of probability, probability distribution, sampling distribution and sampling techniques;
CO 5	Perform test of the hypothesis;

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2								
CO 2							2		
CO 3									
CO 4	2		3			3			
CO 5			3		3				

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture, Text book	Mid-term examination 1, Semester-end examination
CO2	Lecture, Problem-based learning	Mid-term examination 1, Semester-end examination
CO3	Lecture, Problem-based learning	Class evaluation, Mid-term examination 2, Semester-end examination
CO4	Lecture, Self-learning	Mid-term examination 2, Semester-end examination
CO5	Lecture, Problem-based learning	Assignment, Mid-term examination 2, Semester-end examination

Books Recommended

1. **Mostafa, M. G.**, (1989) Methods of Statistics, Karim press and publication, Dhaka, Bangladesh,
2. **Gupta S.C. and Kapoor V.K.**, (2000) Fundamentals of Mathematical Statistics,

- 10th ed, Sultan Chand and Sons,
3. **Hogg R V & Craig A T**, (1995) Introduction to Mathematical Statistics, 5th Ed, Macmillan, London,
 4. **DeCoursey, W J.** (2003) Statistics and Probability for Engineering Applications, Newnes, Elsevier Science (USA),
 5. **Landau, S. and Everitt, B.S.** (2004) A handbook of statistical analysis using SPSS, Chapman & Hall/CRC.

Year/ Semester	3 rd Year		
Course Title	Behavior Studies in Architecture		
Course Code	ARC 0313 3273	Stream	7
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course emphasizes to understand diversity of behavioral needs, values, norms, human psychology in architectural design process.

COURSE CONTENT:

Man-environment relationship: Positive and normative theories. Behavioral science and modern movement. Substantive theory on environment and human behavior, Social stimulation and interaction, the affordances of the built environment. Gestalt theory of perception, Cognition and effect, special behavior. Environmental Determinism, Environmental possibilism and environmental probabilism. Concept of FIT-adaptability and flexibility.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Analyze behavioral study in architecture and planning
CO 2	Explain different theories of human behavior science
CO 3	Incorporate human behavior to create barrier-free and democratic built environment
CO 4	Explain human needs and feelings in buildings with relation to the lifestyle of humans within it
CO 5	Conduct further multidisciplinary research as well as design studio projects based on behavior studies

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1		2				2	2		
CO 2				2					
CO 3	2	2				2			

CO 4		2				2	2		
CO 5		2	3						

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture, text book	Mid-semester examination 1, Semester end examination
CO2	Lecture, self-learning	Mid-semester examination 1, Semester end examination
CO3	Lecture, project-based learning	assignment, Mid-semester examination 2, Semester end examination
CO4	Lecture, Problem-based learning	Presentation (Group/Individual), Mid-semester examination 2, Semester end examination
CO5	Self-learning	Semester end examination

Books Recommended

1. **Robert B. Bechtel(ed)**: Handbook of Environmental Psychology
2. **Amos Rapoport**: Theory in Environment Behavior Studies. (Journal)
3. **Joy Knoblauch**: The Architecture of Good Behavior

Year/ Semester	3 rd Year		
Course Title	Building Information Modelling		
Course Code	ARC 0732 3264	Stream	6
No. of Credits	2.0	Course Hour	4.0 hours/week

COURSE RATIONALE:

This course intends to equip the students with the strengths of Building Information Modeling technologies, widely used in architectural research and profession to stay updated with the global academic and professional race.

COURSE CONTENT:

Understanding the idea of Building information modeling. BIM overview, Developing competences on BIM Processes, BIM Technology, BIM Application. Overview of related software and Case Studies. BIM requirements and applications from around the world, BIM and the Futures Parametric design principles. Application of BIM for building modeling and integration with engineering services and building technology. Preparing construction documents for detail architectural design.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Operate BIM software such as ArchiCAD, Revit, Vectorworks, etc.
CO 2	Apply BIM software for parametric designs

CO 3	Formulate early conceptual design decisions using BIM software
CO 4	Analyze and Integrate building and engineering services using BIM
CO 5	Develop construction level modeling including detailing, specifications and cost estimation

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2				2				
CO 2	2	2							
CO 3		2						3	
CO 4	2	2				2		3	
CO 5	2				2			3	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture using projector	Assignment, Summative assessment
CO2	Project/tutorial	Continuous assessment, Summative assessment
CO3	Self-learning using reference	Quiz, Summative assessment
CO4	Guest lecturers/field visit	Continuous assessment, Summative assessment
CO5	Simulation/field demonstration	Assignment, Summative assessment

Books Recommended

1. **Richard Garber:** BIM Design: Realizing the Creative Potential of Building Information Modelling
2. **Randy Deutsch:** BIM and Integrated Design: Strategies for Architectural Practice
3. **Chuck Eastman et al:** BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers, and Contractors, John Wiley & Sons Inc., 2008

4th Year Optional Courses					
Set C	* Required credits of optional courses from Set C is 8.0 (3/4 courses) and student can register maximum 2 courses from each semester				
Course No.	Course Title	Course Category	Theory credit	Lab Credit	Hour /week
ARC 0532 4162	Computer Aided Spatial Analysis	Elective	0	2	3
ARC 0712 4173	Architecture for Sustainability	Elective	2	0	2
ARC 0222 4123	Heritage Studies and Conservation	Elective	2	0	2

ARC 0731 4183	Rural Studies of Bangladesh	Elective	2	0	2
ARC 0731 4274	Collaborative Design Studio	Elective	0	2	4
ARC 0732 4261	Building Maintenance and Retrofitting	Elective	2	0	2
ARC 0731 4281	Community Architecture and Planning	Elective	2	0	2
ARC 0731 4283	Planning and Management for Disaster Resilience	Elective	2	0	2
			10	06	19

Year/ Semester	4th Year		
Course Title	Computer Aided Spatial Analysis		
Course Code	ARC 0532 4162	Stream	6
No. of Credits	2.0	Course Hour	4.0 hours/week

COURSE RATIONALE:

This course intends to equip students with deeper understanding of computer application in analysis of urban data. Application of GIS in spatial analysis and urban survey will expand the career opportunity of the graduates in coming years.

COURSE CONTENT:

Introducing spatial analysis tools to support urban design and planning studio. Introduction to Geographic information system (GIS) and its application in spatial analysis. Understanding concepts of decision support tools in advanced design and planning process for architecture. Training on web based free spatial analysis tools like space syntax, open street map, mapbox, etc.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to:	
CO 1	Operate the spatial simulation software such as ArcGIS, Space Syntax, etc.
CO 2	Transforming cad files to GIS shapfiles to record urban data
CO 3	Illustrate GIS based mapping and spatial analysis for advanced urban planning and design
CO 4	Utilizing analytical capacity and speed of GIS to process large scale urban data and demonstrate different combinations of analytical methods
CO 5	Apply and use other web based spatial analysis platforms like open street map, mapbox, space syntax, etc.

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2							2	3
CO 2								2	3
CO 3								2	3
CO 4						2	2	2	3
CO 5								2	3

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Project, workshop	Summative Assessment
CO2	Project, workshop	Summative Assessment
CO3	Project, workshop	Summative Assessment
CO4	Project, workshop	Summative Assessment
CO5	Project, workshop	Summative Assessment

Books Recommended

1. Wilpen L. Gorr & Kristen S. Kurland: GIS Tutorial 1 for ArcGIS Pro: A Platform Workbook.
2. David Smith et al.: Understanding GIS

Year/ Semester	4 th Year		
Course Title	Architecture for Sustainability		
Course Code	ARC 0712 4173	Stream	7
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

The course focuses on the present sustainability concept and design practice of energy efficiency and technological advancement in the field of Architecture. The study area includes successful practices, innovative ideas and possibilities with international cooperative measures to guide clear understanding in this study field.

COURSE CONTENT:

Basic concept of sustainability and built environment design. Environmental forces and built form interaction. Passive means of built environment control. Built environment design in the local context. Concepts in bioclimatic design. Water and wetland architecture. Basic concepts of recycling, renewability and conservation in design;

Urban ecology and responsive environment; Sustainable building materials and construction; Green building concept, Environmental analysis, accounting and monitoring of buildings; Technologies for built environment design. Climate change and adaptation.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to:
CO 1	Explain the basic concept and relation between sustainability and architecture
CO 2	Compare the aspects and necessity of sustainable design practice
CO 3	distinguish various historical practices on basis of different climatic and cultural context and relate with modern day practice
CO 4	compare between different trends of sustainable design practice ongoing around the world and apply technology-based solutions on, decision making and design
CO 5	Formulate appropriate solutions for the sustainable design practice in the country or region

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	2							
CO 2	2	2							
CO 3	2	2				3			
CO 4	2	2				2		3	
CO 5	2	2				3			

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture using projector	Mid-term examination 1, Semester-end examination
CO2	Lecture using projector	Mid-term examination 1, Semester-end examination
CO3	Lecture using projector	Mid-term examination 2, Semester-end examination
CO4	Guest lecturers/field visit	Assignment, Mid-term examination 2, Semester-end examination

CO5	Field demonstration	Assignment, Semester-end examination
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Books Recommended

1. **David Loyed Jones:** Architecture and the environment.
2. **Daniel E. Williams:** Sustainable design, ecology, architecture and planning
3. **David Bergman:** Sustainable Design: A Critical Guide (Architecture Briefs)
4. **Krisnan,Baker,Yannas:** Climate Responsive Architecture
5. **Patrick M Condon:** Design Charrettes for Sustainable Communities
6. **Stephen R J Sheppard:** Visual Simulation
7. **Terri Meyer Boake:** Lecture series on sustainable Architecture (www.slideshare.net)

Year/ Semester	4th Year		
Course Title	Heritage studies and Conservation		
Course Code	ARC 0222 4123	Stream	2
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course intends to develop skills for understanding heritage issues and train students with fundamental ideas of heritage conservation management practice.

COURSE CONTENT:

Part A: Understanding heritage: Understanding heritage and process of heritagization. Relation with heritage, memory, and place. Understanding conservation: Architectural & Urban Conservation; Its meaning, principles, and scope; Definition of conservation; Preservation, restoration, renovation, reconstruction, adaptation, reuse, redevelopment, renewal, etc. at building and urban scale. History of conservation movements in the world. International conservation laws and role of UNESCO. Ethics in Conservation, degrees of intervention in historic buildings and monuments, and why to conserve issue. Conservation issues and context. Conservation policy, ethics, regulations, technology, and finance. Policies, legislations, and agencies of conservation

Part B: Understanding systematic Conservation Process and planning. Causes of decay and deterioration of cultural property: External causes of decay. The context of inspecting the historic building, documentation, mapping, and analysis. Preparation of inspection report. Techniques for restoration, preservation, and rehabilitation. Concepts of historic towns, quarters, and areas of heritage Zone and integrated conservation. Planning and management aspects in conservation re-use and

redevelopment of historic buildings and areas. Local and International case study and good practices.

COURSE LEARNING OUTCOMES:

CO 1	Demonstrate a comprehensive understanding of the concepts, theories, and principles related to heritage, including the significance and value assessment
CO 2	Apply ethical considerations in heritage management and decision-making processes through national and international laws, charters, and conventions related to heritage conservation
CO 3	Develop skills in heritage management through various forms of interpretation, and inventory techniques, including architectural surveys, archival research, photography, and digital documentation and collaborative way
CO 4	Identify potential risks and threats to heritage sites, conduct risk assessments, and develop strategies to mitigate damage and ensure the safeguarding of cultural heritage
CO 5	Critically evaluate the effectiveness of different approaches through the knowledge of conservation principles to assess, preserve, and restore cultural heritage sites and further research

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3					3		
CO 2				3			3		
CO 3					2	3	3		
CO 4						3	3		
CO 5			3			3			

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Mid-term examination 1, Semester-end examination
CO2	Lecture,	Assignment, Mid-term examination 1, Semester-end examination

CO3	Lecture, Simulation/field demonstration, Guest Lecture	Assignment, Semester-end examination
CO4	Lecture, Documentary	Mid-term examination 2, Semester-end examination
CO5	Lecture	Mid-term examination 2, Semester-end examination

Books Recommended

- 1 **B.M. Fieldon:** The conservation of Historic Buildings
- 2 **Peter J Larkham:** Conservation and the City
- 3 **Graeme Aplin:** Heritage Identification, Conservation and Management
- 4 **Aylin Orbasli:** Architectural conservation

Year/ Semester	4 th Year		
Course Title	Rural Studies of Bangladesh		
Course Code	ARC 0731 4183	Stream	8
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course intends to introduce students to development issues in the rural context through planning and management.

COURSE CONTENT:

Understanding the rural context of Bangladesh. Nature, scope and models of integrated rural development. The background of rural planning and development and the social, economic and physical context. Review of rural settlement and spatial pattern in Bangladesh. Rural planning and development in the post-independence period. Importance of Community planning and development concepts. Problems and issues in rural development: population, urbanization and migration. Rural governance, services and infrastructure. Institutions for rural development. Policies and strategies of rural development. Study of contemporary innovation and practices in rural sectors. Energy efficient rural planning and environmental protection.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	explain the physical and social aspects of the rural built environment.
CO 2	implement design strategies for rural contexts and communities.
CO 3	integrate participatory approaches with rural development.
CO 4	Identify and resolve housing issues based on rural society, occupation and economy.
CO 5	Apply innovative new technologies for sustainable practices in the rural context.

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	3							
CO 2		2				3			
CO 3		2			3	3			
CO 4	2	2							
CO 5			2			2		3	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	Lecture using projector	Mid-term examination 1, Semester-end examination
CO2	Lecture using projector	Mid-term examination 1, Semester-end examination
CO3	Lecture using projector	Mid-term examination 2, Semester-end examination
CO4	Lecture using projector	Assignment, Mid-term examination 2, Semester-end examination
CO5	Lecture using projector	Assignment, Semester-end examination

Books Recommended

1. Rahman, Prof. Golam (2008). *Town Planning and the Political Culture of Planning in Bangladesh*. A H Development Publishing House: Dhaka.
2. Mustafa, Golam (2007). *Rural Urban Planning 01*. A H Development Publishing House: Dhaka.
3. Driscoll, Catherine (2017). *Cultural Sustainability in Rural Communities*. Routledge: London and New York.
4. Caldwell, Wayne J. (2015). *Planning for Rural Resilience: Coping with Climate Change and Energy Futures*. University of Manitoba Press: Canada.

Year/ Semester	4 th Year		
Course Title	Collaborative Design Studio		
Course Code	ARC 0732 4261	Stream	6
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course intends to create a multidisciplinary platform for context-based design/planning in collaboration with external universities, agencies, research labs, projects. By engaging in collaborative activity, students will utilize each other's perspectives and experiences to solve problems and develop a shared understanding of problems. This course aims to foster the growth of essential employability, professional, and transferable skills among our students. Students will be skilled through collaborative teamwork, project management, entrepreneurialism, negotiation, and an appreciation for diverse creative practices.

COURSE OBJECTIVES:

- Through studio-based project learning, this course will introduce students to collaborative activities with external bodies applying a range of design enquiry processes.
- This course will enable students to take design challenges with a user-centric approach; identify and apply design methodologies and processes in ethical and culturally sensitive ways.
- The projects will blend traditional modes of design and planning with new and innovative ways of doing and integrating various interventions including social survey, stakeholder analysis, environmental assessment, spatial analysis conservation assessment etc.
 - To foster both personal and collective curiosity among students by encouraging them to think beyond traditional discipline specificity and gain multidisciplinary knowledge.

COURSE CONTENT:

Collaborative design studio will immerse students in the essential, foundational learning required of all fields of collaborative design and planning. Project outcomes can range from a variety of proposals including spatial planning, architectural design, conservation planning, interior design, product design, field survey outcomes etc. The projects must show their competencies with collaborative learning, stakeholder inclusion, context observation. The studio projects are crafted in a way that outcomes could be shared throughout the region, cultural and physical boundaries. Also making a significant contribution to the city's cultural scene by collaborating with the creative community and engaging with the general public through various events. Our projects are organized under these interdisciplinary and transdisciplinary themes:

- Design, interventions of built structures, place making
- Planning for community, designing urban spaces

- Innovative product development, interior design, crafts making
- Research in teaching & pedagogy, research & development
- Communal Engagement with community development proposals
- Creative transdisciplinary collaboration, exploration in the field of art and design

Upon availability of resources, more than one project can run simultaneously with registered students. The following types of projects can be included as collaborative design studio projects:

Project type 01: Collaborating with external universities

Within this project scope students will collaborate with students from other universities or other departments within SUST. Student groups will include both host and guest institutes to work together. Project types may include architectural design, spatial planning, urban design, housing, conservation planning etc.

Project type 02: Collaborating with external agencies

Projects can be both initiated or coordinated by the Department of Architecture with external agencies. Or where suitable, the department can be a part of projects initiated by other agencies as well. As potential partners, a range of international/local agencies can be included like governmental departments, research institutes, non-governmental organizations, cultural organizations, social welfare agencies, product industries etc.

Project type 03: Collaborating with community-led projects:

Collaborative Design Studio will highly prioritise projects initiated and led by local communities. Within this project scope, students will participate in community-led initiatives and directly collaborate with local community members and enable a co-creation process to offer adequate knowledge-based support to communities. In this case, projects should explore co-creation methodologies which enable both students and the community as decision-makers.

Project type 04: Collaborating with funded research projects

Research projects funded by external and internal agencies will fall under this project scope. Upon prior approval from the Department of Architecture, an individual or a group of faculties can offer a course proposal for this course.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to:

CLO 1 Demonstrate skills in interpersonal communication and collaboration on both local and international scales with other institutional partners.

CLO 2 Respond to real and speculative challenges through design and planning thinking and expand the realm of contemporary systems of social, economic and environmental operation.

CLO 3 Utilize and value a range of qualitative/quantitative research methods in a real environment and social context.

CLO 4 Identify various stakeholders connected to project and involve them within the participatory design and planning process.

CLO 5 Learn and use various collaborative design/planning tools including bibliometric research, stakeholder workshops, spatial analysis, building assessment, and mapping using various software.

Teaching-learning strategy:

Teaching-learning strategy of the course will adopt a flexible and multidisciplinary method. Based on the type of project, tutors may apply suitable project supervision strategies. Teaching- learning methods may include a mix of modalities including in-person face-to-face teaching, online teaching, series of workshops, field surveys, out-of-campus studios, industrial residency etc. For each project, at least one tutor will be assigned as a host tutor along with guest tutors from collaborating institutes. In addition to host and guest tutors, external lecturers can be invited to provide topic-oriented talks.

Assessment strategy:

Course assessment strategy will follow a departmental grading strategy for sessional courses approved through semester ordinance. Where required host tutors can include gradings by external institutes. Based on project types assessment strategies may include Jury Presentation, Preliminary Assessment, Reports, Design Portfolio, Model Making Self-Reflection etc.

Periodic Assessment		Final Group Presentation	Class Performance	Total
Group Presentations	Self-reflection			
30	20	40	10	100

MAPPING COURSE LEARNING OUTCOMES (CLOs) WITH PLOs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9
CLO 1	*		*						
CLO 2		*		*					
CLO 3						*			
CLO 4							*		
CLO 5									*

MAPPING CLOs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CLO1	Design Studio/field workshop	Monitoring/ observing communication skill
CLO2	Guest lectures/field visit	Field work presentation
CLO3	Design studio	Project Presentation
CLO4	Guest lectures/Design studio	Project Presentation
CLO5	Guest lectures/field visit	Project Presentation

Year/ Semester	4 th Year		
Course Title	Building Maintenance and Retrofitting		
Course Code	ARC 0732 4261	Stream	6
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

This course aims to teach the students building maintenance and retrofitting processes in order to enable them competent for their professional career.

COURSE OBJECTIVES

- To introduce the students with the policy and process of building maintenance.

- To help them understanding the factors and technical aspects affecting the maintenance.
- Acquaint the students with the utilization of retrofitting as a periodical solution.

COURSE CONTENT

Definition of building maintenance and building life cycle. Degradation and durability of building materials. Environmental influence of building materials. Factors affecting maintenance. Influence of design on building maintenance. Maintenance policy and guides. Building maintenance planning. Safety and economics in building operation. Operation and maintenance routines. Energy management. Organization of technical administration. Building inspection and schedule.

Retrofitting methods, analysis of retrofitting needs and possibilities, public demands and planning of retrofitting. Estimate/analyze deficiencies and retrofitting needs in the building stock. different solutions to common retrofitting problems. Seismic Strengthening and Seismic Retrofitting through architecture. Strengthening or Retrofitting Versus Reconstruction.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	Explain building cycle and identify factors affecting maintenance
CO 2	Minimize defects during construction and design
CO 3	Apply proper construction details and chose appropriate materials to make maintenance less onerous
CO 4	Maintain the performance of the building fabric and services
CO 5	Provide an efficient and acceptable operating environment to users

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALSKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	1	2							
CO2		2				3			
CO3		2				3		2	
CO4		2							
CO5					2			2	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Mid-term examination 1, Semester-end examination
CO2	Lecture	Mid-term examination 1, Semester-end examination
CO3	Lecture	Mid-term examination 2, Semester-end examination

CO4	Lecture	Mid-term examination 2, Semester-end examination
CO5	Lecture	Assignment, Semester-end examination

Books Recommended

1. **Brian J.B. Wood:** Building Maintenance
2. **PWD Bangladesh Manual:** Maintenance management, repairs, retrofitting and strengthening of buildings.
3. **Xilin Lu:** Retrofitting Design of Building Structures
4. **BNBC 2006:** (Chapter 5) Maintenance Management, Repairs, Retrofitting and Strengthening of Buildings

Year/ Semester	4 th Year		
Course Title	Community Architecture and Planning		
Course Code	ARC 0731 4281	Stream	8
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course intends to teach students concepts of community planning with special attention to participatory approaches in architectural design.

COURSE CONTENT:

Introducing community planning and design in architecture. Developing ideas of neighbourhood, community and society. Ideas of Co-creation and participatory design approaches. Understanding environmental issues within the community. Relationship of community and culture. Socio-cultural basis of the design of communities. Orientation and identity in community architecture. Creating a sense of place and sense of time. ExPoring types of communities (e.g., crossroads Communities, agricultural communities, fishing communities, urban communities, and retirement communities). Identifying community issues and problems, means of communication with the community and use of media. Community as a key stakeholder in design and planning. Methods and tools for community engagement in design and planning. Community-based management and monitoring.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	Explain community architecture.
CO 2	Explain the relation of socio-cultural elements and historical background to community architecture.
CO 3	Analyze, recognize, classify, and compare special needs in community planning.

CO 4	Apply methods of community involvement as an effective way of stakeholder involvement.
CO 5	Apply co-design and participatory approaches in the design

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2								
CO 2	2	3							
CO 3		2				3			
CO 4		2			3				
CO 5		2			3				

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching-Learning Strategy	Assessment strategy
CO1	LECTURE WITH PROJECTOR	Mid-term examination 1, Semester-end examination
CO2	LECTURE WITH PROJECTOR	Mid-term examination 1, Semester-end examination
CO3	LECTURE WITH PROJECTOR	Assignment, Presentation (Individual/Group), Semester-end examination
CO4	LECTURE WITH PROJECTOR	Mid-term examination 2, Semester-end examination
CO5	LECTURE WITH PROJECTOR	Mid-term examination 2, Semester-end examination

Books Recommended

- 1 Krier, Leon (2011). *The Architecture of Community*. Island Press: London.
- 2 Kendig, Lane H. (2010). *A Guide to Planning for Community Character*. Island Press: London.
- 3 Kelly, Eric Damian (2009). *Community Planning: An Introduction to the Comprehensive Plan*. Island Press: London.
- 4 Masterson, Jaimie Hicks et al (2014). *Planning for Community Resilience: A Handbook for Reducing Vulnerability to Disasters*. Island Press: London.

Year/ Semester	4th year
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Course Title	Planning and Management for Disaster Resilience		
Course Code	ARC 0731 4283	Stream	8
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE:

This course teaches architecture students to integrate and disaster resilience policies and technique with built environment through design and planning.

COURSE OBJECTIVES:

- To help the students to understand the causes and effects of natural calamities.
- To familiarize the students with the factors causing disaster.
- To provide an overall understanding of Disaster prevention and mitigation.
- To help them outline the concepts of disaster resistant construction.
- To expose the students to Case studies of Natural disasters in Bangladesh.
- To familiarize the students with national and international frameworks on disaster managements.

COURSE CONTENT:

Climate Change and Adaptation, Types of environmental risks and hazard in Bangladesh, Basic concept of Disaster, Hazard, Vulnerability, Capacity, Risk and Resilience; Institutional and Regulatory aspect and framework of disaster management: Holistic Disaster Management Approach in Bangladesh, COP, Hyogo Framework, Sendai Framework, etc. Disaster Risk Reduction (DRR): Risk and vulnerabilities assessment, management, and monitoring.

Design & planning for resilience: Structural response and warning System, Earthquake: effects on buildings, Design and planning in coastal ecosystem area, Urban hazard: fire hazard, inland flooding etc. mapping techniques and responsive planning and design; Building codes, configuration and building system for fire hazard.

COURSE LEARNING OUTCOMES:

	After successful completion of the course, students will be able to
CO 1	Develop awareness about natural disasters and factors that causes them
CO 2	Explain the design guidelines in disaster resistant construction
CO 3	Implement solutions through adopting lessons from case studies of mitigating natural disasters in Bangladesh and mitigation policies by government
CO 4	Apply adaptive measures to encounter natural and man-made hazards
CO 5	Formulate strategies for disaster management and mitigation

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs:

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONAL SKILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9

CO1	2	3							
CO2		2		2					
CO3		2				3			
CO4		2				3			
CO5		2	3						

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture	Mid-term examination 1, Semester-end examination
CO2	Simulation/field demonstration	Assignment, Mid-term examination 1, Semester-end examination
CO3	Lecture	Mid-term examination 2, Semester-end examination
CO4	Lecture	Mid-term examination 2, Semester-end examination
CO5	Lecture	Assignment, Semester-end examination

Books Recommended

1. Jaimie Hicks Masterson et al: Planning for Community Resilience - A Handbook for Reducing Vulnerability to Disasters, Island Press, 2014
2. Alexander Fekete, Frank Fiedrich (eds.): Urban Disaster Resilience and Security: Addressing Risks in Societies, Springer, 2018
3. Michael K Lindell: The Routledge Handbook of Urban Disaster Resilience, 2020
4. Alan March and Maria Kornakova: Urban Planning for Disaster Recovery, 2017
5. Ronald W. Perry, Michael K. Lindell: Emergency Planning (Wiley Pathways), John Wiley & Sons, 2006
6. ADPC: Handbook on Design and Construction of Housing for Flood-prone Rural Areas of Bangladesh, 2005
7. K. Iftekhar Ahmed, Salek M. Seraj: Building Safer Houses in Rural Bangladesh, 2004
8. Bashirul Haq: Battling the storm - Study on CyCone Resistant Housing, 1999
9. Disaster Risk Reduction Approaches in Bangladesh: Rajib Shaw Fuad Mallick Aminul Islam, 2013

10. Climate Change Adaption Actions in Bangladesh: Rajib Shaw Fuad Mallick Aminul Islam, 2013
11. Design for Flooding: Architecture, Landscape, And Urban Design for Resilience to Climate Change: Donald Watson, FAIA, and Michele Adams, P.E., 2011
12. Safety Symbols Art: Camera-Ready and Disk Art for Designers:Nora Olgyay

5th Year 1st Semester Optional Courses					
Set D * Required credits of optional courses from Set D is 4.0 (2 courses) and student can register maximum 3 courses from this semester					
Course No.	Course Title	Course Category	Theory credit	Lab Credit	Hour /week
ARC 0731 5196	Architecture in Dialogue: Seminar	Elective	0	2	4
ARC 0732 5162	Cost Estimation and Specification	Elective	0	2	4
ARC 0712 5142	Environmental Simulation Lab	Elective	0	2	4
ARC 0222 5122	Documentation of Built Heritage	Elective	0	2	4
			0	8	16

Year/ Semester	5th Year		
Course Title	Architecture in Dialogue: Seminar		
Course Code	ARC 0731 5196	Stream	9
No. of Credits	2.0	Course Hour	4.0 hours/week

COURSE RATIONALE:

This course intends to inculcate in the students the architectural research paper preparation and publication process.

COURSE CONTENT:

Overview of current development in research related to art and Architecture. Research and design process; Research design; Preparation of research papers including literature search, writing skills and referencing. Verbal and written presentation skills and techniques.

COURSE OBJECTIVES

- To familiarize the students with research paper writing and publication process.
- To provide the knowledge about ethics associated with the research paper writing and publication process.

- Helping them to identify and apply appropriate methods for representing the analytical data in research, both verbally and in written.

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to:	
CO 1	Formulate the basic structure of research papers
CO 2	Prepare and publish a research paper
CO 3	Write research proposals, abstract and referencing in proper format
CO 4	Recognize research publication process, journals and their indexing
CO 5	Maintain professional ethics and abstain from plagiarism

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALS KILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1							2		2
CO 2									3
CO 3				2			2		
CO 4				3					2
CO 5				3					

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Lecture - research	Assessment
CO2	Article review, lecture	Assessment
CO3	Research / lecture	Assessment
CO4	Research presentation	Oral Presentation, jury
CO5	Research publication	Assessment

Books Recommended

- Groat, L.N. and Wang, D.: Architectural Research Methods
- London, K. and Ostwald, M.: Architectural Research Methods
- R. Kothari: Research Methodology

Year/ Semester	5th Year		
Course Title	Cost Estimation & Specification		
Course Code	ARC 0732 5162	Stream	6

No. of Credits	2.0	Course Hour	4.0 hours/week
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COURSE RATIONALE

This course aims to teach how, in relation to drawn details for building construction, to specify materials and methods of installations and precautions.

COURSE OBJECTIVES

- To introduce the students with the process of cost estimation of building construction.
- To introduce with the standards for specifications and rate schedule.
- To acquaint them with common building and finishing materials and their specifications.

COURSE CONTENT

Study of modes of measurement adopted in Bangladesh context, various methods for cost estimation of buildings. Calculation of Plinth area and cubic contents including estimation and their bases for different buildings. Calculating quantities for earth work building items, abstracting of quantities and item rate.

Definition, importance and use of specification; principles and practices, drafting of general and special specification clauses. Specification of common building materials and simple construction. Study and use of standard specification issued by engineering department in Bangladesh. Specification for special finishes, advanced/new building materials and direct construction elements

COURSE LEARNING OUTCOMES:

After successful completion of the course, students will be able to:	
CO 1	prepare Bill of Quotation (BOQ), detail estimation, tender drawings and documents
CO 2	identify the volume of civil works such as excavation, foundation, brickwork, casting and finishing work
CO 3	mention standard specifications in drawings properly
CO 4	calculate the estimation of interior and electro-mechanical works
CO 5	suggest environmentally resilient building and finishing materials

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALS KILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1		2							2
CO 2	2				3				
CO 3	2								
CO 4	2				3			2	
CO 5						2		3	

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Project & workshop	Presentation (Group/Individual)

CO2	Field Survey & workshop	Assignment
CO3	Tutorial & workshop	Assignment
CO4	Project & workshop	Presentation (Group/Individual)
CO5	Tutorial & workshop	Presentation

Books Recommended

1. **B.N. Dutta:** Estimating and Costing
2. **P.L. Basin:** Quantity Surveying
3. **G.H. Cooper:** Building Construction and Estimating
4. **PWD Schedule – 2020**

Year/ Semester	5th Year		
Course Title	Environmental Simulation Lab		
Course Code	ARC 0712 5142	Stream	4
No. of Credits	2.0	Course Hour	4.0 hours/week

COURSE RATIONALE:

Simulation is the process of making a simplified model of some complex system and using it to predict the behavior of the system. In this course, state-of-the-art computer simulation methods for ventilation and thermal/energy analysis will be introduced.

COURSE CONTENT:

Introduction to the computer-based tools and techniques to assess and critically evaluate a design regarding its climatic factors. The focus of this exercise is to analyze the thermal, visual and acoustical performances of built-form, site-planning analysis, energy modelling and building performance, evaluation of energy efficiency using energy simulation software such as EnergyPlus, Ecotect, Radiance, Daysim, etc. The course includes discussion of the benefits as well as the limitations of these tools and methods. Topics include fundamentals such as modeling strategies, underlying physical principles, understanding simulation assumptions, and interpreting results with an emphasis on developing the ability to translate the analysis into design decisions.

COURSE LEARNING OUTCOMES:

	<i>After successful completion of the course, students will be able to</i>
CO 1	develop a better understanding of building physics in architecture
CO 2	explore fundamental design issues such as building massing and envelope design
CO 3	conduct computerized building performance simulation for architecture
CO 4	interpret the outcome of the analysis on their own design intuition
CO 5	conduct further research and higher study in related filed

MAPPING COURSE LEARNING OUTCOMES (COs) WITH POs :

	FUNDAMENTAL SKILL			SOCIAL SKILL		THINKING SKILL		PERSONALS KILL	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1								3	
CO 2						2		2	
CO 3					2				
CO 4						3		3	
CO 5		2	3						

MAPPING COs WITH TEACHING-LEARNING & ASSESSMENT STRATEGY:

	Teaching -Learning Strategy	Assessment strategy
CO1	Tutorial & workshop	Assignment
CO2	Tutorial & workshop	Assignment
CO3	Tutorial & workshop	Assignment
CO4	Tutorial & workshop	Assignment
CO5	Self study	Presentation

Books Recommended

1. **Peters B., Peters T.** (2018) Computing the Environment: Digital Design Tools for Simulation and Visualisation of Sustainable Architecture, Wiley.
2. **Garg V., Mathur M.** (2020) Building energy simulation: a workbook using DesignBuilder, Routledge.

Year/ Semester	5th Year		
Course Title	Documentation of Built Heritage		
Course Code	ARC 0222 5122	Stream	5
No. of Credits	2.0	Course Hour	4.0 hours/week

COURSE RATIONALE: Students will learn applications of built heritage documentation methods.

COURSE CONTENT:

This course explores the methodologies, techniques, and tools involved in the documentation of built heritage. Students will gain both theoretical knowledge and practical skills in recording and analyzing historic buildings and structures. The course emphasizes the importance of documentation as a foundational element for conservation, restoration, and future research. It also covers the ethical, legal, and technological aspects of heritage documentation process. This course also train about aspects of site conservation assessment including threats.

COURSE LEARNING OUTCOMES:

<u>After successful completion of the course, students will be able to:</u>	
CO 1	<u>Understand the significance of documentation in heritage conservation.</u>
CO 2	<u>Apply various techniques for recording architectural details and historical context.</u>
CO 3	<u>Use tools like photogrammetry, laser scanning, and traditional survey methods.</u>
CO 4	<u>Prepare comprehensive documentation reports, including drawings, photographs, and descriptive texts.</u>

Non-Major Courses
(Offered by Dept. of ARC for other departments)

Year/ Semester	1 st Year 2 nd Semester		
Course Title	Computer Aided Engineering Drawing		
Course Code	ARC 0732 1208E	Stream	1
No. of Credits	1.5	Course Hour	3.0 hours/week

COURSE RATIONALE

This course intends to train students to apply digital tools for engineering drawings and develop representation skills using computer aided software such as AutoCAD.

COURSE OBJECTIVES

- Helping the students to understand the basic knowledge of engineering drawing
- To provide the knowledge of the use of engineering drawing in the field of electrical engineering.
- Acquaint students with the basic tools of computer aided drafting using AutoCAD software.
- To help students to apply the knowledge through collaboration or teamwork.

COURSE CONTENT

Basic concepts and the use of engineering drawing in the design and manufacturing field of electrical engineering. Develop an understanding of 2D and 3D computer aided drafting with the requirements of good engineering drawings and be able to apply them to their work. Appropriate sketching exercises will be done during practice hours by using a package program namely AutoCAD.

MAPPING COURSE LEARNING OUTCOMES (CO) TO PO		MAPPING CO TO PO								
	<i>After successful completion of the course, students will be able to</i>	1	2	3	4	5	6	7	8	9
CO 1	learn the symbol of different electrical fixtures in a building	*								
CO 2	operate AutoCAD software using basic drawing commands	*		*						
CO 3	draw the electrical layout of a room			*						
CO 4	design electrical layout of a building			*	*					
CO 5	place lighting fixtures appropriately in a building			*	*					
CO 6	work as a team in different multidisciplinary projects			*				*		

Books Recommended

1. **Bernd S. Palm:** Introduction to AutoCAD 2020: 2D and 3D Design

2. **Munir Hamad:** AutoCAD 2020, Beginning and Intermediate.
3. **Pradeep Mamgain:** Autodesk 3Ds Max 2020: A Detailed Guide to Modeling, Texturing, Lighting, and Rendering, 2nd Edition.

Year/ Semester	2nd Year 1st Semester		
Course Title	Computer Aided Engineering Drawing		
Course Code	ARC 0732 2108F	Stream	1
No. of Credits	2.0	Course Hour	4.0 hours/week

COURSE RATIONALE

This course intends to train students to apply digital tools for engineering drawings in the field of food engineering and tea industry and develop representation skills using computer aided software such as AutoCAD.

COURSE OBJECTIVES

- Helping the students to understand the basic knowledge of engineering drawing
- To provide the knowledge of the use of engineering drawing in the field of food industry and spatial planning.
- Acquaint students with the basic tools of computer aided drafting using AutoCAD software.
- To help students to apply the knowledge through collaboration or teamwork.

COURSE CONTENT

Basic concepts and the use of engineering drawing in the design and manufacturing field of food engineering and tea technology. Develop an understanding of 2D and 3D computer aided drafting with the requirements of good engineering drawings and enable students to apply them in their professional works. Appropriate sketching and drawing exercises will be done during practice hours by using a package program namely AutoCAD.

MAPPING COURSE LEARNING OUTCOMES (CO) TO PO		MAPPING CO TO PO								
	<i>After successful completion of the course, students will be able to</i>	1	2	3	4	5	6	7	8	9
CO 1	learn the types of different spatial layout in food industry	*								
CO 2	operate AutoCAD software using basic drawing commands	*				*				
CO 3	draw the detail 2-D layout of an industrial building					*				
CO 4	design the basic spatial layout of a food processing and manufacturing industry					*				
CO 5	formulate appropriate zoning in a food industry design	*				*				
CO 6	work as a team in different multidisciplinary projects					*			*	

Books Recommended

1. **Bernd S. Palm:** Introduction to AutoCAD 2020: 2D and 3D Design
2. **Munir Hamad:** AutoCAD 2020, Beginning and Intermediate.
3. **Joseph De Chiara:** Time Saver Standards for Building Types
4. **Jargen Adam:** Industrial Buildings (Design Manuals)

Year/ Semester	3 rd Year 2 nd Semester		
Course Title	Urban & Regional Planning		
Course Code	ARC 0731 3201C	Stream	1
No. of Credits	2.0	Course Hour	2.0 hours/week

COURSE RATIONALE

The course aims to introduce the basic theory, concept and practices in physical planning through review and examination of city and regional structures since the beginning of the earliest human settlements to the contemporary, for the students of Civil and Environmental Engineering.

COURSE OBJECTIVES

- To provide the knowledge on the chronological development of cities and towns since the beginning of the earliest human settlements to the contemporary megalopolises, and beyond.
- Helping the students to understand the social-cultural and political forces that influenced the growth of the cities throughout centuries.
- Help them conceptualize basic theories in physical planning in relation to the study of built environment.
- Foster the analytical and critical thinking in understanding various physical environments in terms of their social-cultural, environmental and technological correspondents.

COURSE CONTENT

Concepts of Urban Planning: Definition, objective, scopes, trends, methods; Urban planning components: framework, forms and type of Planning; History of urbanization and planning: early to modern; Urban planning methods: Theories of zoning system.

Planning history, culture and practice in Bangladesh. Planning governance : Legislation, tools, instruments. concept of contemporary planning tools and process: Community planning, Public-Private partnership, Built-operate transfer, Transit-oriented Development.

MAPPING COURSE LEARNING OUTCOMES (CO) TO PO		MAPPING CO TO PO								
	<i>After successful completion of the course, students will be able to</i>	1	2	3	4	5	6	7	8	9

CO 1	distinguish various human settlements and identify their planning process		*							
CO 2	develop a solid conceptual framework on their origin and evolution throughout history		*							
CO 3	relate various socio-cultural, political, environmental and technological impacts to the growth of the cities throughout the globe		*							
CO 4	communicate concepts in urban history and theory through both verbal and written presentations							*		
CO 5	identify the limitations of planning and land management system in Bangladesh		*							
CO 6	apply critical thinking in a range of corresponding fields of history and theory in regional and urban planning							*		

Books Recommended

1. **Doxiadis, C.A.:** Ekistics: An Introduction to the Science of Human Settlements.
2. **Gallion, A.B. & Eisner, S.:** The Urban Pattern: City Planning and Design
3. **Hall, P.;** Urban and Regional Planning (third edition); Routledge, London; 1992
4. **Christopher Alexander, Sara Ishikawa, and Murray Silverstein;** A Pattern Language: Towns, Buildings, Construction (1976)
5. **Gary Hack, et al.** (2009) Local Planning: Contemporary Principles and Practice
6. **Professor Golam Rahman** (2008), Town planning and the political culture in Bangladesh
7. **Sultana, S.;** Rural Settlements in Bangladesh: Spatial Pattern and Development; Graphosman, Dhaka; 1993

PART D
OBE Curriculum of
Department of Architecture
Shahjalal University of Science and Technology, Sylhet, Bangladesh

12. Content of Design studios

- Year 1** First year studio exercises develop craftsmanship and visual sensitivity as a foundation for a basic architectural language. Problems of various lengths deal with the technical skills of drawing and model-making materials in both two and three dimensions. Emphasis is given on idea of abstraction and creation of simple space by design thinking. Throughout Year 1, students also participate in a range of other core courses that address concerns surrounding the nature of the built environment, including Technology, History & Theory
- Year 2** Second year studio develops architectural principles through the study and analysis of ergonomics, function and climate design . Studio focuses on the development of the graphic language in architecture, and considers the appropriate use form and materials.
- Year 3** Third year studio continues the development of architectural principles through the correlation of design process and building systems. The studio considers the interrelations of building, programming, site planning, structure, enclosure systems, energy consumption, and environmental control systems, and the cultural concepts supporting their organization. Design of structural system of buildings and system design for tall structures are major concerns for the studios.
- Year 4** Fourth years studios focuses large scale design interventions including projects like housing, urban planning and design, conservation planning, environmental planning. Students are trained to perceive design through sociological , economic, cultural dimensions and involved to address more challenging issues of society.
- Year 5** In the fifth year, students enter into the thesis Studios, focused on more intensive research based design approach. Students are taught design by research method to explore design problems of large scale projects .Along with design projects student have to submit thesis dissertation to complete the thesis stream.

2. Teaching Strategy:

All teaching and supervision in department of architecture is based on the fact that the student takes responsibility for the own studies and for active knowledge gaining. The student is given the opportunity of personal development, which is of great importance for the future profession and a lifelong learning. Different teaching and working methods are applied in classes to inspire students to actively seek knowledge, to enhance critical thinking, to boost creativity and gain adequate oral and written proficiencies.

The curriculum is emphasized on design studios. Design based education requires, promotes reflection and synthesis of the fields of knowledge brought together in interdisciplinary manner. So all the taught courses are designed to support design studios. As university ordinance, Students must register for all courses they attend and want to complete. The deadlines for registration are determined prior to the beginning of the semester. Department encourage multimodal approach for design education by incorporating outdoor activities with regular classroom.

3.1 Modals for teaching strategies : *Following modes are offered by department for teaching .*

a) Design Studio

The design project is at the core of the curriculum. In the course of a project, students learn to combine, review and assess acquired knowledge and developed ideas. The design project is taught in both individually and small group of students. Intensive one-on-one tutoring allows for responding to students' individual capacities and ideas. Team teaching is encouraged, as it confronts students and teachers with different views, incites them to think about variations and alternatives, and encourages them to take a position. Class projects are continuously reviewed and assessed in dialogue with the teachers and external guest critics. Together with the corresponding project lectures the design projects constitute modules that can only be completed as a whole.

b) Project lectures

Project lectures are thematically related with design projects and deepen knowledge concerning the issues and skills relevant to the specific project. Lectures for design studios are given inside design studio and embedded in design studio credit

c) Theory course lectures

Lecture courses familiarize students with the theoretical foundation and methods of architecture. Supporting teaching materials are made available by the lecturers. Students are graded on the basis of examinations on the subject matter.

d) Seminars

Seminars aim at deepening students' understanding of the subject via presentations. Students actively participate in the course through discussions, as well as written assignments and visual and oral presentations. Seminars also introduce students to research methodologies.

e) Excursions

Field trips are class excursions taking place outside school. Students are taken to historic places with architectural significances and contemporary projects sites. Students often meet the architects to know their project stories. They aim at illustrating the contents of courses in real-life contexts.

f) Internship

In department of architecture internship is a key part of teaching mode. Final year students are sent to architectural offices for one month. Students have to actively participate in at least one architectural project. After internship students are required to submit internship report documenting their works.

4. Assessment Strategy:

A variety of examination formats are applied in the program courses. The format is adapted to the different course requirements on examination formats. Students' performance is continuously evaluated through Jury presentation, projects, examination, oral test and periodic assessments of sessional work. The design, extent and duration of the tests are adapted to the learning outcomes decided for the respective course. Classes are subject to continuous review and assessment of progress by teachers. The class test mode and the conditions are determined by teachers at the beginning of the semester. Students have to register for exams and collect admit card to. Department of architecture adopted following modes of assessment strategies to evaluate students learning outcome.

Jury presentation

Jury presentation is one of the major assessment strategies of Architecture department. Students have to present his/her final design outcome inform of a Jury board consisting of both studio and external teachers. Out of campus professionals and visiting academics are invited to be a part of Jury very often.

Periodic Design Assessment

Periodic design assessments monitor design development phases inside class. Class teacher assess project development and give instructions. Part of total course grade is assigned for assessments.

Class Presentation

Students are often required to make classroom presentations to verbalize their knowledge and organize their thoughts about a topic in order to present a summary of their learning. It provides the basis for assessment upon completion of a student's project.

Written Examination

Written examinations for theory courses are important assessment strategy for architecture department. Examinations require students to given questions to demonstrate their knowledge of theory courses. At the end of the semester, students have to attend semester final examination. This is a written examination where students need to answer course related question with in a given time.

Class test /Quiz

Class test and Quizzes are usually short examination for theory courses taken in middle of the semester.

Portfolio Submission

A portfolio is a collection of samples of a student's work as a visual demonstration of a student's achievement. Students are required to submit design portfolio after semester.

Report Writing

A report is a writing sample in which a student constructs a response to a question, topic, or brief statement, and supplies supporting details or arguments. Students are required to submit reports as design survey outcome. Topics of the reports usually follow the learning objective of respective course. Report is an essential part of final year thesis where student have to submit report as a thesis dissertation along with design project.

Physical Model Making/ Graphical reproduction

Varies with courses, students are often required to submit either physical models or graphical reproductions in form of photographs, posters.

Self-assessment

Self-assessment is a process by which the students gather information about their own learning. It is the student's own assessment of personal progress in terms of knowledge, skills, and processes. Self-assessment are encouraged among students to develop critical thinking on own work and monitor working progress.

4.1 Assessment Policy for Theory Courses

Course Type	Assessment Strategy	Class Attendance	Class Perform	Class Test	Final Examination
Theory Courses.	Class Performance Class test Quiz Assignment presentation Written examination Viva/Voc	10%	10%	20%	60%

Class Performance

As university ordinance, Class attendance assessment is a key part of student assessment for every courses. Call attendance records are taken by so responding teachers and a grade is awarded for this. For theory courses students have to attend at least 50 % of the course lectures to be eligible to take part in the final exam.

Code	Teaching-learning (TL) strategy	Code	Assessment Strategy
LECTURE WITH PROJECTOR	Lecture using board/LCD projectors/OHP projectors		Continuous assessment (CA)
TL 02	Class discussion/seminar/tutorial	CA 01	Midterm Examination 01
TL 03	Self-learning using reference book/research article/case study/other online materials	CA 02	Midterm Examination 02
TL 04	Student-led classroom - Students team teach or work in groups to teach a new topic.	CA 03	Assignment 01
		CA 04	Assignment 02
			Summative Assessment (SA)
		SA 01	Semester-end examination

4.2 Assessment Policy for Design Studios

Teachers are assigned for each semester at the beginning of semester. Project section, studio organization and grading parameter are set and revised by the Design Coordinator and respective studio teachers. The Final Project grading is divided into 3 Periodic assessment and Jury presentation. Class teacher will ensure following requirements for periodic assessment:

1. Schematic Review (review of concept, site analysis, program, etc.)
2. Design Development (review of project, architectural plans and sections, structure, functional distribution, program development, etc)
3. Final Review

The Jury board consists of class teachers and external members. Jury board for each studio is suggested by design coordinator and approved by department in the beginning of each semester. From 2nd year to 5th year each studio is required to exercise at least two projects. Project grades will be cumulated according to project duration weightage and determined by studio teacher.

Course Type	Assessment Strategy	Class Attendance	Periodic Assessment	Final Jury/ Presentation
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Design Studio	Jury Presentation Preliminary Assessment Reports Design Portfolio Model Making Self-Assessment	10%	50%	40%
Sessional Studio	Jury Presentation Preliminary Assessment Reports Design Portfolio Model Making Self-Assessment	10%	50%	40%

4.3 Thesis

Thesis is a requirement for B arch degree in department of architecture. Every student prepares thesis proposal and develop along the semester and present it. Department encourages both thesis by project and thesis by research. Thesis proposal have to be approved by department at the beginning of the semester. Each student develops their thesis inside studio under the supervision of class teachers. The thesis shall be submitted in the form of Design project, Research, Report, Drawings, Models etc. The thesis covers in two semesters distributed in three following phases:

Phase	Activity	Semester	Credits
Thesis I	Development and submission of research proposal.	5-1	2
Thesis II	Thesis design Studio	5-2	12
Thesis III	Dissertation	5-2	4

The evaluation of the thesis is guided through sessional and dissertation evaluation. The sessional work made up of various stages, will be evaluated through periodic assessment and by a jury comprising the class teachers and external examiner. The dissertation is evaluated by corresponding dissertation course teacher and design studio teachers.

Thesis design studio Grading criteria

	Review 01	Review 02	Pre-jury	Jury	Total
Thesis Supervisor	5	5	10	10	30
Thesis Committee	5	5	10	20	40
External Jury	x	x	x	30	30
	10	10	20	60	100

Dissertation Grading criteria

Research Development			Dissertation Writing			Performance during supervision / overall quality	TOTAL
Literature review /Background Theory	Research Method/Analysis/Finding	Schematic Design Process	Content	Text Format	References/Bibliography		
25	25	25	5	5	10	5	100

4.4 Internship

During the semester the students are required to undergo practical training of 4 weeks. Every student is required to submit copies of representative work done and study report during this period together with a certificate from the Organization to the Department of B. Arch. The practical training work is evaluated, through seminar/viva-voce by corresponding teacher.

4.5 Grading System

The University Grading System uses a series of letters to which grade quality points are assigned. The Grade Point Average (GPA) is calculated according to a procedure. Each grade represents a level of performance as indicated below.

Marks (100)	Grade	Grade Point
80% or above	A+ (A plus)	4.00
75% to less than 80%	A (A regular)	3.75
70% to less than 75%	A- (A minus)	3.50
65% to less than 70%	B+ (B plus)	3.25
60% to less than 65%	B (B regular)	3.00
55% to less than 60%	B- (B minus)	2.75
50% to less than 55%	C+ (C plus)	2.50
45% to less than 50%	C (C regular)	2.25
40% to less than 45%	D	2.00
Less than 40%	F	0.00

4.6 Grade Point Average (GPA)

All courses taken by a student are included in the computation of the cumulative Grade Point Average. The Grade Point Average is the ratio of the number of points gained, to the number of credit hours attempted. The semester GPA = Total semester quality points/Total semester credit hours attempted.

4.7 Code of Conduct During Examination

Students are expected to abide by the Code of Conduct during all the Examinations as university rules

4.8 Degree Requirement for B Arch program

4.9 Awarding Degree Certificates

Students who fulfill the requirements for a higher education qualification should receive degree certificates. With each degree certificate, a transcript supplement describing the individual course results will be awarded.

5. Graduate Profile

Architecture is always one of the strongest symbols to search the history and it made the world suitable for human being to survive till date. With these dignities of architecture, we try to ensure those qualities among our graduates

that made them fittest to survive locally as well as globally. The architectural is fast demanding professional field due to accommodate livings for high dense population and rapid growth in urban and sub urban areas in Bangladesh. To meet these challenges and demand of the society our graduates are individually capable to serve the social needs with creative environment responsive livable design and policies for all professionally and ethically.

The Architecture department is providing five years Bachelor of Architecture degree here. In the meantime, the department has released eight batches of around more than two hundred graduates within thirteen years of time span.

All are serving the society by being practicing architects, entrepreneurs and developers and also being involved in teaching professions, government jobs and research projects and so on successfully. Their skills regarding intellectuality, practical projects, numeracy, analytical ability, research works and innovations are highly appreciated by the stakeholders by this time period. Our graduates have already made a strong platform and acceptance within the society.

The graduates are showing an unbeatable performance among the practicing market with their unparalleled IT, communication, interpersonal relationship, leadership and teamwork skills. They are able enough to run new businesses with related issues, innovative ideas and techniques, introducing unique use of products to serve the community. They are well behaved and skilled to communicate effectively with colleagues, clients and different service providers for the best outcome. Our graduates are able to understand and to carry professionalism, managerial and leadership responsibilities, entrepreneurship, problem-solving context, self-management activities. They have already been proven in demonstrating strong analytical and problem-solving skills. They do a rational judgment for a practical solution with a detailed work in depth with sensitivity from the available and given information. They have ability to visualize, articulate and conceptualize solutions for any problems by making sensible decisions.

They have achieved the qualities within the five-year frame of social and cooperative, values, attitudes and awareness. They always ensure commitment to independent learning and confirming adequate research skills to collect and analyze information obtained from different source from the ethical practice in the field upholding the moral of the profession. Moreover, they maximize ability to adjust with the needs continuous changes of a rapidly evolving society. They are able to improve self-confidence through rational judgment by accepting constructive criticism.

They are able to work with a passion, sensitive and spirit of culture and heritage of a region as well as the nation. They are contributing the society

by satisfying the clients with their sensitive, innovative, livable, iconic development works with high criticism.