HYDERABAD COLLEGE OF SCIENCE & TECHNOLOGY, HYDERABAD

B.TECH (4-YEAR PROGRAM)

DEPARTMENT OF CIVIL TECHNOLOGY

SELF-ASSESSMENT REPORT (SAR)

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Criterion – I

Program Mission, Objectives and Outcomes

Introduction:

Hyderabad College of Science and Technology, Hyderabad (HCST) is very renowned institute of Hyderabad, situated at Central Sindh Province, Pakistan which provides the best technical educations to their students. **HCST** is known for imparting skill based technical education to their students which make them fit for industries. At **HCST**, students have demonstrated their ability to take their education and apply it in solving day to day problems. **HCST** is one of the best technological colleges in Sindh Province in true sense.

The **HCST** has Collaboration and MOU with different companies and Industries, so that the students get placed with good packages and do the jobs in their technical fields. Apart from this HCST make the students able in technical education and they can become entrepreneur as well. **HCST** in the coming years definitely bring revolutionary changes in the field of technical education. Program Team Members of all three departments of college worked with Incharge QEC to pursue the application of Self-Assessment Manual in their respective departments.

Civil Technology,
Electrical Technology
Mechanical Technology

This report is prepared &presented by the team of **Department of Civil Technology;** Civil Technology is a professional engineering technology discipline that deals with the planning, design, construction, operation and maintenance of the physical and natural built environment. Civil Engineering Technology includes works such as buildings, bridges, flyovers, under passes, roads, railway tracks, airports, docks and harbor, factories, dams, barrages, canals, water supply schemes, sewerage system, etc.
Civil Technology graduates has sufficient opportunities of getting job in various government sectors i.e. Communication and Works (C & W), Water and Power Development Authority (WAPDA), Irrigation Department, Hyderabad Development Authority (HDA), Karachi Development Authority (KDA), National highway authority (NHA), Water and Sanitation Agency (WASA), Public Health Engineering (PHE) etc. The graduate also has many opportunities of getting job in private sector firms like National Engineering Services Pakistan (NESPAK), National Development Consultant (NDC), Associated Consulting Engineers (ACE), SKB Engineering and Construction, Descon Engineering Limited and many more.

Our aim is to produce highly qualified Engineering technologists, who would be equipped with the latest knowledge in the field of Civil Technology and have the professional skills. The faculty at Civil Technology Department is qualified from prestigious local and international universities. The Faculty has vast academic, research and professional experience.
The efforts of HCST's dedicated team lead to the establishment of the Department of Civil Technology in 2008.All the efforts of HCST's, administration and faculty are directed to produce competent and efficient professionals who will effectively contribute in taking Pakistan to technological and economic glories.

Criterion-1

PROGRAM MISSION, OBJECTIVES AND OUTCOMES

Each program must have a mission, measurable objectives and expected outcomes for graduates. Outcomes include competency and tasks graduates are expected to perform after completing the program. A strategic plan must be in place to achieve the program objectives. The extent to which these objectives are achieved through continuous assessment and improvements must be demonstrated.

Standard 1.1: The program must have documented measurable objectives that support Institution's mission statement/s.

Document institution, college and program mission statements

1.1.1 Institution Mission Statement:

To provide modern technical education by embedding advanced teaching and learning methods and to collaborate with industries for building an academia industrial linkage, thereby; producing entrepreneurs, reducing unemployment and boosting Socio-Economic growth.

1.1.2 Institution Vision Statement:

To produce Technologist for the achievement of updated global technical education, who can facilitate in transforming the society innovatively in the interest to meet with requirements of an advanced country.

1.1.3 Institution Aims & Objectives:

The main aim of the HCST is to produce high quality technology graduates to be equipped with practical hands-on experience needed to serve the community.

The specific objectives of the College are:

i. To provide technical knowledge to the graduates with the state of the art practical skills required for market commercialization
ii. To produce the skilled personnel to eradicate poverty and boost up the morale of the community
iii. To equip graduates with technical entrepreneurial skills
iv. To produce workforce with global market employability
v. To embed latest market-driven skills needed to uplift the society
vi. To produce skilled graduates conscious of ethical norms & cultural values

State program objectives, Program educational objectives are intended to be statements that describe the expected accomplishments of graduates during the first several years following graduation from the program.

1.1.4 Program Mission of Civil Engineering Technology:

The mission of Department of Civil Engineering Technology for awarding the degree of BSc is to produce highly competent & intellectual technologist to contribute in the field of technology and development of constructional, projects and committed to provide dynamic learning environment that focuses on team work & leadership skills which ultimately improve the welfare & raise the living standard of public.

1.1.5 Program Education Objectives (PEOs) of Civil Engineering Technology:

PEO1: Developing an ability in graduates to conduct the investigations and analysis of the broadly- defined technological problems by acquired technical knowledge.

PEO-2: To prepare graduates having effective communication skills and sound ethical knowledge enabling them to work individually as well as a team member to efficiently manage the technical projects, ultimately leading towards the development of the society.

PEO-3: To initiate an active program of life-long learning enabling the graduates to assess and implement the technological designs by using the modern tools and considering the environmental sustainability.

Describe how each objective is aligned with program, college and institution mission statements

1.1.6 Alignment of Program Objectives with Mission Statements:

The objects of the Institute were carefully drawn from the above cited mission, guiding the Institute's transaction of the objects into practical reality in the areas of teaching and service to the public.

Program objectives intend to impart not only technical information to students but moral and ethical information as well. HCST provides a platform to students to get knowledge of their desired field and learn the Islamic ways in order to carry out their duties.

1.1.7 Main Elements of Strategic Plan:

1.1.7.1 Curriculum Design:

The course was designed to provide graduates with technical excellence, and foster innovation and humanistic values through:

- A general education that develops the student's knowledge of and skills in the basic sciences, social sciences, humanities and the arts and the student's ability to apply this knowledge;
- An engineering science foundation that provides skills and methodology to bridge the gap between science and application;
- Quantitative and computational skills needed to measure, estimate, model and simulate solutions to engineering problems;
- Problem solving skills including quantitative and qualitative analysis, evaluation and synthesis of information;
- Training in creative thinking through an Introduction to Electrical Engineering freshman course;

Thus the Curriculum of B. Tech (4-Year) was carefully designed comprises of **28 core, 4 basic science** and **3 allied** courses considering the above facts. The curriculum is designed to build the basic concepts of the students and to help them attain the deep insight of the relevant field using different courses and practical work.

1.1.7.2 Practical Work:

In the lab task assignment, students gain practical experience with the analysis techniques being covered in lectures and are introduced to cost, size, and complexity tradeoffs that are part of the practical process. Design tools and documentation standards are introduced.

Students are required to go through extensive practical work in laboratories to implement the theoretical knowledge with the help of state of the art equipment and observe the outcome of their learning.
The practical work in laboratories is segmented as follows:

a. Basic Science Laboratory Work
b. Civil laboratory Work
c. Computer laboratory Work

1.1.7.3 Projects:

During the program execution, every student is required to do mini projects where required to testify his/her learning level. These subjects' related projects are designed to check the progress of students in small level, while, in the final semester students carry out their final project as final outcome of their learning.

1.1.7.4. Internships/Industrial Tours/Visual Demonstrations:

HCST arranges the internships for students at defined stages during the execution of program. The college keeps in touch with the potential industrial units for student's internship possibilities through a very well defined system. Faculty of Civil Department has one Industrial Liaison officer and one Students Affairs Officer who mutually look after the possibilities for internships.

1.1.7.5Program Objectives Assessment:

Objective	How Measured	When Measured	Improvement Identified	Improvement Made
1	Alumni Survey	2018- 19	Need to have more case studies	Under Review of Faculties
2	Alumni Survey, Course evaluation Survey	2018-19	Tutorials and report writing skills	Under Review of Faculties
3	Alumni Survey, Employer Survey	2019-20	Emphasis on Laboratory work	Under Review of Faculties
4	Graduating student Survey, Employer Survey	2019-20	Need More emphasis on deign components	Under Review of Faculties
5	Alumni Survey, Teacher Survey	2019-20	Course Evaluation, Aptitude building	Under Review of Faculties
6	Employer Survey	2019-20	Not Applicable	Not Applicable

Table 1.1: Program Objectives Assessment

Annexure E shows the cumulative results of Alumni Survey, while Annexure F shows the cumulative results of Employer Surveys and Annexure A shows the cumulative results of course evaluation survey in different feedback categories.

The three tools for assessments of program objectives are:

i. Employer Survey (Annexure-F)
ii. Alumni Survey (Annexure-E)
iii. Graduating Students Survey (Annexure-C)

The following table 1.2 shows how each of the above program objective/s is measured and actions taken as a result of these measurements.

PEOs (Objectives)	Performance Indicator	Continuous Quality Improvement (CQI)
1	50% of the employers feedback 50% of the Alumni feedback obtained from graduates (4-5 years after graduation) should be satisfactory	Alumni feedback and employer feedback.
2	50% of the employers feedback 50% of the Alumni feedback obtained from graduates (4-5 years after graduation) should be satisfactory	Alumni feedback and employer feedback.
3	50% of the employers feedback 50% of the Alumni feedback obtained from graduates (4-5 years after graduation) should be satisfactory	Alumni feedback and employer feedback.

Table: 1.2

Standard 1.2

The program must have documented outcome for graduating students .It must be demonstrated that the outcome support the program objective and that graduating students are capable of performing these outcomes

1.2.1 Program Learning Outcomes (PLOs):

Graduate Attribute Profiles with References to the Knowledge Profile are shown, **(Graduate Attributes and Professional Competencies, Version 3: 21 June 2013)** thus for Sydney Accord Graduate Program Learning Outcomes (PLOs) CET has the following program outcomes by the end of the program the students should be able to:

Engineering Technologist Graduates will be able to:

PLO-01: Technical Knowledge:

An ability to apply knowledge of mathematics, natural science, Engineering Technology, fundamentals and Engineering Technology specialization to defined and applied Engineering Technology procedures, processes, systems or methodologies.

PLO-02: Problem Analysis:

An ability to Identify, formulate, research literature and analyze broadly-defined Engineering Technology problems reaching substantiated conclusions using analytical tools appropriate to the discipline or area of specialization.

PLO-03: Design/Development of Solutions:

An ability to design solutions for broadly- defined Engineering Technology problems and contribute to the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

PLO-04: Investigation:

An ability to conduct investigations of broadly-defined problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions

PLO-05: Modern Tool Usage:

An ability to Select and apply appropriate techniques, resources, and modern technology and IT tools, including prediction and modeling, to broadly-defined Engineering Technology problems, with an understanding of the limitations.

PLO-06: The Engineering Technologists and Society:

An ability to demonstrate understanding of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to Engineering Technology, practice and solutions to broadly defined Engineering Technology problems.

PLO-07: Environment and Sustainability:

An ability to understand and evaluate the sustainability and impact of Engineering Technology work in the solution of broadly defined Engineering Technology problems in societal and environmental contexts.

PLO-08: Ethics:

Understand and commit to professional ethics and responsibilities and norms of technology practice.

PLO-09: Individual and Team Work:

An ability to solve function effectively as an individual, as a member or leader in diverse teams.

PLO-10: Communication:

An ability to communicate effectively on broadly defined Engineering Technology activities with the Engineering Technologist community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PLO-11: Project Management:

An ability to demonstrate knowledge and understanding of Engineering Technology management principles and apply these to one's own work, as a member or leader in a team and to manage projects in multidisciplinary environments.

PLO-12: Lifelong Learning:

An ability to recognize the need, and have the ability to engage in independent and life-long learning in specialist Engineering Technologies.

Describe how the program outcomes support the program objectives. In Table 1 . 3 shows the outcomes that are aligned with each objective. A sample of such a table is shown in Annexure- D

1.2.2 Outcomes versus Objectives:

Table 1.3 : Outcomes versus Objectives

Program Objectives	Program Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
	Technical Knowledge	Problem Analysis	Design/Development of Solution	Investigation	Modern Tool Usage	The Technologists and Society	Environment and Sustainability	Ethics	Individual and Team Work	Communication	Project Management	Lifelong Learning
1	✔	✔		✔								
2						✔		✔	✔	✔	✔	
3			✔		✔		✔					✔

1.2.3 Assessment of Program Learning Outcomes (PLOs):

The table 1.3 given above shows that this program have documented outcomes for graduating students .The program demonstrates that the outcomes support the program objective and that graduated students are capable of performing these outcomes as shown below:

1.2.3.1 Program Specific Outcomes:

i. Graduates will be able to utilize their skills in technical and other allied sciences.

ii. Graduates will be able to work in groups.

iii. A proficiency in civil, electrical, mechanical and basic sciences including mathematics, and computer skills.

iv. A proficiently in technical and scientific concept covering all areas of basic technical concepts.

v. The ability to characterize the properties of various engineering materials, using the experimental/practical techniques.

vi. The ability to express thoughts and ideas through oral, written, and computer communications

1.2.4 Strategic Plan for Achieving Program Mission and Objectives;

- Curriculum design and Strengthening of Faculty.
- Online lectures and literature review facilities.
- Organizing seminars, workshops and other activities.
- Study tours of various industries and research institutes of Pakistan

Describe the means for assessing the extent to which graduates are performing the stated program outcomes/learning objectives. This should be accomplished by the following:

1. Conducting a survey of graduating seniors every semester.
2. Conduct a survey of alumni every two years.
3. Conduct a survey of employers every two years.
4. Carefully designed questions asked during senior projects presentations. These questions should be related to program outcomes.
5. Outcomes

examinations

A sample of the forms for such surveys is given in Appendix C. The data obtained from the above sources should be analyzed and presented in the assessment report.

It is recommended that the above surveys should be conducted, summarized and added to the self-study assessment report. Departments should utilize the results of the surveys for improving the program as soon as they are available. An example follows:

Annexure C showing cumulative results of the graduating survey, Annexure E is the alumni survey and Annexure F showing the cumulative results of employer survey in different feedback categories of surveys.

Standard 1.3

The results of programs assessment and the extent to which they are used to improve the program must be documented.

- Describe the actions taken based on the results of periodic assessments.
- Describe major future program improvements plans based on recent assessments.
- List strengths and weaknesses of the program
- List significant future development plans for the program.
- Describe the actions taken based on the results of periodic assessments.

The program is being evaluated based on 8 criteria and 31 standards as given in the Self-Assessment Manual provided by Higher Education Commission (HEC). Course (Annexure-A) and teacher evaluation (Annexure-H) online survey will ensure unbiased feedback from students. The gathered data analyzed and results provided to department officials for further necessary action.

The result of the program assessment is shown in Annexure A for courses evaluation and Annexure H for teachers' evaluations.

1.3.1 Course Evaluation:

Annexure A is the list of courses that are being evaluated by the students along with their course name and graded scores;

Students have graded the courses against the course structure, teaching methodology, learning objectives and outcomes and practical implementation of theory. The total graded marks are 100%.

1.3.2 Teachers Evaluation:

The **Annexure H** shows that the teachers were evaluated by students as according to their lectures preparation, punctuality, subject knowledge, general behavior and teaching methodology. The total graded marks are 100%; the responses from student are good and are much satisfied with their teacher and their techniques for delivering the lectures. Faculty carried out in house discussion and analyzed the feedback and identified the areas of improvement

Describe major future program improvements plans based on recent assessments.

1.3.3 Future Programs for Improvement:

HCST has recently got the award of accreditation to start the program **"Bachelor of Science in Engineering Technology"** (BSc Engineering Technology), which is a four years undergraduate Engineering Technology degree program. The degree holders are called **"Engineering Technologists"**.

The accrediting body of Engineering Technology degree is National Technology Council (NTC) which is also responsible for registration of Engineering Technologists.

The **National Technology Council** is an accreditation body under the administrative control of **Higher Education Commission** (Pakistan). The NTC has accredited engineering technology degree programs in HCST.

The HCST is keen interested to resume new admissions on **OBE** system of Sydney Accord initiating with HEC's proposed new curriculum of 2016 of BSc Engineering Technologies in;

1) Civil Engineering Technology

List strengths and weaknesses of the program

Program weak and strong points:

The strengths and weaknesses of the program are:

1.3.3.1 Strengths:

a. High qualified teaching faculty
b. Coherent, on time and uninterrupted annual system
c. Efficient and capable senior faculty
d. Market oriented course contents
e. Wide infrastructure

1.3.3.2 Weakness:

a. No admissions since 2019 due to, new entry of BSc Engineering Technology and getting permission.
b. To get update and to start new curricula
c. Gap in Education due to Pandemic Disease COVID-19
d. low number of case studies
e. outmoded lab equipment
f. Training of Junior Faculty members

List significant future development plans for the program.

1.3.3.3 Significant future development plans:

Significant future development plans for the program are categorized as short and long term arrangements which are as under:

a. HCST is keen interested to start Master Program (M.Tech) in specialized disciplines of Civil Engineering Technology and seeking for getting affiliation of reputed university.
b. To shift in newly building under construction
c. Short term arrangements include improvement of existing infrastructure to run the program in much better environment by replacing or adding curtains in classrooms, changing of white boards, and performance enhancement of the cooling system in classes. Prepare handouts, brochures and pamphlets for advisory services.
d. While the long term arrangements include procurement of high value items like multimedia, additional air conditioners, improvement in sound systems and up gradation of lab equipment. On the academic side, the future development plans for the programs include training programs for junior faculty members to enhance their teaching capabilities, revision of course syllabi and overall enhancement of knowledge and skills of all faculty members in relation to the latest global advancements in communication engineering through exchange program, short trainings and collaborative research projects within and outside Pakistan.

Standard 1.4

The department must assess its overall performance periodically using quantifiable measures. Present students' enrolment (B. Tech 4-Year)

1.4.1 Graduates/Undergraduates Enrolled/Present in last three years

S.No.	Batch	Year	Number of Enrolled Students	Number of Present Students
1	2016	3rd	199	170
2	2017	3rd	148	90
3	2018	2nd	153	122
4	B-2018	3rd	120	49
Total Number of Students Enrolled/Present			**620**	**431**

1.4.2 Class - Students Ratio:

S. #	Batch/Section	Year	Class Room #	Class Room Area	No. of Present Students	
1	2016 (A)	3rd Year	MSF1	540	60	170
	2016 (B)	3rd Year	MSF2	480	55	
	2016 (C)	3rd Year	MSF3	480	55	
2	2017 (A)	2nd Year	NFF2	480	60	90
	2017 (B)	2nd Year	MSF4	320	30	
3	2018 (A)	3rd Year	NSF2	512	70	122
	2018 (B)	3rd Year	NSF3	320	52	
4	B-2018 (A)	3rd Year	NGF1	512	49	49
	Empty		MSF7	320		
	Empty		MSF8	512		
	Empty		MSF9	672		
Total				**5148**	**431**	
Total Available area = 5148 SQF						
Total Current No. of Students = 431						
Class - Students Ratio (12 SQF per student) = 12:1						

1.4.3 Students-Teacher Ratio:

Batch	Year	No. of Enrolled Students	No. of Present Students	Faculty/Teachers		
				Core Subjects	Allied Subjects	Total
2016	3rd	199	170	**16**	**6**	**22**
2017	3rd	148	90			
2018	2nd	153	122			
B-2018	3rd	120	49			
Total		**620**	**431**			
No. of Students Present = 431						
No. of Teachers = 22						
Student-Teacher Ratio (20 students per teacher) = 20:1						

1.4.4 Subject-Teacher Ratio:

Batch	Year	No of Subjects			Faculty		
		Core	Allied	Total	Core	Allied	Total
2016 (4-Y)	2nd	10	2	12	16	6	22
2017 (4-Y)	2nd	10	2	12			
2018 (4-Y)	1st	5	4	9			
B-2018 (Bridge)	Bridge	8	4	12			
Total		33	12	45			
No. of Subjects = 45							
No. of Teachers = 22							
Subject-Teacher Ratio (2 subjects per teacher)= 2:1							

1.4.5 Average GPA per semester:

As shown in results gazett

1.4.6 Average Completion Time:

Average Completion time for undergraduate program is 4 years. The attrition rate is 50% for the period2019-20.

1.4.7 Employer Satisfaction:

Employer survey conducted in collaboration with QEC and Faculty and thus resulted in 90% satisfaction level. Employer survey Performa is attached in Annexure F. The result shows maximum satisfaction level, like management skills, leadership skills, ability to work alone and in team, ability to collect, analyze data and write a report and ability to link theory to practice, though there are some deficiencies in spoken English language, a bit in the confidence level of the graduates as they are turning into real life scenarios

1.4.8 Students Course Evaluation Rate:

The rate for all student courses evaluation is satisfactory, just above 30% and shown in Annexure A. The facts in Annexure A shows satisfaction of the students towards course content and organization, students contribution, learning environment and teaching methods, learning resources, quality of delivery, assessment, teaching assistant evaluation, tutorial and practical.

1.4.7 Students Faculty Evaluation:

Students Evaluated faculty. The feedback was taken by QEC staff in the absence of faculty members. The consolidated result sheet is annexed as Annexure D

1.4.8 Research:

There is no research in B. Tech (4-Year) program.

1.4.9 Community Service:

Students took part in community services, very actively and have been arranging awareness programs to follow the SOPs for Covid-19 pandemic in the college. The average student hours spent were 15 for each student.

1.4.10 Students/Teachers Satisfaction:

The department maintains a ratio of 4:1 for the academic (technical) and administrative non-technical staff which fulfills the standard set by the HEC.

Students: In person discussion in classes by QEC staff with students while taking the feedback, indicated mix reactions through HEC Performa no 1 & 10.

A reasonably good percentage was happy with university environment and administrative support services of the department, while, a few gave suggestion for improvements in administrative facilities like canteen and games etc.

Teachers: Teachers have mix reactions about the prevailing environment in the department and their satisfaction level is judge by HEC Performa number 5 in Annexure D.

1.4.11 Overall Performance:

- There is system of periodic assessment. Hence there are fruit full results in shape of high demand and increasing enrollment day by day.
- There is also system periodic assessment, Hence there are major future program of higher education for improvements.
-

1.4.12 Strength of Program:

- Scheduled advertisement of program
- Entry Test of merit
- Qualified and trained Faculty
- Access to computers including Wi-fi hotspots

Criterion – II

Curriculum Design and Organization

Criterion-2

CURRICULUM DESIGN AND ORGANIZATION

2.1 Title of Degree Program: Bachelor of Technology (B. Tech) in Civil Discipline/Technology

2.2 Duration of B. Tech Degree Program: The duration of B. Tech 4-Year)is four Academic years after post matriculation three years diploma / H.S.C (Pre – Engineering).

2.3 Definition of Credit hour:

(a) The term "Contact Hour" refers to a 60 minutes period of contact with the students.

(b) The term "Credit Hours" refers One hour Theory period per week = 2 Credit Hours, One practical of 3 hours per week = 2 Credit Hours

Year	CONTACT HRS.			CREDIT HRS.			MARKS		
	TH	PR	TL	TH	PR	TL	TH	PR	TL
1st Year	16	18	34	32	12	44	800	300	1100
2nd Year	22	12	34	44	8	52	1100	200	1300
3rd Year	16	18	34	32	12	44	800	300	1100
4th Year	4	42	46	12	4	16	300	700	1000
Total	**58**	**90**	**148**	**120**	**36**	**156**	**3000**	**1500**	**4500**

2.4 Duration of Academic Year: The duration of each academic year is 44 weeks distributed as 36 week of actual teaching & 02 weeks for preparation leave for examination and 06 weeks for conduct of examinations and compilation of results. Following table shows detailed distribution of academic period;

Activity	Weeks	Attendance Requirement
Academic Teaching	36	➢ Minimum attendance requirement to be eligible to appear in the annual examination is 75%.
Mid-Term Test Examination	2	
Preparation of Examination	2	➢ Minimum numbers of lecture/classes during the teaching of 36 weeks in a subject of 4 C.H shall be (4 x 24) 96.
Conduct of Examination	2	
Summer Vacations	6	
Winter Vacations	2	➢ Summer Vacations: 1st June to 15 July (6 Weeks)
Other National Holidays (As Per annual Planner)	2	
Total Weeks	**52**	➢ Winter Vacations: 21st December to 5th January (2 Weeks)

2. 5 Curriculum Breakdown: The courses of studies for the Degree of B. Tech are as given as below;

2.6 Math & Basic Science Courses:

Semester / Year	S. No.	Math & Basic Science		Credit Hours		
		Couse Code	Course Name	TH	PR	TL
1st Year	1	IS 111/SS 111	Islamic Studies/ Ethics	2	0	2
	2	MTH 122	Applied Mathematics-I	4	0	4
2nd year	1	PS 211	Pakistan Studies	2	0	2
	2	MTH 222	Applied Mathematics-II	4	0	4
Sub Total				**12**	**0**	**12**

2.7 Humanity & Social Science Courses (C.H):

Semester / Year	S. No.	Humanity & Social Science		Credit Hours		
		Couse Code	Course Name	TH	PR	TL
1st year	1	CS 132	Computer Applications	2	2	4
	2	EN 142	Communication Skills	4	0	4
2nd Year	1	CT 2122	Occupational Health and safety	4	0	4
3rd Year	1	CT 373	Environmental Management	4	2	6
4th Year	1	CT 432	Engineering Economics	4	0	4
Sub Total				**18**	**4**	**22**

2. 8 Core Courses (C.H):

Semester / Year	S. No.	Core Courses		Credit Hours		
		Couse Code	Course Name	TH	PR	TL
1st year	5	CT 153	Applied Mechanics	4	2	6
	6	CT 163	Civil Engineering Drawing	4	2	6
	7	CT 173	Concrete Technology	4	2	6
	8	CT 183	Surveying	4	2	6
	9	CT 193	Material & Methods of Construction	4	2	6
2nd year	3	CT 232	Quantity Surveying & Contract Document	4	0	4
	4	CT 243	Soil Mechanics	4	2	6
	5	CT 253	Fluid Mechanics	4	2	6
	6	CT 263	Mechanics of Materials	4	2	6
	7	CT 273	Highway & Transportation Engineering	4	2	6
	8	CT 282	Water Supply & Waste Water Management	4	0	4
	9	CT 292	Engineering Geology	4	0	4
	10	CT 2101	Hydrology	2	0	2
	11	CT 2112	Material Testing, Repair & Maintenance	4	0	4
3rd year	1	CT 313	Irrigation & Hydraulics Structures	4	2	6
	2	CT 323	Reinforced Concrete Structure	4	2	6
	3	CT 332	Steel Structure	4	0	4
	4	CT 342	Computer Aided Building Modeling & Design	2	2	4
	5	CT 353	Pavements Design and Maintenance	4	2	6
	6	CT 363	Geo-Technical Engineering	4	2	6
	8	CT 382	Theory of Structures	4	0	4
	9	CT 391	Introduction to Earthquake Engineering	2	0	2
4th Year	1	CT 412	Foundation Engineering	4	0	4
	2	CT 422	Project Management	4	0	4
	4	CT 442	Project	0	4	4
	5	CT 45X	Internship	0	0	0
Sub Total				**90**	**32**	**122**
G. Total				**120**	**36**	**156**
Minimum Requirements						

2.9 Detail of Courses First Year:

COURSE TITLE: ISLAMIYAT

Course Objectives:

1. To provide Basic information about Islamic Studies
2. To enhance understanding of the students regarding Islamic Civilization
3. To improve Students skill to perform prayers and other worships
4. To enhance the skill of the students for understanding of issues related to faith and religious life.

Text Books &References:

1) Hameedullah Muhammad, "Emergence of Islam" , IRI, Islamabad

2) Hameedullah Muhammad, "Muslim Conduct of State"

3) Hameedullah Muhammad, Introduction to Islam

4) Mulana Muhammad Yousaf Islahi,"

5) Hussain Hamid Hassan, "An Introduction to the Study of Islamic Law" leaf Publication Islamabad, Pakistan.

6) Ahmad Hasan, "Principles of Islamic Jurisprudence" Islamic Research Institute, International Islamic University, Islamabad (1993)

7) Mir Waliullah, "Muslim Jurisprudence and the Quranic Law of Crimes" Islamic Book Service (1982)

8) H.S. Bhatia, "Studies in Islamic Law, Religion and Society" Deep & Deep Publications New Delhi (1989)

9) Dr. Muhammad Zia-ul-Haq, "Introduction to Al Sharia Al Islamia" Allama Iqbal Open University, Islamabad (2001)

COURSE NAME: MATHEMATICS-I

Course Objectives:

i. To review the knowledge and practice the skills acquired in diploma / HSC Courses

ii. To understand the concept and use of differential equations

iii. To learn different methods to solve differential equations

iv. To understand the concept of complex numbers and their applications

Text Book & References:

1. Thomas G. B. and Finney R. L.CALCULUS AND ANALYTIC GEOMETRY (latest edition).

Reference Books

1. Kreyszig E. ADVANCED ENGINEERING MATHEMATICS. John Wiley and Sons, USA (latest edition).

2. Cohen H. L. MATHEMATICS FOR SCIENTISTS AND ENGINEERS. Prentice-Hall, UK (latest edition).

COURSE TITLE: COMPUTER APPLICATIONS

Course Objectives:

i. To review the knowledge and practice the skills acquired in diploma Courses

ii. To use C language and Spreadsheet software in different applications

iii. To learn the concept of CAD/CAM and related applications

iv. Familiarization with commercially available software in the relevant field

Description

This course intends to enhance the knowledge of students regarding computer applications and to provide them a chance to get hands-on exposure to different general purpose and special purpose computer applications.

Text Books &Reference:

1. Tucker A. B., Bernat A., Cupper R. D. and Scragg G. W.

FUNDAMENTALS OF COMPUTING. McGraw Hill Book Company(Latest Edition).

2. IBM DICTIONARY OF COMPUTING (Latest Edition).

3. Bradley J. C. QUICK BASIC. Wm. C. Brown Publishers, USA (Latest Edition).

COURSE TITLE: COMMUNICATION SKILLS

Course Objectives:

i.- To understand the importance and basic concepts of communication

ii.- To enhance the listening skills and to become active listener

iii.- To enhance the reading skills and to become active reader

iv.- To improve the writing skills in general

Text Book& Reference:

1. Murphy H. A., Hildebrandt H. W. and Thomas J.P. EFFECTIVE BUSINESS COMMUNICATIONS, McGraw-Hill, USA (Latest Edition)

Reference Books:

1. Norman S. WERE IN BUSINESS. Longman Group Ltd., UK (Latest Edition).

2. Thomson A. J. and Martinet A. V. A PRACTICAL ENGLISH GRAMMAR Oxford University Press, UK (Latest Edition).

COURSE TITLE: APPLIED MECHANICS

Course Objectives:

A student passing this module should be able to:

1. Explain and apply the theory and principles of applied mechanics.
2. Analyze kinematics, kinematics of both particles and rigid bodies systems and apply them to practical engineering system design and development.
3. Analyze newton laws, force systems and apply them to practical engineering system design and development.
4. Carry out stress and strain analysis of beams and simple structures and apply them to practical engineering system design and development.
5. Carry out torsion, pure bending and shearing stress and apply them to practical engineering system design and development.
6. Deploy applied mechanics knowledge to solve the practical engineering problems of product and system design and development.

Text Books & References:

1. Hibler, RC. Engineering Mechanics, Prentice Hall

COURSE TITLE: CIVIL ENGINEERING DRAWING

Course Objectives:

1. To enable students to learn basics of engineering drawing.
2. To provide the students with knowledge of principles and techniques of manual construction drawing.
3. To enhance skills to prepare and understand drawings.
4. To enable them to appreciate the use of engineering drawings as a communication medium in the construction industry.
5. Students will become conversant with the rules of Engineering Drawings, in turn; they will be able to construct the structures at the site properly.

Text Books & References:

1. "Civil Engineering Drawing and House Planning" by B P Verma
2. "Civil Engineering Drawing and Design" by D N Ghosh
3. "Civil Engineering Drawing" by Gurcharan Singh
4. "A Course in Civil Engineering Drawing" by V B Sikka
5. "Estimating Costing, Specification and Valuation In Civil Engineering" by M Chakraborti

COURSE TITLE: CONCRETE TECHNOLOGY

Course Objectives:

i. To develop an understanding of the composition and behavior of plain and reinforced concrete.
ii. To understand various methods of proportioning of constituent materials for a required concrete quality.
iii. To analyze the problems of transportation, pouring, bleeding of concrete.
iv. To understand methods of curing and compaction and factors affecting strength of concrete.
v. To know the benefits of testing of concrete and to understand the procedure of quality control.

Description

This subject contains the properties and behavior of plain and reinforced concrete, the design of concrete mix and the factors affecting it. The basics of Pre-stressed concrete are also presented.

Books Recommended:

1. Properties of Concrete by A. M. Neville; Wiley John & Sons. (Latest Edition)
2. Design of Concrete Structures by H. Nilson, McGraw Hill. (Latest Edition)

COURSE TITLE: SURVEYING

Course Objectives:

i. To develop an understanding of surveying & leveling theory and practice.
ii. To develop an ability to translate survey information for design and construction purposes.
iii. To develop a skill in the use of survey instruments.

Description

The course provides an overview of surveying & leveling practice and demonstrates an understanding of area control by different survey instruments. It includes the methods of establishing the contours of an area by field exercise and in setting out and controlling complex construction works.

Text Books & References:

i. Surveying Theory and Practice by R. E. Davis, J. Anderson, F.S. Foote,
ii. McGraw Hill (Latest Edition)
iii. Surveying by Jack C. Mc Cormac, (Latest Edition).
iv. Schaum's Outline of Introductory Surveying by R. H. Wirshing, Roy
v. Wirshing, James R. Wirshing, (Latest Edition).
vi. Surveying: With Construction Applications by Barry F. Kavanagh, Prentice Hall. (Latest Edition).
vii. Plane and Geodetic Survey Vol: I and II by David Clark. Trans-Atlantic
viii. Publications. (Latest Edition).
ix. Surveying and Leveling by T. P. Kanetker

COURSE TITLE: MATERIALS AND METHODS OF CONSTRUCTION

Course Objectives:

i. To develop an understanding of the properties, uses and behavior of the building materials, standards for material quality, various tests on materials.

ii. To develop the basic understanding of construction techniques and methods of building construction with particular reference to R.C. work, brick work, flooring, damp-proofing, roofing and stairs.

Text Books& References:

i. Materials of Construction by R. C. Smith and C. K. Andres, ISBN: 0070585040, McGraw Hill. January 1987 (Latest Edition).

ii. Fundamental of Building Construction: Material and Methods, by Edward B. Allen, (Latest Edition).

iii. Building Construction Vol. I to Vol. IV by Mckay (Latest Edition).

iv. Building Construction by Mitchall (Latest Edition).

v. Building Construction by Huntington (Latest Edition).

vi. Civil Engineering Materials by Neil Jackson (Latest Edition).

vii. Construction Materials by P. D. Domone, University College, London (Latest Edition).

viii. Materials of Construction by Z. H. Syed (Latest Edition).

2.10 Detail of Courses Second Year:

COURSE TITLE: PAKISTAN STUDIES

Course Objectives:

i. Develop vision of historical perspective, government, politics, contemporary Pakistan, ideological background of Pakistan.

ii. Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

Text Books & References:

1. Burki, ShahidJaved. State & Society in Pakistan, The Macmillan Press Ltd 1980.

2. Akbar, S. Zaidi. Issue in Pakistan's Economy. Karachi: Oxford University Press, 2000.

3. S.M. Burke and Lawrence Ziring. Pakistan"s Foreign policy: A Historical analysis. Karachi: Oxford University Press, 1993.

4. Mehmood, Safdar. Pakistan Political Roots & Development. Lahore, 1994

5. Wilcox, Wayne.The Emergence of Banglades., Washington: American Enterprise, Institute of Public Policy Research, 1972.

6. Mehmood, Safdar. Pakistan Kayyun Toota, Lahore: Idara-e-Saqafat-e-Islamia, Club Road,

7. Amin, Tahir. Ethno National Movement in Pakistan, Islamabad: Institute of Policy Studies, Islamabad.

8. Ziring, Lawrence. Enigma of Political Development. Kent England: Wm Dawson& sons Ltd, 1980.

9. Zahid, Ansar. History & Culture of Sindh. Karachi: Royal Book Company, 1980.

10. Afzal, M. Rafique. Political Parties in Pakistan, Vol.I, II & III. Islamabad: National Institute of Historical and cultural Research, 1998.

11. Sayeed, Khalid Bin. The Political System of Pakistan. Boston: Houghton Mifflin, 1967.

12. Aziz, K.K. Party, Politics in Pakistan, Islamabad: National Commission on Historical and Cultural Research, 1976.

13. Muhammad Waseem, Pakistan Under Martial Law, Lahore: Vanguard, 1987.

14. Haq, Noor ul. Making of Pakistan: The Military Perspective. Islamabad: National Commission on Historical and Cultural Research, 1993.

COURSE TITLE: APPLIED MATHEMATICS-II

Course Objectives:

Aim:

To develop an understanding of the knowledge/skill of Mathematics and to apply these in Civil Engineering problems

Text Books & References:

1. Advanced Engineering Mathematics by Kreyszing E; John Wiley and Sons, USA (Latest Edition).

Reference Books

1. Calculus and Analytic Geometry, by Thomas G. B. and Finney R. L. (Latest Edition)
2. Mathematics For Scientists And Engineers by Cohen H. L; Prentice-Hall, UK (Latest Edition).

COURSE TITLE: QUANTITY SURVEYING AND CONTRACT DOCUMENTS

Course Objectives:

i. To develop ability to measure construction works in an orderly manner.
ii. To develop a systematic approach of cost estimation of a construction job
iii. To develop an understanding of preparing of contract documents and managing/execution of civil engineering works.

Description:

The course starts with a brief review of the diploma course and extends the knowledge of a systematic approach for cost estimation, understanding of preparing of contract documents and tendering of works. The uses of computer spreadsheets in estimation are also introduced.

Text Books & References:

1. Estimating Construction Costs by R. L. Peurifoy. McGraw Hill.(Latest edition).
2. Contract Specifications by Daniel and W. Mead (Latest Edition).
3. Construction Scheduling, Cost Optimization and Management by H. Adeli and A. Karim. (Latest Edition).
4. MES/Pak PWD Schedule of Rates (Latest Edition).
5. WAPDA Drafting Standards (Latest Edition).

COURSE TITLE: SOIL MECHANICS

Course Objectives:

i. To develop a basic understanding of the composition, classification, structure and properties of soils.
ii. To obtain knowledge of application of soil mechanics in civil engineering works.
iii. To acquire the laboratory skills for determination of soil properties.

Description

Soil classification methods, fundamental soil properties and standard
Laboratory tests are included in the course contents. The course contains site exploration techniques and standard practices. It prepares the basis of foundation and highway design.

Text Books & References:

1. Fundamentals of Soil Mechanics by M. S. Qureshi & Aziz Akbar,
A-1 Publishers, Urdu Bazar, Lahore. (Latest Edition).
2. Soil Mechanics by A. R. Jumikis (Latest Edition).
3. Fundamental of Soil Mechanics by D. W. Taylor (Latest Edition).
4. Soil Mechanics by T. W. Lambe, Robert V. Whitman, John Willey & Sons. (Latest Edition).

COURSE TITLE: FLUID MECHANICS

Course Objectives:

To provide a broad concept of fluid mechanics.

To enable students to solve problems relating to pipe flow and open channel flow.

Description

The methods of measurement of static fluid pressure and laws governing fluid flow are explained with their application in pipe network and open channels.

Text Books & References:

1. Fluid Mechanics for Civil Engineers by N. B. Webber, Chapman & Hall, (Latest Edition).

2. Fluid Mechanics with Engineering Applications by Dougherty, Franzine and Fennimore, McGraw Hill, New York. (Latest Edition).

3. An Introduction to Engineering Fluid Mechanics by J. A. Fox, Macmillan Company (Latest Edition).

4. Mechanics of Fluids by B. S. Massey, Wan Nost Reinhold International Rand hold Company Ltd., London (Latest Edition).

5. Mechanics of Fluids by J. W. Ireland, Bulter worth& Company, London (Latest Edition).

COURSE TITLE: MECHANICS OF MATERIALS

Course Objectives:

Aims:

i. To develop an understanding of analysis of the magnitudes and distribution of internal forces in the body by the concept of free body diagram under external loads.
ii. To calculate the shearing force and bending moment in simply supported and cantilever beams.
iii. Understanding of equilibrium conditions.

Description:

The course presents an understanding of the mechanics and its basic concepts, geometrical properties of plain area. The use of different analysis tools to understand all the design concepts.

COURSE TITLE: HIGHWAY AND TRANSPORTATION ENGINEERING

Course Objectives:

Aims:

1. To develop understanding towards the physical aspects and features of different modes and transportation.
2. To develop an understanding of the fundamentals of highway geometry and its application in the design of Highways & Railways, Bridges, Tunnels, Docks & Harbors.
3. To make student able to understand the development and layouts of Highways & Railways.

Description:

This course introduces the road standards and specifies geometric design of Highway elements. It provides recommendations for the layout of junctions and islands.

Text Books & References:

1. Fundamentals of Transpiration Engg. Robert G. Hennes. 2nd edition McGraw Hill company New York.
2. Highway Engineering by C. H. Oglesby, Russell G. Hicks. ISBN: 047102936X. John Willey & Sons. January 1982 (Latest Edition).
3. A Policy on Geometric Design of Highways & Streets AASHTO Staff, ISBN: 1560510013. January 1990 (Latest Edition).
4. Hand Books of Highway Engineering by Baker (Latest Edition).
5. Railways, Bridges and Tunnels by S. K. Sharma (Latest Edition).
6. Roads, Railways, Bridges and Tunnels by Deshpande Antia and Shahna (Latest Edition).
7. Highway Design Manual, Highway Department, Govt. of the Punjab (latest edition).

COURSE TITLE: WATER SUPPLY AND WASTE WATER MANAGEMENT

Course Objectives:

To introduce basic concepts relating to the provisions of water supply and wastewater collection facilities.

To enable students to design water supply and wastewater collection systems

Description:

This course deals with the application of scientific and engineering principles in water supply and wastewater collection. In this course the students will learn about collecting necessary data on water and wastewater quantities and utilize the collected data in the design of water distribution and sewer systems. The course also covers the topics on construction of water supply and wastewater collection systems.

Text Books & References:

1. Water Supply and Sewerage by E. W. Steel and L. J. McGhee. McGraw

2. Hill, New York. 1979 (Latest Edition)

3. Water and Wastewater Technology by M. J. Hammer, John Wiley & Sons. New York, 1986 (Latest Edition)

4. Wastewater Engineering: Collection and Pumping of Wastewater by Metcalf and Eddy. McGraw Hill, New York, 1981 (Latest Edition)

COURSE TITLE: ENGINEERING GEOLOGY

Course Objectives:

Aims:

i. To understand geology or various minerals and rocks and their properties.

ii. To learn to select proper site for civil engineering structures.

Text Books & References:

1. A Geology for Engineers, Blyth, F G H 7th Arnold International student edition.

2. Geology and Engineering, Legget, R F 3rd edition McGraw Hill International edition.

3. Principles of Engineering Geology and Geotechniqcs, Krynine, DP 1st Edition McGraw Hill International edition.

COURSE TITLE: HYDROLOGY

Course Objectives:

Aims:

To provide a broad concept of basic hydrology.

To enable students to calculate surface runoff and ground water flows.

Description

This course describes the hydrological cycle and the way it is affected by weather, climate and geology. The groundwater hydrology is explained along with its use as a resource. Floods processes in a river basin are also illustrated in the course.

Text Books & References:

1. Hydrology for Engineers by Linsley, Kohler and Paulhus. McGraw Hill, New York, 1982 (Latest Edition).

2. Handbook of Applied Hydrology by Chow, McGraw Hill, New York (Latest Edition).

3. Introduction to Hydrology by Viessman, Lewis and Knapp. Harper and Row, New York (Latest Edition)

COURSE TITLE: MATERIAL TESTING REPAIR & MAINTENANCE

Course Objectives:

Aims:

i) To know about the failure of building structures and their measures

ii) To understand the rules and regulations of maintenance

Text Books & References:

1. Building Construction by S.K.Sharma

2. Different Practicing Codes used in different department of Civil Works like (P & D, PWD etc).

COURSE TITLE: OCCUPATIONAL SAFETY AND HEALTH

Course Objectives:

Aims:

The purpose of the OSH Regulation is to promote occupational Safety and Health and to protect Engineers/workers and other persons present at workplaces from work-related risks to their health, safety, and well-being. Compliance with the requirements provides the basis on which workers and employers, in cooperation, can solve workplace health and safety problems. The requirements are not an end in them, but are a foundation upon which to build an effective health and safety program.

Text Books & References:

www.worksafebc.com

1. Holt A.S.J Principle of Health & safety at work. The institution of occupational safety & health. The caverdisk press Limited. UK 1999.

2. Patty F.A "Industrial Hygiene & Toxicology Vol-1 General Principles" Inter science Publishers New York.

2.11 Detail of Courses Third Year:

COURSE TITLE: IRRIGATION AND HYDRAULIC STRUCTURES

Course Objectives:

Aims:

i) To apply the understanding of fluid mechanics in the analysis & design of hydraulic structures.

ii) To develop an understanding of irrigation resources and apply for head works & barrages.

Description:

The course provides the students an understanding of hydraulic jump, water hammer, hydraulic similitude and hydraulic turbo machines. It further includes resources of irrigation, methods of discharge measurement, lining and design of channels, irrigational storage works and water logging problems.

Text Books & References:

1. Irrigation and Hydraulic Structures (Theory, Design and Practice by Dr. Iqbal Ali, Institute of Environmental Engineering & Research, NED University of Engineering & Technology, Karachi (Latest Edition).
2. Irrigation Canals by Iqtidar H. Siddiqi (Latest Edition).
3. Fundamentals of Irrigation Engineering by V. B. Piryani (Latest Edition).

COURSE TITLE: REINFORCED CONCRETE STRUCTURES

Course Objectives:

Aims:

i) To develop an understanding of the behavior of reinforced concrete members.

ii) To develop an ability of design and preparing working drawings of concrete structures.

Description:

This course presents a review of properties of concrete and systematic approach of design of RCC structures. Detailing of reinforcement and preparation of working drawings of various types of structures are covered.

Text Books & References:

1. Design of Concrete Structures by H. Nilson, McGraw Hill.
2. Reinforced Concrete – Design & Behavior by C. K. Wang & Salmon.
3. Reinforced Concrete by J-Faber and F. Meed; Chapman & Hall.
4. Reinforced Concrete design by Keneth Leet(Latest edition)

COURSE TITLE: STEEL STRUCTURES

Course Objectives:

Aims:

i. To develop an understanding of the behavior and design of structural teel members and connections using ASD (Allowable stress design) method.

ii. To develop an understanding of the behavior and characteristics of structural steel systems.

Description

The course is intended to provide an introduction to specification and code of practice for steel design. It further introduces the methods of fabrication, construction details, maintenance of steel structure and rehabilitation.

Text Books & References:

1. Steel Structures by Z. A. Siddiqi, M. A. Chaudhry and M. Ashraf, Civil Engineering Series Publishers (Latest Edition).

2. RFD Steel Design Aids in SI Units by Z. A. Siddiqi, M. A. Chaudhry & M. Ashraf; Civil Engineering Series Publishers.

3. Structural Steel Design LRFD Method (Second Edition) by Jack C. Mc Cormac; Harper Collins Publishers. ISBN: 0065016270. January 1994.

4. Design of Steel Structures by E. H. Gaylord, C. N Gaylord; McGraw Hill. 1991.

5. Steel Structures Design & Behavior by Charles G. Salmon, John E. Johnson.

6. Structural Steel Designers Handbook by Fredrick S. Merritt.

7. RFD Steel Design by William T. Segui; PWS Publishers. ISBN: 053493353X. January 1993.

8. Design in Structural Steel by John E. Lothers

COURSE TITLE: COMPUTER AIDED BUILDING, MODELING AND DESIGN

Course Objectives:

Aims:

To enhance the capabilities of student to independently prepare the building drawings and develop an ability to analyze and design structures by commercially used computer packages

Text Books & References:

I. Computer Aided Process Plant Design" by Leesley M L
II. Proceedings of the Second International Conference on Foundations of Computer Aided Process Design" by Westerberg A W
III. Computer Aided Engineering Design" by Anupam Saxena
IV. "Design Theory and Methods Using CAD/Cae: The Computer Aided Engineering Design Series" by Kuang-Hua Chang

COURSE TITLE: PAVEMENTS DESIGN & MAINTENANCE

Course Objectives:

Aims:

i. To develop an ability of applying the layout and alignment parameters to the highway design and its construction.
ii. To develop an understanding of the design of rigid and flexible pavements.
iii. To understand the design of foundations.

Description:

The course is required to provide an introduction to the types of base, sub- base courses, wearing surface and determination of CBR value of soil and foundation design. Standard AASHTO loading, AASHTO and British Road Notes for highway design are explained. Principles for the design of various elements of flexible and rigid pavements are given. Revision of basic concept and explanation of important definitions, design, concepts for various types of foundations are presented.

COURSE TITLE: GEOTECHNICAL ENGINEERING

COURSE OBJECTIVES:

Aims:

i. To develop a basic understanding of the behavior of soil under loading and unloading conditions
ii. To obtain knowledge of application of soil as a construction material
iii. To get acquitted about the soil improvement techniques

Description

This course deals with the fundamental and advanced principles of soil behavior related to the design of foundations, earth structures, excavations and soil improvement, etc. This course also provides fundamentals and advanced laboratory and field testing of soils.

COURSE TITLE: ENVIRONMENTAL MANAGEMENT

Course Objectives:

Text Books & References:

1. Introduction to Environmental Engineering by Peavy (McGraw Hill)
2. Environmental Engineering by Mckenze (McGraw Hill)
3. Environmental Profile of Pakistan by IUCN.
4. National Conservation Strategy by IUCN.
5. ILO laws regulations

COURSE TITLE: THEORY OF STRUCTURES

Course Objectives:

Aims:

i. To develop the understanding of the behavior of determinate structures with reference to beams and frames.

ii. To provide the concept of statically indeterminate structures illustrating their application to structures like beams, trusses and rigid frames.

iii. To understand the behavior of arches and suspension cables.

Description

The contents of this course are organized to have a clear understanding of the stability and determinacy of structures. It introduces basic understanding of conventional methods of analysis for indeterminate structures.

Text Books & References:

COURSE TITLE: INTRODUCTION TO EARTHQUAKE ENGINEERING

Course Objectives:

AIMS

Engineering Characterization of Earthquake Ground Motions

1. Response of Simple Structural Systems to Different Types of Ground Motion

Description

The course on Introduction to Earthquake Engineering provides the fundamental concepts, principles and application of earthquake engineering in seismic analysis and design of structures.

Text Books & References:

1. Fundamental Characteristics of Earthquake Engineering by Roberto Villaverde (Latest Edition)
2. Elements of Earthquake Engineering and Structural Dynamics by Andre Filiatrault (Latest Edition)
3. Geotechnical Geological and Earthquake Engineering by Ansal, Atila (Latest Edition)
4. Geology and Tectonics of Pakistan by Kazmi and Jan (Latest Edition)

2.12 Detail of Courses Fourth Year:

COURSE TITLE: FOUNDATION ENGINEERING

Course Objectives:

Aims:

i. To develop an ability of applying the layout and alignment parameters to the highway design and its construction.
ii. To develop an understanding of the design of rigid and flexible pavements.
iii. To understand the design of foundations.

Description:

The course is required to provide an introduction to the types of base, sub- base courses, wearing surface and determination of CBR value of soil and foundation design. Standard AASHTO loading, AASHTO and British Road Notes for highway design are explained. Principles for the design of various elements of flexible and rigid pavements are given. Revision of basic concept and explanation of important definitions, design, concepts for various types of foundations are presented.

Text Books & References:

1. Foundation Analysis and Design by J. E. Bowles, 5th Edition, McGraw Hill. ISBN: 0070068739. January, 1996.

2. Foundation Engineering by Ralph B. Peck, W.E. Hanson, Thomas H. Thornburn; John Willey & Sons, ISBN:0471675857.January 1974.

3. Foundation Design and Construction by Michael. J. Tomlinson; Longman Publishing Group. ISBN: 058222697X. January 1996.

4. Foundation Design by W. C. Teng; Prentice Hall. ISBN: 0133298051.

5. Geotechnical Engineering: Foundation Design by John.N. Cernica, John; Willey & Sons. ISBN: 0471308870. January 1994.

COURSE TITLE: PROJECT MANAGEMENT

Course Objectives:

Aims:

i- To learn the basic concepts of management

ii- To understand the importance of productivity and related concepts

iii- Introduction to project management and inventory management

iv- Familiarization with human resource management

Description:

This is a management-oriented course for technologists. It will enhance their general abilities of management, required in a technical environment.

Text Books & References:

1. Babcock D. L. MANAGING ENGINEERING AND TECHNOLOGY. Prentice Hall, UK (Latest Edition).

2. Zuberi M. H. INDUSTRIAL MANAGEMENT. Rabbani Printing Press, Lahore (Latest Edition).

Reference Books:

1. Bateman T. S. and Snell S. A. MANAGEMENT: BUILDING COMPETITIVE ADVANTAGE. Times Mirror Higher Education Group, USA (Latest Edition).

2. Spinner M. ELEMENTS OF PROJECT MANAGEMENT. Prentice Hall, UK (Latest Edition).

COURSE TITLE: ENGINEERING ECONOMICS

Course Objectives:

Aims:

i- To understand value and cost concepts

ii- To acquire the knowledge and skills related to the application of time value for money

iii- To acquire the knowledge and skills related to the application of costing, financing and risk

iv- iv- To acquire the knowledge and skills related to the application of depreciation, obsolescence and replacement factors.

Description:

This is a management-oriented course with a significant involvement of calculations to find solutions to financial problems.

Text Books & References:

1. DeGarmo E. P., Sullivan W. G., Bontadelli J. A. and Wicks E. M. ENGINEERING ECONOMY. Prentice-Hall International, Inc., USA.

2. Morris C. QUANTITATIVE APPROACHES IN BUSINESS STUDIES. Pitman Publishing, UK (Latest Edition).

3. Tung A. and Thomas P. A. ENGINEERING ECONOMICS FOR CAPITAL INVESTMENT ANALYSIS. Prentice-Hall.UK (Latest Edition).

4. Horne J. C. V. and Wachowicz, Jr. J. M. FUNDAMENTALS OF FINANCIAL MANAGEMENT. Prentice-Hall International, Inc., USA (Latest Edition)

COURSE TITLE: THESIS &PROJECT

Course Objectives:

Aims:

To develop the ability of exercising the B-Tech (Hons) program in the analysis and design of construction/highway projects.

Course Title: Internship

Course Objectives:

To make the student skillful by giving him on job training through Industry.

The revised scheme is spread over four years. The first three years comprise of major academic courses while the fourth year accommodates some academic courses followed by supervised industrial training of minimum 32 weeks. The guidelines for Industrial training are as follows:

Standard 2-1:

The curriculum must be consistent and supports the program's documented objectives.

2.1.1 Course Groups and Program Objectives:

The curriculum is consistent and supports the program's documented objectives. Table below showing Course Groups and Program Objectives

Courses/Group of Courses	Objectives					
	1	2	3	4	5	6
Islamic Studies/ Ethics	√	√	√	√		
Applied Mathematics-I					√	√
Pakistan Studies	√	√	√	√		
Applied Mathematics-II					√	√
Computer Applications						
Communication Skills	√	√	√	√		
Occupational Health and safety	√	√	√	√		
Environmental Management	√	√	√	√		
Engineering Economics	√	√	√	√		
Core					√	√

Standard 2-2:

Theoretical background, problems analysis and solution design must be stressed within the program's core material.

Indicate which courses contain a significant portion (more than 30%) of the elements in standard

Table below showing Standard 2-2 requirement

Element	Courses	
Theoretical background	IS 111/SS 111	Islamic Studies/ Ethics
	PS 211	Pakistan Studies
	CS 132	Computer Applications
	EN 142	Communication Skills
	CT 2122	Occupational Health and safety
	CT 282	Water Supply & Waste Water Management
	CT 292	Engineering Geology
	CT 2101	Hydrology
	CT 342	Computer Aided Building Modeling & Design
	CT 373	Environmental Management
	CT 391	Introduction to Earthquake Engineering
	CT 422	Project Management
Problem analysis	MTH 122	Applied Mathematics-I
	MTH 222	Applied Mathematics-II
	CT 432	Engineering Economics
Solution design	CT 232	Quantity Surveying & Contract Document
	CT 2112	Material Testing, Repair & Maintenance
	CT 332	Steel Structure
	CT 382	Theory of Structures
	CT 412	Foundation Engineering
	CT 153	Applied Mechanics
	CT 163	Civil Engineering Drawing
	CT 173	Concrete Technology
	CT 183	Surveying
	CT 193	Material & Methods of Construction
	CT 243	Soil Mechanics
	CT 253	Fluid Mechanics
	CT 263	Mechanics of Materials
	CT 273	Highway & Transportation Engineering
	CT 313	Irrigation & Hydraulics Structures
	CT 323	Reinforced Concrete Structure
	CT 353	Pavements Design and Maintenance
	CT 363	Geo-Technical Engineering

Standard 2-3:

The curriculum must satisfy the mathematics and basic sciences requirements for the program as specified by the respective accreditation body

The curriculum satisfies the core requirements for the program as specified by the HEC. Minimum requirements of credit hours for B. Tech (4-Year) program

Table below showing Standard 2-3 requirements

Program B. Tech (4-Year)	Math's & Basic Sciences			Core Topics (Civil Tech.)			Computer, Humanities & Management Science			Others			Electives		
Credit Hour	TH	PR	TL	TH	PR	TL	TH	PR	TL	TH	PR	TL	TH	PR	TL
	12	0	12	90	32	122	18	4	22						

Standard 2-4:

The curriculum must satisfy the major requirements for the program as specified by the respective accreditation body

The curriculum satisfies the core requirements for the program as specified by HEC same as above. The curriculum in the program is fully satisfied the major requirements of the program.

Same as Standard 2-3

Standard 2-5:

The curriculum must satisfy humanities, social sciences, arts, ethical, professional and other discipline requirements for the program as specified by the respective accreditation body

The curriculum satisfies general education, arts, and professional and other discipline requirements for the program. The following table shows how the BS Chemistry program satisfies requirements in standards 2-3, 2-4 and 2-5. It's clear from the table that all requirements are met.

Standard 2-6 :

Information technology component of the curriculum must be integrated throughout the program .

Information technology component is given important in the curriculum. As information technology is very important and play very vital role in Higher Education, for this purpose improvement is needed in this area.

Course Code	Course for IT	Tech.	Year
CS 132	Computer Application-I	Civil	1st Year
CT 342	Computer Aided Building Modeling & Design	Civil	3rd Year

Standard 2-7:

Oral and written communication skills of the students must be developed and applied the program

B. Tech program is based on practical orientation therefore 60 percentage Oral and written communication has been given importance in the program. To develop the oral and written communication skills of students, some courses relating to it have been included in the program.

Students go through the elective courses of Communication Skills and Technical Report Writing which develops the oral and written communication skills of the students. These are 4 credit hours courses which are given due weight age. The following courses have been included in the syllabus. As shown in curriculum.

Humanity & Social Science		Credit Hours		
Couse Code	Course Name	TH	PR	TL
EN 142	Communication Skills	4	0	4
CT 442	Project	0	4	4
CT 45X	Internship	0	0	0

Criterion – III

Laboratories and Computing Facilities

Criterion-3

LABORATORIES AND COMPUTING FACILITIES

Laboratories and computing facilities must be adequately available and accessible to faculty members and students to support teaching and research activities. To meet this criterion the standards in this section must be satisfied. In addition departments may bench mark with similar departments in reputable institutions to identify their short comings if any.

Provide the following information about the laboratories and computing facilities:

Describe the laboratory/ computer facilities that are available for use in the program under assessment.

Indicate for each lab the following

- Laboratory Title
- Location and area
- Objectives
- Adequacy for instruction
- Courses taught
- Software available if applicable
- Major Apparatus
- Major Equipment
- Safety regulations

The HCST offers B. Tech (4-Year) degrees in Civil Technology. The designed curriculum for each program provides a fundamental knowledge in the major areas of technologies related.

There are 7 laboratories in the civil department, and 3 laboratories in related studies department of the college. The detail regarding area, adequacy for Instruction, major apparatus/equipment and safety regulations is as under:

3.1 Adequacy for Instruction: All required instructions are displayed in the lab at appropriate places for use by faculty, students and support staff

3.2 Laboratory Safely Regulations:

I. Students must follow all the instruction from the lab instructor.

II. No smoking, drinks or food are allowed in the lab.

III. Wearing white cotton laboratory coat or **overall** during lab work is must. Without lab Coat, students will not be allowed to enter and work in the laboratories.

IV. For **safety** reasons, wearing fabrics made of synthetic materials should be avoided. Both for safety reasons and good manners of the society, Because of chemical toxicity, taking food and drinking water inside the laboratories is not recommended.

V. Taking away glassware, chemicals, equipment etc from one laboratory to another without permission in writing from the Chairman is strictly prohibited.

VI. Students are expected to avoid visiting other laboratories (other than the assigned one) during working hours. In case of urgency, please take prior permission or consult the instructor of your own laboratory.

VII. **Accident or Emergency:** On such occasions after hearing the bell, everyone is required to rush and assemble in the entrance gate but avoid panic.

VIII. See Annexure 1 for further details

3.3 Location and Area of Laboratories:

S. No	Name of Technology	Lab. No.	Labs/Workshop Title	Location	
1	Civil	1	Survey Lab	MGF	Main Building Ground Floor
		2	Construction Lab a. Highway b. Concrete	MFF2 MGF2	Main Building First Floor Main Building Ground Floor
		3	Drafting Lab	MFF1	Main Building First Floor
		4	Soil Mechanics	MGF1	Main Building Ground Floor
		5	Public Health Engg. Lab	MFF4	Main Building First Floor
		6	Engg. Mechanics Lab.	MSF1	Main Building Second Floor
		7	Fluid Mechanics Lab.	MSF2	Main Building Second Floor
3	Related Studies	1	Science Lab	MFF3	Main Building First Floor
		2	Computer Lab	NFF1	New Building First Floor
		3	Physics Lab	MFF3	Main Building First Floor

3.4 Details of Lab Courses First Year:

LABORATORY TITLE: COMPUTER LAB

SUBJECT: INTRODUCTION TO COMPUTER FUNDAMENTALS

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: Microsoft Office i.e. MS Word, MS PowerPoint, MS Excel

S. #	Object	Equipment/Apparatus
1	Basic machines organization including motherboard, memory, I/O cards, networking devices	Basic machines organization including motherboard, memory, I/O cards, networking devices
2	Use of flow charts	Use of flow charts
3	Computer peripheral devices	Computer peripheral devices
4	Operating Systems	Operating Systems
5	Microsoft Windows	Microsoft Windows
6	Microsoft Office i.e. MS Word, MS PowerPoint, MS Excel	Microsoft Office i.e. MS Word, MS PowerPoint, MS Excel
7	Office Tools & Overview of different browsers with emphasis on power point	Office Tools & Overview of different browsers with emphasis on power point
8	Microsoft Visio	Microsoft Visio

LABORATORY TITLE: DRAWING HALL

SUBJECT: CIVIL ENGINEERING DRAWING

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: AUTOCAD

S. #	Object	Equipment/Apparatus
1	Draw Regular Polygons by Universal Method (with given dimensions).	Drawing board with stand
2	Draw a 3-Centered Arch (with given dimensions).	Drawing board with stand
3	Draw a 4-Centered Arch (with given dimensions).	Drawing board with stand
4	Draw Ellipse by Focal Point Method and Parallelogram Method (with given dimensions of major and minor axes).	Drawing board with stand
5	Draw Ellipse by Concentric Circle Method and Four Center Method.	Drawing board with stand
6	Draw Parabolas by Offset Method and Basic Method.	Drawing board with stand
7	Draw Parabolas by Parabolic Arc Method and Tangent Method.	Drawing board with stand
8	Draw Isometric Views of given objects.	Drawing board with stand
9	Draw Oblique Views of given objects.	Drawing board with stand
10	Draw Isometric View of the given stairs steps.	Drawing board with stand
11	Draw Oblique View of the given stairs steps.	Drawing board with stand
12	Draw Oblique View of a Beam resting on two Columns.	Drawing board with stand
13	Draw Development Drawing of a Cube and Cylinder.	Drawing board with stand
14	Draw Development Drawing of a Cone.	Drawing board with stand
15	Draw Development Drawing of a Hexagonal Prism.	Drawing board with stand
16	Draw different forms of Rivet Heads.	Drawing board with stand
17	Draw Orthographic Views of Hexagonal Bolt.	Drawing board with stand
18	Draw Orthographic Views of Hexagonal Nut.	Drawing board with stand
19	Draw a Plan and section of isolated and combine footing showing reinforcement also draw the Schedule of Footing.	Drawing board with stand
20	Draw a four storied Building Column's elevation and cut section at each floor reducing reinforcement and cross-section of column.	Drawing board with stand
21	Draw Schedule of Beam also draw Typical Elevation of Beam , showing Bottom bar, Extra bottom bar, Hanger bar, Top bar, Extra Top bar, and rings.	Drawing board with stand
22	Draw single span Beam Elevation and its Section showing reinforcement using bent up bar.	Drawing board with stand
23	Draw a three span RCC Beam elevation and its section showing reinforcement also develop Schedule of Beam.	Drawing board with stand
24	Draw a Plan (13 X 17) and its X-section of single span RCC Slab, showing reinforcement. Short way #3@6"c/c , long way, #3@9"c/c. Slab thickness 6"	Drawing board with stand
25	Draw Plan and X-section of one way slab of three spans showing reinforcement.	Drawing board with stand
26	Draw Plan and X-section of Septic Tank.	Drawing board with stand
27	Draw a Plan of 120 sq. yard residential bungalow.	Drawing board with stand

LABORATORY TITLE: SURVEYING LAB.

SUBJECT: SURVEYING & LEVELING

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S. #.	Objects	Equipment/Apparatus
1	Locating various objects by chain surveying and determine offsets	Chains
2	To range out the survey line by direct ranging and establish the intermediate	Ranging rods, Line Ranger, Hammer
3	Temporary adjustment of automatic level and reading of a leveling staff	Auto level, Tripod stand, Plumb bob, Leveling staff
4	To determine the horizontal distance between the points by tachometer when the line of sight is straight	Tachometer, Tripod stand, Plumb bob, Leveling staff
5	To determine the horizontal distance between the points by tachometer when the line of sight is inclined and staff is held vertical	Tachometer, Tripod stand, Plumb bob, Leveling staff
6	To determine the horizontal distance between the points by tachometer when the line of sight is inclined and staff is held normal	Tachometer, Tripod stand, Plumb bob, Leveling staff
7	Profile and precise leveling	Auto level, Tripod stand, Plumb bob, Leveling staff
8	To measure the horizontal distance between two points on the Sloping Ground by measuring angle of slope	Measuring Tape, Ranging rods, Arrows, Hammer Plumb bob, Field Book
9	Introduction & study of Total station/gyro station	Total station
10	GPS based survey, integration of GPS data in GIS software, creation of contour sheet using GIS	GPS Device

LABORATORY TITLE: CONCRETE LAB.

SUBJECT: MATERIALS & METHODS OF CONSTRUCTION

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S. #	Object	Equipment/Apparatus
1	Preparation of cement concrete	
2	Preparation of cement mortar	
3	Slump test of cement concrete	Slump Test Cone
4	Compaction factor test of cement concrete	
5	Sieve analysis of fine aggregates	Mechanical Sieve analysis apparatus
6	Sieve analysis of coarse aggregates	Mechanical Sieve analysis apparatus
7	Standard consistency test of cement.	Vicat's Apparatus
8	Determination of initial and final setting time of cement.	Vicat's Apparatus
9	Standard sizes of brick and blocks.	Measuring tape
10	Determination of water absorption of a brick and stone.	Water bath, Weight machine
11	Determination of efflorescence of brick.	Water bath, Weight machine
12	Determination of compressive strength of brick/block.	Universal Testing Machine
13	Determination of moisture content of wood.	Oven. Weight Machine
14	Determination of specific gravity of wood.	Oven. Weight Machine
15	Fineness of Cement.	By formulae
16	Fineness modulus of various sands.	By formulae

3.5 Details of Lab Courses Second Year:

LABORATORY TITLE: CONCRETE LAB.

SUBJECT: CONCRETE TECHNOLOGY

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S. #	Object	Equipment/Apparatus
1	Preparation of a cement paste of standard consistency.	Vicat's Apparatus
2	Determine of initial and final setting time of cement.	Vicat's Apparatus
3	Determine of the consistency of a freshly mixed concrete through slump test.	Slump Test Cone
4	Determine of the workability of a freshly mixed concrete through compacting factor test.	Compacting Factor Test Machine
5	Determine of the compressive strength of concrete cubes.	Compacting Factor Test Machine
6	Determine of the compressive strength of concrete cylinder.	Compacting Factor Test Machine
7	Comparison of cube and cylinder strength.	Compacting Factor Test Machine
8	Test on modulus of rupture on beam specimens.	Compacting Factor Test Machine
9	Determination of aggregate Impact value.	Impact testing Machine
10	Sieve analysis of coarse aggregate.	Mechanical Sieve analysis apparatus
11	Sieve analysis of fine aggregate.	Mechanical Sieve analysis apparatus
12	Determination of fineness modulus of coarse and fine aggregate from different sources.	Mechanical Sieve analysis apparatus

LABORATORY TITLE: **ENGG. MECHANICS LAB.**

SUBJECT: **APPLIED MECHANICS**

COURSES TAUGHT: **100%**

SOFTWARE AVAILABLE IF APPLICABLE: **NO NEED OF SOFTWARE**

S. #	Object	Equipment/Apparatus
1	To verify the parallelogram law of forces	Force board with pulleys, ring, string, slotted masses and protractor
2	To verify triangle law of forces	Force board with pulleys, ring, string, slotted masses and protractor
3	To verify the polygon law of forces	Force board with pulleys, ring, string, slotted masses and protractor
4	To verify the conditions of equilibrium(graphically)	Force board with pulleys, ring, string, slotted masses and protractor
5	To verify the moment principle(varignons theorem)	Stand, wooden scale, slotted masses, threads
6	To verify the conditions of equilibrium	Wooden beam with scale, stand with spring balance, weights
7	To verify the co-efficient of friction on an horizontal plane	Horizontal surface, wooden block, weights, pulleys, thread
8	To determine the coefficient of friction on an inclined plane performance objective	Inclined surface, wooden block, weights, pulleys, thread
9	To determine the angle of repose of an inclined plane	Inclined surface, wooden block, weights, pulleys, thread
10	To verify the hooks law	Stand, spring, scale, weights
11	To determine the spring constant	Stand, spring, scale, weights
12	To verify the law of conservation of energy	stand, thread, scale, metallic bob

LABORATORY TITLE: NO NEED OF LAB.

SUBJECT: QUANTITY SURVEYING & CONTRACT DOCUMENT

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: MS OFFICE

S. #	Object	Equipment/Apparatus
1	Workout 1:2:4 concrete for foundations, columns below plinth and plinth beams.	No need equipment
2	Workout the quantities of single span and multi span beam reinforcement from given drawing.	No need equipment
3	Workout the quantities of single span and multi span beam reinforcement from given drawing.	No need equipment
4	Workout the quantities slab reinforcement from given drawing	No need equipment
5	Workout the quantities of overhead water tank concrete and its reinforcement.	No need equipment
6	Workout the quantities of RCC retaining wall concrete and its reinforcement.	No need equipment
7	Prepare material estimate for a single room complete in all respect.	No need equipment
8	Prepare complete estimate of a steel truss.	No need equipment
9	Prepare a detailed estimate of an RCC water overhead reservoir of 20,000 gallon capacity.	No need equipment
10	Prepare detailed estimate of a manhole	No need equipment
11	Prepare detailed estimate of a septic tank and soakage pit.	No need equipment
12	Prepare bill of quantity and abstract of cost for a manhole and septic tank.	No need equipment
13	Estimate the quantities of all necessary items of work required for 1500ft long bituminous road.	No need equipment
14	Estimate the cost of construction of a concrete road 24'-6" wide and one mile long for given section. The concrete will have a proportion of 1:3:6 and 0.5 % reinforcement is to be used.	No need equipment
15	Calculate the volume of earth work from contour map.	No need equipment
16	Calculate the volume of earth work for irrigation channel (i) fully in cutting (ii) partially in cutting and filling.	No need equipment

LABORATORY TITLE: SOIL MECHANICS & HIGHWAYS LAB.

SUBJECT: SOIL MECHANICS

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S.#	Object	Equipment/Apparatus
1	To determine the water content of soil sample	Oven Drier, Moisture container, Desiccator, Electronic balance sensitive 0.001 gm
2	To determine the liquid limit	Penetrometer, Cylinder mould 5cm*5cm, Moisture container and evaporating dish, Spatula, Electronic balance sensitive 0.001gm, Thermostatically controlled oven, 40 No. Sieve, Distilled water
3	To Determine Grain size distribution of a Fine Grain Soil by Hydrometer Analysis.	Hydrometer, Trays, Thermometer , Electronic balance sensitive 0.001gm, Measuring cylinder 100ml, Hydrogen per oxide, Distilled water, Dispersion apparatus, stop watch
5	To determine the plastic limit of cohesive soil sample	Glass plate, Moisture container, Spatula, Evaporating dish, Electronic balance sensitive 0.00 gm, Thermostatically controlled oven, 40 No. Sieve, Distilled water
6	To determine the Shrinkage limit of soil sample	Shrinkage Dish, Moisture container, Spatula, Evaporating dish, Electronic balance sensitive 0.00 gm, Mercury, Thermostatically controlled oven, 40 No. Sieve, Distilled water, Graduated cylinder
7	To determine the specific gravity of soil sample	Volumetric Flask (500ml), Thermometer, Vacuum Pump, Electronic balance sensitive 0.001gm, Pipette Distilled water
8	To determine the co-efficient of permeability of soil sample by constant head method	Permeameter with accessories, Stop watch, Graduated cylinder, Distilled water, Measuring scale
9	Determination of Permeability of soil by falling Head Method	Permeameter with accessories, Thermometer, Trimming knife, measuring Jar
10	Direct shear test of a soil sample.	Shear Box, Grid plates two pairs, one pair plain and another pair perforated, Proving ring with dial gauge accurate to 0.002 mm to measure the shear force
11	Unconfined compression test of a soil sample.	Unconfined compression machine, proving ring type, Dial gauge, Weighing balance, Oven, Stop watch, Sampling tube, Mould., Sample extractor,
12	Tri-axial compression test of a soil sample.	Tri-axial machine with all accessories
13	Consolidation test of a soil sample	Consolidometer or Odometer, Consolidation ring, Two porous stones. Two filter papers, Loading pad, oven

LABORATORY TITLE: FLUID MECHANICS LAB.

SUBJECT:FLUID MECHANICS

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: N/A NO NEED OF SOFTWARE

S. #	Object	Equipment/Apparatus
1	To determine the errors in the readings of a pressure gauge	Hydraulic bench, dead weight tester, weights ,pressure gauge
2	To determine , the meta-centric height of floating height	meta-centric heights apparatus
3	To find by experiment the coefficient of velocity for a small orifice	Hydraulic bench with orifice apparatus, vernier calipers
4	to find experimentally the coefficient of discharge for a small orifice for the case of	Hydraulic bench, orifice apparatus, stop-watch, measuring cylinder, vernier calipers
5	1. Flow under constant head	
	2. Flow under varying head	
7	To investigate relation between head over sill of a rectangular notch and flow rate through notch	Hydraulic bench with notch, stop-watch
8	To investigate relation between head over vertex of a v-notch and flow rate through notch	Hydraulic bench with notch, stop-watch
9	To investigate the validity of formulas of resultant force and position of center of pressure of a vertical rectangular surface	Hydrostatic pressure and centre of pressure apparatus
10	To prove validity of bernoullis theorem	Hydraulic bench, stop-watch, Bernoulli apparatus
11	To determine the fraction factor for a pipe	Fluid friction apparatus, hydraulic bench and stop watch
	To determine Cd for venturimeter	
	To determine Cd for orifice meter	
12	To determine head loss coefficient for	Comparative flow measurement apparatus, water supply arrangement small compressor
	1. Venturimeter	
	2. Sudden enlargement	
	3. Sudden contraction	
	4. Orifice meter	

LABORATORY TITLE: MATERIAL TESTING LAB

SUBJECT: MECHANICS OF SOLIDS

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S. #	Object	Equipment/Apparatus
1	To determine the compressive strength of cement.	Universal Testing Machine
2	To determine the Tensile strength of cement.	Universal Testing Machine
3	To familiarize the students about the functions of Universal Testing Machine.	Universal Testing Machine
4	To perform tensile test on a mild steel specimen and to determine yield strength, ultimate strength, rupture strength and percentage elongation.	Universal Testing Machine
5	Hardness test on a given metal specimen using Avery's Rockwell testing machine.	Avery's Rockwell testing machine.
6	To perform the Izod Impact Test for the given metals.	Izod Impact Test
7	To perform the Charpy's Impact Test for the given metals.	Charpy's Impact Test
8	To determine shear strength of a half-inch dia steel bar.	Steel fasteners
9	To determine the modulus of elasticity of the material of given rectangular beam.	Screw gauge, spherometer and slide caliper.
10	To determine modulus of rigidity of the material of given specimen with circular cross-section.	Torsion Testing Machine
11	To perform Bending test on wooden beam.	Universal Testing Machine
12	To determine the Brinell hardness number of given specimen by Brinell hardness testing machine.	Brinell hardness testing machine
13	Torsion test on a given specimen by torsion Testing Machine.	torsion Testing Machine.

LABORATORY TITLE: SOIL MECHANICS & HIGHWAYS LAB.

SUBJECT: TRANSPORTATION ENGINEERING

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S. #	Object	Equipment/Apparatus
1	To determine the C.B.R Sub grade soil for soaked sample of soil.	California Bearing Ratio [CBR] Test Machines
2	To determine the C.B.R Sub grade soil for unsoaked sample of soil.	California Bearing Ratio [CBR] Test Machines
3	To determine Resistance to degradation of small-size Coarse Aggregate by Abrasion and Impact in the LOS ANGLES machine.	LOS ANGLES machine.
4	To Determine Specific Gravity and Absorption of Course Aggregate.	Wight balance hanged with basket, water bath and Oven
5	To Determine Penetration grade of bituminous materials.	Penetration apparatus, needle, Container water bath
6	To Determine flash and fire points By Cleveland Open Cup.	Cleveland Open Cup.
7	To Determine Softening Point of Asphalt (Bitumen) and tar by Ring and Ball apparatus.	Ring and Ball apparatus
8	To Determine Impact Value of Aggregates.	Impact testing machine
9	To Determine the Flakiness index and Elongation Index.	Sieves, Balance, Flakiness Gauge and elongation gauge
10	Float Test Bituminous Material.	aluminum float and a brass collar filled with bitumen
11	To Determine Viscosity of Asphalt by Vacuum Capillary Viscometer.	Vacuum Capillary Viscometer.
12	To Determine Specific Gravity of Semi Solid Bituminous Materials by Pyconometer.	Pyconometer.
13	To Determine Ductility of Bituminous Materials	Briquette mould, Water bath, Ductility machine
14	Exercises to calculate the quantities of materials required for various types of pavements and various sections of highways.	No need equipment
15	Exercises for provision of transition curves and re-alignments of curves.	No need equipment
16	Performing standard and modified Proctor test.	Rammer, mould
17	Find field density by core cutter and sand replacement method.	core cutter, Sand pouring cylinder equipment
18	Performing standard penetration test.	Penetration apparatus, needle, Container water bath
19	Demarcation of road alignment on a given contour map.	Field

3.6 Details of Lab Courses Third Year:

LABORATORY TITLE: PUBLIC HEALTH LAB

SUBJECT: WATER SUPPLY & WASTE WATER MANAGEMENT

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S. #	Object	Equipment/Apparatus
1	Forecasting population of various cities using different methods.	No Equipment needed
2	Detailed study of different types of valves.	No Equipment needed
3	Detailed study of different pipe material and joints for water supply and sewerage.	No Equipment needed
4	Design of a transmission main.	No Equipment needed
5	Design of water distribution system for a housing scheme.	No Equipment needed
6	Design of a sanitary sewer system.	No Equipment needed
7	Design of storm sewer system.	No Equipment needed
8	Preparation of drawings for different bedding of sewers.	No Equipment needed
9	Preparation of working drawings for manholes, drop manholes and storm water inlets.	No Equipment needed
10	To determine the Bio-chemical Oxygen Demand of waste water sample.	DO meter, Water bath, water container
11	To determine the amount of suspended solids in drinking water and waste water samples by photometric method.	Blender, Beaker
12	Determination of volatile suspended solids (MLVSS) in waste water samples by gravimetric method.	Filters, Tubing, Vacuum pump, and watch glass
13	To determine the turbidity of continuous flow by Low Range Turbid meter.	Low Range Turbid meter.
14	Determination of oil and grease by Partition- Gravimetric method in wastewater.	Filters, Tubing, Vacuum pump, and watch glass
15	Determination of ortho-phosphate in water and wastewater sample by Ascorbic acid method.	Pipette Tube, Glass bottle
16	To determine the concentration of Nitrate and Lead in different water samples by ion Selective electrode.	

LABORATORY TITLE: CONCRETE LAB.

SUBJECT: RCC STRUCTURES

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S. #	Object	Equipment/Apparatus
1	Workability test of Concrete by Slump test	Iron pan to mix concrete, weighing machine, trowel slump, cone, scale and tamping rod.
2	Workability test of Concrete by compaction factor	Compaction factor apparatus, trowel weighing machine conical hoppers mounted vertically above the cylindrical mould.
3	Workability test of Concrete by flow table test	Vee-Bee consistometer test apparatus, Stopwatch, Standard iron rod, Weighing device, Tamper, Tools and containers for mixing
4	Cube test of concrete (Nominal mix)	Cube Moulds of 15 cm size, Compression Testing Machine, two steel bearing platens with hardened faces
6	Cylinder test for concrete (Nominal mix).	Compression testing machine, Cylinder mold of (150mm diameter and 300mm height or 100 x 200mm), Weighing balance.
6	Split tensile strength test of concrete	Cylindrical moulds 150 mm dia. 300 mm long, testing Machine, jigs, two packing strips of tempered hardboard of nominal thickness 4 mm, steel loading strips
7	Prism test for determining modulus of rupture of concrete	Compression Testing Machine, Assorted Test Fixtures, Combination Square, Calipers
8	Design of Concrete Mix (As per Indian Standard Method)	Not required
9	Failure of RC beams in bending by two point and one point loading	Universal Testing Machine
10	Failure of RC beam under shear with shear reinforcement	Universal Testing Machine
11	Failure of RC beam under shear without shear reinforcement	Universal Testing Machine

LABORATORY TITLE: PUBLIC HEALTH LAB

SUBJECT: ENVIRONMENTAL MANAGEMENT

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S. #	Object	Equipment/Apparatus
1	Determination of pH of Municipal Solid waste (MSW).	Ph meter
2	Determination of total solids, fixed solids, and volatile solids.	TDS Meter
3	Determination of nutrient value (NPK)	
4	Preparation of fertilizer from kitchen waste.	
5	Determination of Turbidity in industrial waste water.	Turbidity meter
6	Determination of total residual chlorine in a water sample.	By Analytical method
7	Determination of the impact of discharges on the surface water, (river, canal etc.)	By Analytical method
8	Determination of Iron in drinking water.	Spectrophotometric
9	Composition of solid waste (percentage)	No need of equipment
10	Energy Value.	No need of equipment
11	Moisture content.	
12	Measurement of dust fall in any specified area	Dust Measuring Device PCE-PCO 1
13	To study the effects of air pollutants emitted by thermal power house or chimneys of large industries on the leaves of the plants	No need of equipment
14	To estimate bacterial composition of the air by standard plate count (SPC) method:	standard plate count
15	Nox and Sox by hand meters.	Hand meters.
16	Carbon monoxide by hand meters.	Hand meters.

LABORATORY TITLE: IRRIGATION & HYDRAULICS LAB.

SUBJECT: HYDROLOGY

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S. #	Object	Equipment/Apparatus
1	Determination of velocity and discharge using current meter.	Current meter.
2	Determination of velocity and discharge using floats.	Stop watch, artificial channel
3	Study of the barometer.	Barometer.
4	Study of the rainfall gauge.	Rainfall gauge.
5	Measurement of wind velocity.	Anemometer
6	Measurement of humidity.	Hygrometer
7	Measurement of atmospheric temperature.	Atmospheric thermometer

LABORATORY TITLE: SOIL MECHANICS & HIGHWAYS LAB. & FIELD TESTS

SUBJECT: FOUNDATION ENGINEERING

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S. #	Object	Equipment/Apparatus
1	Boring log with SPT values up to 30 ft.	Field Visits
2	Plate load test.	Test plate, Hydraulic jack, Dial Gauge, Loading

LABORATORY TITLE: FIELD VISITS

SUBJECT: PRE-STRESSED & PRECAST CONCRETE

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S. #	Object	Equipment/Apparatus
1	A general study of essential equipment for precast concrete industry.	Field Visits
2	Making form work for precast concrete members and grills and casting of the specimens.	Field Visits
3	Study of equipment and machinery for pre-stressed concrete industry	Field Visits
4	Casting and testing of specimens of pre-stressed concrete units.	Field Visits
5	Casting and testing of specimens of precast RC concrete units	Field Visits

LABORATORY TITLE: GEOLOGY LAB.

SUBJECT: GEOLOGY & EARTH QUAKE ENGINEERING

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S.#	Object	Equipment/Apparatus
1	To study physical properties of minerals.	No Equipment needed
2	To identify minerals on the basis of physical properties.	No Equipment needed
3	Prepare data sheet for mineral identification.	No Equipment needed
4	To study rock types and their classification.	No Equipment needed
5	To differentiate between different types of rocks.	No Equipment needed
6	To identify and classify igneous, plutonic and volcanic rocks.	No Equipment needed
7	Prepare data sheet for identification of igneous rocks.	No Equipment needed
8	To Study sedimentary rocks.	No Equipment needed
9	To differentiate between different types of sedimentary rocks.	No Equipment needed
10	Prepare data sheet for identification of sedimentary rocks.	No Equipment needed
11	To study Metamorphic rocks.	No Equipment needed
12	To identify and classify metamorphic rocks.	No Equipment needed
13	Prepare data sheet for identification of metamorphic rocks.	No Equipment needed
14	Study and interpretation of a geological map	No Equipment needed
15	To draw a geological cross section from a geological map.	No Equipment needed

LABORATORY TITLE: IRRIGATION & HYDRAULICS LAB.

SUBJECT: IRRIGATION & HYDRAULICS STRUCTURE

COURSES TAUGHT: 100%

SOFTWARE AVAILABLE IF APPLICABLE: NO NEED OF SOFTWARE

S. #	Object	Equipment/Apparatus
1	Study of Irrigation System of Pakistan	Field Visit
2	Design of channels in alluvial soil.	No need equipment
3	Study of canal fall	Field Visit
4	Design of canal	No need equipment
5	Study of outlet	Field Visit
6	Design of Outlet	No need equipment
7	Study of a barrage on pervious foundation.	Field Visit
8	Comprehensive Design of a Barrage.	No need equipment
9	Determination of loss of total head in converging and diverging flow.	Hydraulic Bench, Venture meter,
10	Measurement of velocity with pitot tube in a closed conduit.	Pitot Tube
11	To determine the discharge in orifice under varying head.	Orifice meter, U Tube Differential Manometer
12	Study of Hydraulic Jump.	Glass walled flume with sluice gates & a spillway arrangement, Point gauges, Manometer & scales, Pump
13	To study flow channel (by Hydraulic Bench)	Hydraulic bench.
14	To study flow over weir (by Hydraulic Bench)	Rectangular and triangular notches, Hydraulic bench, Basket of glass spheres
15	To determine uplift pressure on foundation of hydraulic structure	Permeability Tank
16	To change uplift pressure on foundation of hydraulic structure by changing the length of flow lines	Permeability Tank

Standard- 3-1:

Lab manuals/documentation/instruction for experiments must be available and readily accessible to faculty and students.

All manuals and instructions are available with the Laboratory in charge and copies of these are also available with program coordinator and program in charge to be used by faculty members and students. These manuals and instructions are issued to desired entity through a defined process and proper record is being kept. The laboratory in charge keeps the manuals and instructions in laboratory for immediate access to students and faculty members during the laboratorywork.

Standard 3-2:

There must be adequato support personal for instruction and maintaining the computing laboratories

Each laboratory has 2 staff members which are Laboratory Technician and laboratory Assistant.

Laboratory in charge is responsible for overall maintenance of laboratory and also maintains the manuals and instructions while laboratory Attendant is responsible to maintain the laboratory equipment and general duties within the lab.

Standard 3-3:

The university computing infrastructure and facilities must be adequate to support programs objectives.

The computer laboratories are equipped with state of the art computers and relevant equipment's. The program objectives require the students to be equipped with IT skills at the end of the program and facilities (equipment and software) provided in the computer laboratories are adequate enough to achieve program objectives. All faculty members and students have adequate access to computing facilities.

HCST is running a Management Information System MIS which facilitates the faculty members in maintaining the attendance record, examination schedules, time tables and student's data.

Criterion – IV

Student Support and Advising

Criterion-4:

STUDENTS SUPPORT AND ADVISING

Since the launch of HCST in year 2008, all its programs have started and finished on schedule. The culture in HCST is that teachers and students have facility of frequent interaction, even after classes, for any professional and academic advice. This aspect is even highlighted and indicated by the students in the feedback on HEC Performa number 10, taken by the Quality Enhancement Cell (QEC) in the college

The students are provided full support to complete the program in timely manner. The faculty members are available during office hours and students are encouraged to consult them in case they have any problem. Students are fully supported and advised in academic and extra-curricular activities by the faculty members of the department.

Student services practitioners work with students, faculty and administrators to realize the educational goals of a college. Our Introduction to Student Advising and Support course explores the knowledge, skills and attitudes required to support students in their learning.

4.1 Co-curricular Activities:

Students are provided opportunities to participate in co-curricular activities, such as sports, debates, exhibitions etc. the college has the facilities/grounds for playing cricket, football, hockey, volleyball, basketball etc.

4.2 Industrial Tours:

Local as well as national visits to industrial units are arranged by this college. These visits are arranged for all the three technologies during the academic year. This helps in exposing them to industrial units where they learn about the industrial environment as well as requirements for technicians working there. This widens the mental and technical vision of the students. Thus a close liaison is strived to be achieved between Technical Education and Industries.

4.3 Literary Society:

In order to arouse and polish the literary capabilities among the students, the literary society of the students has been formed. It is supervised by incharge literary society. Naat Khawani, Quiz competition, debates, declamation contests are regularly organized by this society.

4.4 Games & Sports:

Besides teaching, for physical and mental growth of the students games/sports are also arranged in the college. Director Physical Education is available to organize sports activities in the college. Students of this college not only participate in inter-college sports competition but also in inter-board sports competition and has a good record of wining different events at its credit. We have signed the MOU with Hyderabad Club for the sports facilities, the students are brought on the ground and conduct various types of sports playing there.

4.5 Annual Functions:

At the end of every academic year, annual functions are held regularly. In this function, students who have achieved excellence in different events are awarded with prizes and certificates. This has created a healthy competitive atmosphere in the College.

4.6 Societies:

Beside extensive academic activities, students are provided the opportunity to develop and enhance their qualities regarding leadership qualities, literary skills etc. Different activities under societies made for the purpose are arranged for students in guidance of the teachers to achieve the above objectives.

Standard-4-1:

Courses must be offered with sufficient frequency and number for students to complete the program in a timely manner.

The department strategy to offer courses for the subject program is based on schedule approved by Higher Education Commission (HEC), given in college prospectus. The required core and elective courses are offered in a logical sequence that grooms the students to obtain the program's defined objectives and outcomes. The courses offered outside the department belongs to Faculty of Basic Sciences and Faculty of Computer Science. The technology program coordinator coordinates with the respective coordinators in both the faculties and accommodates the desired courses in program's time table. This is done well in advance prior to the commencement of classes to avoid any clashes in the schedule.

Standard-4-2:

Courses in the major areas of study must be structured to ensure effective interaction between student, faculty and teacher assistants.

Every course offered in the program carry assignments, class presentations and practical work. Students have close interaction with their teachers for the guidance related to prepare their assignments and presentations. Each instructor adopts his way to interact with his students either in the class or during the office hours. However no proper procedure is adopted for student teacher interaction. Improvement needs in this area to fulfill the requirements.

Each Candidate has supervisor which helps him to communicate with Principal / Director, seniors students also support the junior students to sort out their problem and encourage to discuss with their faculty members in the college. Visits and discussion helps the candidates to solved queries of topics taught by more than one faculty member

All courses in the program are taught by the single faculty member. Courses are structured in the board of studies before commencement of each semester. Faculty members interact frequently among themselves and with students. Students are encouraged to participate in providing feedback and their views about course contents during and after the classes.

Standard-4.3:

Guidance on how to complete the program must be available to all students and access to academic advising must be available to make course decisions and careers choices.

An orientation class is conducted in the start of every semester. In the orientation class, concerned faculty members provide a document containing program mission, objectives, outcomes, curriculum design & organization, assessment-methodology and attendance criteria.

Similarly, the contents of the document having program mission, objectives, outcomes are available to all students of the concerned course in shape of module description. The same document is also shared with the concerned Chairman/ HoD, Office of the QEC and Director Academics. Professional counseling is usually carried out by Student Career Counseling Committee constituted for the purpose. The students can also consult with the chairman of the department or with the office of the registrar. A faculty member is assigned responsibility to discuss and coordinate with students in taking the right decision about their career.

Coordinator program provides professional counseling to students when needed. Students can get in touch directly with him/her for any advice.

In charge Industrial Liaison arranges industrial tours for students to improve their subject vision and technical know-how. He/She also invites professionals from different industries to conduct interactive sessions with students for advice on professional matters/future career planning.

Program coordinator maintains a list of professional societies and technical bodies, that is provided to students on demand and students can get membership of such organizations on individual basis.

Criterion – V

Process Control

Criterion-5:

PROCESS CONTROL, (PROGRAM ADMISSION)

The execution of the major functions, such as student admission and registration, faculty recruitment, teaching, and graduation are documented and conducted in a well-organized manner. These processes are controlled, periodically reviewed and evaluated continuously.

Standard 5-1:

The process by which students are admitted to the Program must be based on quantitative and qualitative criteria and clearly documented. The process must be periodically evaluated to ensure that it is meeting its objectives.

5.1.1 Admission Procedures:

The admission criterion is set by the MUET and it is revised periodically. However, the admission of the students is the responsibility of the Admission committee of HCST, Director Admissions and the college is not directly involved in this process. The admission office gives admissions according to the criteria set by the university.

Admissions to the First Year for B. Tech degree courses are made according to the policies and rules, framed by the authorities of the MUET Jamshoro from time to time. The rules are subject to revision by the competent authority as and when deemed necessary and without notice.

The candidates who apply for their admission on the basis of fake certificates/documents (detected before or after their admission) shall be prosecuted under criminal law and their admission shall be cancelled. Additionally, they may also be debarred for a period of three years for future admissions and all payments made to the College/University shall be forfeited in favor of the College/University

5.1.2 Eligibility for Admission in 1stYear:

Group A (DAE Candidates)

The Candidates who have passed three-years diploma of Associate Engineering from a recognized Board of Technical Education in Pakistan in approved (relevant) Technology in Annual Examination and have

secured at least 50% marks are also eligible to apply for admission under Group 'A' in the same technology.

Group B (HSC Pre- Engg. Candidates):

In this group the candidates who have passed the Higher Secondary School Certificate (HSC Pre-Engineering/ General Science Group Examination or equivalent with Physics, Chemistry and Mathematics in Annual Examination and have secured at least 50% marks from any recognized Board of Intermediate and Secondary Education in Pakistan or from foreign countries, are eligible to apply for admission.

Age Limit for DAE & HSC candidates:

The candidates who fulfill the conditions of group A and group B are eligible to apply for admission. The upper age limit is fixed as 35 years. The relaxation in upper age limit up to 5 years may be allowed in special cases subject to administrative approval.

(Note: The age of candidates shall be calculated according to the final closing date of submission of admission form)

5.1.3Eligibility for Admission in 3RD Year:

B. Tech (Pass) Candidates

As per policy of HEC (Advertised in News Papers) the candidates who have passed the examination of B. Tech (Pass) with minimum CGPA of 2.5 will be offered admission directly in 3rd year of B. Tech (4-Year) Program. Admission will be given in the relevant technology of B. Tech (Pass).

i. All the equivalent courses of B. Tech (Pass) shall be credited to the 1st year of B. Tech (4-Year).
ii. All the deficiency courses of each technology shall be covered in bridge year before joining third year.
iii. After completion of deficiency courses students will be able to join regular third year classes of B. Tech (4-Year) Program.
iv. The candidates of B. Tech (Pass) shall surrender and submit their original documents (Mark sheets, Pass Certificates, Transcript, Degree) in the college/university before seeking admission in 3rd year.
v. Successful students shall be awarded Transcript and Degree of New program.

Age Limit B. Tech Pass Candidates:

No condition for age limit for seeking admission in 3rd Year of B. Tech (4-Year) program on basis of B. Tech (Pass) degree.

In-Service candidates:

The candidates who are already in service in any Government Organization at the time of admission, they should provide the following additional documents:

No Objection Certificate (NOC)

After selection for admission the Candidates will be required to produce "No Objection Certificate" from the employers for their admission.

Study Leave Order / Relieving Order

In service candidates are required to provide grant of study leave from their organization, failing which he / she will be solely responsible for any intervention by the employer.

NO-in-Service candidates:

The candidates are required to provide an Undertaking of **"NO-IN-SERVICE"** on Judicial Stamp Paper as prescribed

Note: Those students, who were admitted to any other institutes/universities before applying for admission in College/University and were rusticated, debarred or their admissions were cancelled, shall not be considered for admission in the college. Additionally, if the students hide such information regarding disciplinary action and they were granted admission; their admission would be cancelled at any stage after ascertaining such facts

Those candidates who have been convicted involving moral turpitude shall also be refused admission in the college.

Admission Form:

Call for admissions, is generally advertised in the prominent regional, national newspapers as well as on website of the affiliated Colleges of Technology. The candidates are required to obtain admission forms from college or any place as decided by authorities on payment of prescribed fees and are asked to deposit them in the college or any place as decided by the authorities within the announced closing date. These

admission forms are then scrutinized and the forms of ineligible candidates are rejected. After this scrutiny, all the eligible candidates are sent admit cards for entry to the Pre-Admission Test.

Since the admission form is a legal document any wrong information provided there-in, over-writing or tampering, concealing or missing information in any other way is illegal and may result in rejection of the form outright. The candidates are advised to submit the attested Photostat copies of all the required certificates as indicated in the admission form.

5.1.4Pre-qualification:

The candidates having **DAE** passed certificates in different disciplines can apply in relevant Technology of B. Tech as shown below with the exception of candidates having DAE in Secretarial Technology who will mention their preferred technologies in the order of choice.

Pre-Qualification of DAE Candidates		
S. #	**Admission in (B. Tech)**	**Pre-Qualification/Prerequisite DAE (Technology)**
01	**Civil Technology**	1. Civil Tech. 2. Architecture Tech. 3. Mining Tech. 4. Secretarial Tech 5. HSC (Pre. Engg.)

5.1.5 Choice of technology:

The **Candidates of DAE** are required to apply for admissions in the relevant field of study having specialized technology only with the exception of candidates having DAE in Secretarial Technology, who can apply for admission to any technology mentioning their preferred order of choice for admission.

The **Candidates of HSC (Pre-Engg:)** are required to fill up the options given in the Admission form in their own hand writing carefully. Choices selected in the admission form will be treated as final and no change will be allowed. If any student after granted admission in lower choice of technology is satisfied with the same, he/she may submit an application within three days from the date of issuance of such list that he/she is satisfied with the technology awarded to him/her, and his/her technology may not be changed further. If such application is not received the Admission Committee may change them as per their choice and seats and this change shall be binding on candidates.

Submission of documents

I. The Candidates DAE/HSC for admission in **1st Year of B. Tech (4-Year)** shall submit the following documents;

(a) Along with admission form:

S. #	Certificates/Documents	No. of Copies
1	Attested photocopies of SSC/TTC/Equivalent Pass & Marks Certificate	02 each
2	Attested photocopies of HSC/DAE/Equivalent Pass & Marks Certificate	02 each
3	Attested photocopies of Domicile Certificate	02 each
4	Attested photocopies of Permanent Residence Certificate (Form C)	02 each
5	Attested photocopy of C.N.I.C	02 each
6	Passport size photographs (fresh), one should be pasted on the application form and duly attested on the front side.	08

(b) After confirmation of admission

S. #	Certificates/Documents	No. of Copies
1	**IN-SERVICE** candidates must submit NOC and study leave certificate from Employer with application Form. **(Original)** **OR** Undertaking of **"NO-IN- SERVICE"** on Judicial Stamp Paper as prescribed.	02 each
2	Verification of DAE /HSC combined Mark sheet or pass pacca certificate on photocopy. **(Stamped original)**	02 each
3	Migration Certificate of DAE/HSC from last board of Examination. **(Original)**	02 each

II. The Candidates of B. Tech (Pass) for admission in **3rd Year of B. Tech (4-Year)** shall submit the following documents;

(a) Along with admission form:

S. #	Certificates/Documents	No. of Copies
1	Attested photocopies of SSC/TTC/Equivalent Pass & Marks Certificate	02 each
2	Attested photocopies of HSC/DAE/Equivalent Pass & Marks Certificate	02 each
3	Attested photocopies of B. Tech (Pass) Mark sheets and Pass certificate/degree certificate.	02 each
4	Attested photocopies of Domicile Certificate	02 each
5	Attested photocopies of Permanent Residence Certificate (Form C)	02 each
6	Attested photocopy of C.N.I.C	02 each
7	Passport size photographs (fresh), one should be pasted on the application form and duly attested on the front side.	08

(a) After confirmation of admission

S.#	Certificates/Documents	No. of Copies
1	**IN-SERVICE** candidates must submit NOC and study leave certificate from Employer with application Form. **(Original) OR** Undertaking of **"NO-IN- SERVICE"** on Judicial Stamp Paper as prescribed.	02 each
2	Verification of B. Tech (Pass) combined Mark sheet or pass pacca certificate on photocopy. If other than MUET **(Stamped original)**	02 each
3	Migration Certificate of B. Tech (Pass) from last board of Examination. If other than MUET **(Original)**	02 each
4	B. Tech (Pass) Mark sheets and Pass certificate/degree certificate. **(Surrender Original)**	02 each

5.1.6 Preparation of Merit List Admission*

The final merit list of the candidates for each category will be prepared by calculating the overall merit, based on the marks obtained in each of the following examinations, multiplying them with the respective weightage and adding the result to calculate the "Composite Percentage Number" (CPN) as described below;

S.#	Percentage of Marks in	Multiplying Weightage
A	Higher Secondary School Certificate (Matriculation)	**0.10**
B	Higher Secondary School Certificate (Pre-Engg./ General Science) **OR** Diploma of Associate Engineer (DAE)	**0.40**
C	Pre-Admission Entry Test	**0.50**

*** Subject to change as per Policy from time to time.**

5.1.7 Pre-Admission Test:

In accordance with the policies adopted by the Federal as well as Provincial Government of Sindh all the eligible candidates applying under any category, are required to appear in the Pre-Admission Test shall be conducted by the college or any other party as per policy. Passing criteria / qualifying the entry test will be in according to the policy/guidelines given by Authority from time to time.

5.1.8 Interviews & Verification of Documents:

After the announcement of the results of Pre-Admission Test a comprehensive merit list is prepared for each category and a number of qualifying candidates are called for interview before the Admission Committee. The interviews are held at Government College of Technology, Hyderabad on the dates as announced. The number of candidates called for interview is usually much higher than the seats available in a given category.

5.1.9 Allocation of Seats:

Provincial Distribution of Seats:

HCST offers a number of 240 seats in 1st year and 240 seats in 3rd year of B. Tech (4-year) program in batch 2018. Technology – wise distribution with respect to other provinces as shown in table given below.

Provincial Distribution of Seats							
S. #.	Tech.	1st Year (DAE & HSC)			3rd Year (B. Tech)		
		TOTAL	SINDH 80%	OTHERS 20%	TOTAL	SINDH 80%	OTHERS 20%
1	Civil	120	96	24	120	96	24

Qualification-Wise Distribution of Seats:

This is first time that HCST offers admission in 1styearHSC-II (Pre- Engg.) beside DAE in batch 2015 the distribution of seats on DAE & HSC-II is as shown in table given below.

Qualification-wise distribution of seats					
S. #	Tech.	Total	DAE (Technologies 60%)		HSC-II (Pre-Engg. 40%)
			GROUP A (30%)	GROUP B (30%)	GROUP C (40%)
1	Civil	120	36	36	48

Note: The no of seats described in above tables of others provinces and HSC-II basis shall be considered at maximum of allocation, however in case of shortage of applications / candidates from those categories, seats will be filled from other categories provided not exceeding the actual no. of seats allocated by MUET Jamshoro.

5.1.10 Intimation to Selected Candidates:

Merit list will be displayed on the college notice board and successful candidates will be intimated by post or by SMS. However, the college shall not be responsible for any postal delay or loss. The candidates are advised to see for all important notices in connection with their admission on notice board of the College. Candidate rejected on any ground shall not be intimated.

5.1.11 Final Authority Regarding Admission:

The decision of Admission Committee/Principal of the college in respect of admission is final and is not challengeable, in any court of law/not valid for litigation.

Note: As **B. Tech** program is administered by the college authority with affiliation of **Mehran University of Engineering and Technology Jamshoro,** as such the relevant "RULES and REGULATIONS" of MUET for affiliated colleges/institutes would be applicable in respect of admissions to B. Tech.

Standard 5-2:

The process by which students are registered in the program and monitoring of students' progress to ensure timely completion of the program must be documented.

Each department shall send details of the admitted students to the director of admissions and controller of examinations on the prescribed proforma for registration within one month of the finalization of 1st year admissions. The office of the director admissions and controller of examinations shall maintain record of all the registered students in manner which shall contain the Name, Father's Name, Date of Birth, Permanent address, CNIC No. of the candidate, DMC of SSC and DAE/intermediate Examination, details of any other examination and result of every University Examination.

5.2.1 Academic Progress of Students:

In annual system, monitoring of student progress is evaluated by tests, surprise quizzes, assignments, class presentation, projects and final exam at the end of the semester.

5.2.2 Internal Evaluation:

Academic Year Requirements- The minimum requirements for each academic year course shall be as follows:

Sessional work consisting of class tests and laboratory work:

i. 75% Attendance (minimum) and ii. Appearance in annual examination

Distribution of marks:-The distribution of Marks for each Theory and Practical in an academic year will be as follows:

Theory:

Theory 100			Theory 50		
I	Attendance	10	I	Attendance	05
II	Two Class tests	10	II	One Class test	05
III	Final Examination	80	III	Final Examination	40
Total		100	Total		50

Practical:

Practical 100			Practical 50		
I	Attendance	10	I	Attendance	05
II	Evaluation of Lab. work	30	II	Evaluation of Lab. work	15
III	Final Examination	60	III	Final Examination	30
Total		100	Total		50

(a) Module of Bifurcation of marks for Practical Examinations:

S.#.	Total Marks of Subject	Sessional Marks		Annual Examination	
		Attendance	Evaluation of Lab Work	Conduct of Practical/*Objective Test	Viva – Voce
01	50	05	15	15	15
02	100	10	30	30	30

Project:

Project shall be done in the Final Year of B. Tech, the distribution of Marks shall be as follows:

Maximum 200 marks

1	Supervisory Evaluation (Internal)	**50**
2	Written Report (Internal & External)	**50**
3	Via – Voce (Internal & External)	**100**

5.2.3 Industrial Guided Training Internship:

Industrial Guided Training / Internship shall be done in the Final Year of B. Tech, the distribution of Marks shall be as follows:

Max: Marks (500)

(a) Student Daily Diary 100

(b) Supervisory / Evaluation (Internal)` 100

(c) Written Report (Internal & External) 150

(d) Viva Voce (Internal & External) 150

5.2.4 Attendance requirements:

(I) A student must have at least 75% average attendance, so to be eligible to appear in the Annual Examination.

(II) In genuine cases, maximum 10% condonation in attendance shall be the discretionary powers of the Vice – Chancellor on the basis of an application to be scrutinized by Principal and routed through proper channel.

5.2.5 Distribution of attendance marks:

The distribution of marks for attended lectures by the students shall be as under:-

A. For a theory head of 100 Marks.			**B. For theory head of 50 Marks**		
S.No.	No. of lectures attended	Marks to be awarded	S.No.	No. of lectures attended	Marks to be awarded
1	61 - 64	10	1	30 – 32	5
2	55 - 60	9	2	27 – 29	4
3	52 - 54	8	3	25 – 26	3
4	48 – 51	7	4	Below 24	0
5	Below 48	0			

C. For a practical head of 100 attended:			**D. For Practical head of 50 marks**		
S.NO.	%age of lectures attended	Marks to be awarded	S.NO.	%Age of Lectures Attended	Marks to be Awarded
1	95% - 100%	10	1	90% -100%	10
2	86% - 94%	4	2	80% - 89%	4
3	81% -79%	3	3	75% - 79%	3
4	75% - 80%	7	4	BELOW75%	0
5	Below - 75%	0			

5.2.6 Conduct of sessional work / Final Examinations:

The procedure for conducting the sessional work / Annual examination and declaration of results shall be as follows:

(a) 10/5 marks of assignments subjects carrying 100/50 marks shall be awarded by the teacher concerned after conducting 3/2 class tests and 2/1 best of 3/2 class tests shall be counted towards award of 10/5 marks. The entire record of evaluated class test shall be submitted by the concerned Principal / Director to Examinations Department at the time of submission of sessional marks.

(b) At the end of each Academic Year, the marks of attendance, sessional work and lab. Work secured by a student in Theory / Practical of the concerned subject shall be announced by the concerned subject teacher by displaying on the Notice Board.

(c) The Principal / Director at the end of each Academic Year shall finally prepare four copies of the sessional marks of each course (attendance, class tests and laboratory work) separately on the prescribed proforma, who after retaining one copy for his / her office record, shall forward the remaining of the Final Examination.

(d) The result of each subject of the Final Examination shall be prepared TRIPLICATE by Internal / external Examiners separately which will be forwarded to the Controller of Examinations in the sealed envelopes.

(e) The cumulative result (including all the marks of attendance, calls test, lab. Work and Final Examination) of each academic year shall be announced by the Controller of Examinations.

(f) The time allocated for final year Examinations shall be 03 hours for the subject of 100 marks and 02 hours for the subject of 50 marks.

5.2.7 Setting of questions paper / assessment of scripts conduct of Practical Examinations:

The mode for setting of question paper (Theory / Practical) and assessment of work Theory Examination as well as conduct of Practical Examination shall be as under:

(a) The Internal Examiner of both Theory and Practical in Regular / Supplementary Examinations shall be recommended by the Principal / Director to the Controller of Examinations. The Internal

Examiner shall preferably be the subject teacher otherwise a proper justification may be communicated to the Controller of Examination for further consideration.

(b) The External Examiner of both Theory and Practical in Regular / Supplementary Examinations shall be appointed by the Vice – Chancellor from the Panel of Examiners recommended by the Chairman of the concerned department of the University, through proper channel.

(c) The Internal Examiner for the Theory paper will set the Question paper in duplicate which shall be sent to the External Examiner, along with a copy of syllabus in sealed envelope by the Controller of Examination, who shall set the final question paper with 30% moderation / change of the total number of questions. The Internal Examiner shall submit question paper four weeks before the commencement of Annual Examination and same shall be sent to External Examination by Controller of Examination two weeks before commencement of Final Examinations.

(d) In specific cases, if the question paper is not submitted by the External Examiner two days before the date of commencement of Annual Examination, the question paper set by the Internal Examination shall be deemed final.

(e) The choice of attempting the questions shall be limited to a maximum 60% i.e. Five (05) out of Eight (08) questions to be solved by the students. The question paper shall comprise various sections in exceptional cases determinable as per nature of the course.

Practical:

(i) The objective Type Question Paper of Practical Examination shall be set in duplicate first by Internal Examiner and thereafter the same shall be got moderated by External Examiner concerned as per procedure already applicable for Theory Examination.

(ii) The following Guideline Parameters shall be included by the Examiners for setting of Objective Type Question Papers.

Fill in the Blanks, True or False, Multiple Choice Questions (MCQs), Definition of Technical Terms, Drawing Skill Oriented Questions and Interpretation of Diagrams.

(iii) The duration for conduct of Objective Type Test shall be Minimum of 30 Minutes and Maximum of One hour for Question Papers carrying 15 7 30 Marks, respectively.

(b) Assessment of scripts.

(i) The scripts of Theory7 Examination shall be sent to the concerned External Examiner first and thereafter the scripts shall be assessed by the respectively Internal Examiner. Both the Examiners will send the award lists (in triplicate) to the Controller of Examinations separately.

(ii) The average of the marks of the Internal & External Examiners shall be awarded to the candidates. In case the variation in the award of marks of Internal & External Examiners exceeds 20% of the marks assigned to the Final Examination, the matter shall be referred to the Dean concerned for final decision.

(c) Conduct of Practical Examinations.

The Objective Type Test, Practical and Via Voce Examinations shall be conducted jointly by the Internal and External Examiners. The Signature sheets of Examiners for conduct of Objective Type Test and Via Voce / Jury shall be maintained separately and the same shall be submitted to the Examinations Department for office record by the Examiner. The award lists signed by the both Examiners shall be submitted in triplicate Type Tests and Practical Examination.

(d) **Scanning of Results.**

(i) A Committee comprising of the Dean, the Chairman / Director of the concerned Department of the University and the concerned Senior teacher of the subject of the University, who if necessary, for reason of checking the quality and consistency of assessment of scripts, would at random re-asses at least 15% of the scripts and in case gross discrepancy is detected, the Committee shall be empowered to take appropriate action with approval of the Vice – Chancellor.

(ii) Prior to sending ledgers of the results of Regular / Supplementary Examination of B. Tech to the Vice – Chancellor for his signature, the overall tabulated and checked ledgers shall be perused and scanned by the Dean.

5.2.8 Appearance in the Annual Examination:

The Annual Examination will be open to the student who full-fills the following conditions

a) He / she has submitted his / her Examination Form duly filled-in complete along with the prescribed fee to the Controller of Examinations within the due date announced by the University.

b) He / she has produced the following certificate duly signed by the Director / Principal concerned.

(i) Good character certificate

(ii) Photo state copy of Enrolment Card.

(iii) Attendance certificate to the effect that the student has achieved minimum prescribed 75% attendance.

Passing an Examination:

(i) A candidate having passed all the Heads of 1st to Final Year B. Tech with a minimum 40% in Theory and 50% in Practical shall be declared "PASS" or otherwise.

(ii) A candidate having all the Head of 1st to Final Year B. Tech with minimum 50% marks shall be declared "PASS". If any student is not able to get 50% aggregate marks even after having passé all the Heads, he / she shall be promoted but must improve the heads of his / her choice to secure at least 450% aggregate marks.

(iii) A student failing in any or all Head of a Final Examination shall be declared to have failed in the examination. He / she shall be allowed to re-appear in the failing Head(s) in the next examination, if otherwise eligible as per rules.

Promotion to next higher Year:

(i) A student shall be promoted to the next higher year provided he / she has completed minimum attendance requirements and failed-up examination form of regular examination and has also appeared in at least one of the Head of the examinations (A Theory or Practical would be treated as separate Heads).

(ii) A student shall be promoted to Third Year only if he / she has cleared at least 50% Benefit of the fraction will be given to the student.

Division:

(i) The award of Division / Grade in the B. Tech Degree to the candidates shall be made on the basis of Cumulative Average of Four Years as under:

Year	1st	2nd	3rd	4th
Weightage	10%	20%	30%	40%

The weightage mentioned above will be based on the %age of marks secured by the student in each year.

(ii) A candidate who fulfills all the requirements for the Degree of B. Tech and secures 60% marks of above in all the Regular / Supplementary Examinations as mentioned above shall be declared pass in FIRST DIVISIOIN and if secures 50% marks or above shall be placed in SECOND DIVISION.

(iii) In the University Pass Certificate / Transcript, a foot note shall be added that Division has been awarded on Year – wise weightage as per 19 (i) above in the ratio of marks obtained from First to Final Year Regular / Supplementary Examinations.

20. **Award of merit position.**

The Merit Positions shall be awarded in each discipline on the highest percentage of marks based on weightage as prescribed in 18. (i) in all Regular Examinations First to Final Year (1st attempt). The candidate having declared pass in 1st attempt with admissible grace marks as per rules are also eligible for the award of said three Merit Position.

Award of grace marks:

(i) The benefit of grace marks of up to 10 marks in each academic year will be given to a candidate who has taken the examination and who, but for this benefit, would have failed in the examination. These marks may be distributed over the various Heads of passing and shall not be added physically.

However, the benefit of grace marks mentioned above shall be allowed optional and as such the concerned candidate (s) shall be allowed the change ONCE to re-appear in the condoned subject (s) by declaring Fail in such subject(s). Accordingly, the concerned candidate shall have to submit such option in writing through the Director / Principal of the concerned college. The option once exercised shall be deemed as final. In such cases, the candidates(s) shall have to deposit the prescribed fee for permission along with his / her option in addition to examination fee as admissible under the rules. However, if the candidates(s) who is / are allowed such optional permission fails to pass the concerned subjects) after re-appearing in the examination he / she will retain his / her previous results.

(ii) The benefit grace marks of up to 10 marks will be given to a candidate who but for this benefit, would have been placed in lower Division in the examination. These marks shall not be added physical.

Comprehensive Viva Voce Examination for Project and Internship

(i) The comprehensive Viva – Voce of the Project / Internship shall be held after the completion of the Final Year Examination of B. Tech.

(ii) A student who has failed in the Written report / Viva – Voce shall be given the benefit of appearing again in the same examination only ONCE.

Time of Assessment of scripts:

The time limit for checking the answer scripts shall be 15 Scripts per day plus one week unless specified.

Final award:

The final award once received by the office of the Controller of Examination shall not be liable to a subsequent change, except with the permission of the Vice – Chancellor.

Re – Totaling of marks:

Re-totaling of the marks shall be done one payment of prescribed fee per paper of a candidate who submits an application to the Controller of Examinations, through the Director / Principal of the concerned College within two weeks from the date of announcement of result.

Medium of Instruction:

Instructions in all courses and laboratories are carried out in English Language.

Modification of regulations:

These regulations are subjects to modification by the competent University authorities as may be felt appropriate from time to time.

Evaluation of Registration and monitoring process

Evaluation of Registration and monitoring process is evaluated periodically

Standard 5-3:

The process of recruiting and retaining highly qualified faculty members must be in place and clearly documented. Also processes and procedures for faculty evaluation

5.3.1 Recruitment of faculty:

Recruitment of the faculty members is done on open merit by inviting the applications through newspapers. Written screening test is conducted for short listing. The candidates are required to appear before the selection board for interview. The names of selected candidates are recommended to board of directors for approval. After the approval, the director issues the offer letters for the appointment. Faculty members are made in accordance to the policy approved by HEC.

Promotion:

The performance of the faculty members is monitored regularly and continuously by the Chairman/HoD of the department, and it is evaluated annually through ACRs. (Annual Confidential Report) There was no systematic process before to evaluate the faculty members, now after establishment of QEC each faculty member is evaluated by the students via "Teacher Evaluation Questionnaire" at the end of each semester. Since the HCST is a private institute; therefore promotions are conducted through selection board of college, by following the criteria of experience, qualification and age wise.

Standard 5-4:

The process and procedures used to ensure that teaching and delivery of course material to the students emphasize active learning and that course learning outcome is met. The process must be periodically evaluated to ensure that it is meeting the objectives.

Process to ensure teaching and delivery of course material:

- Time table is strictly followed by all faculty members. The Chairperson of the department frequently gets feedback from the students during the semester.
- Students are show their test and papers in the show off session after every test and quiz, this process in made sure by the HoDs. Students can see their papers marked by the teacher and view it.
- All the relevant materials (Tests, Assignments and Quizzes) of evaluation are submitted to the office of the HoD and Principal office. It purpose to ensure that the grading is transparent
- Award list of all sessional and final examinations and papers are submitted to the controller of examination MUET Jamshoro.

In order to ensure that the teaching is effective a quarterly survey is conducted by the university QEC and the findings are communicated to the concerned faculty members. After completion of Survey Assessment Team meeting is called to assess the process and make implementation plan for the said department.

Evaluation of course:

There is student's evaluation proforma to ensure that teaching and delivering of course material is effective and focus on students learning, and this evaluation results is use to improve the process of teaching.

Standard 5-5:

The process that ensures that graduates have completed the requirements of the program must be based on standards, effective and clearly documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives.

The programs are run on annual basis and at the end of each annual examination are held to evaluate the student's progress in that year. Qualified students are allowed to join next year and this cycle continues till the end of 4th year which is the final year. At the end of 4th year all students are required to submit their respective projects. Student's final results are announced on the basis of projects results and examination results.

Requirements of this standard are met through 3 Performa's issued by HEC. The feedback is documented and its evaluation indicates degree of satisfaction of the graduates. Three forms (Performa 3, Survey of Graduating Students (Annexure- C), Performs 7, Alumni Survey (Annexure-E) and Performa 8 (Annexure F) are extremely good instruments to measure the program outcomes.

The feedback is taken on yearly basis. The suggestions given by the graduating students and graduates working in the industry are given due weightage.

The feedback of employers has been achieved. Generally, they are satisfied; however, they have recommended that graduates be given more practice in technical report writing, presentation skills and ability to design system components. This is also being processed to make changes in syllabi.

Criterion – VI

Faculty

Criterion-6:

FACULTY

Faculty members of the HCST Hyderabad are active in teaching and practical activities and have the necessary technical depth to support the program. Teachers attempt to cover the curriculum adequately and in case of need hold extra classes.

Standard-6.1:

There must be enough full time faculties who are committed to the program to provide adequate coverage of the program areas / courses with continuity and stability. The interest of all faculty members must be sufficient to teach all courses, plan, modify and update courses. The majority must hold a PhD degree in the discipline

HCST believe in providing quality education, do not compromise on this matter; therefore, we always invite high qualified teachers for providing skillful knowledge to the students, we have with us very experienced and qualified teaching faculty to conduct the classes as per time table and approved calendar of academic teaching.

The interest and qualifications of faculty members are sufficient to plan, teach, modify, and update all offered courses and curriculum.

Civil technology is a professional engineering discipline that deals with the design, construction, and maintenance of the physical and naturally built environment, including works like roads, bridges, canals, dams, and buildings etc.

6.1.1 Faculty of Core/Technical Course:

Permanent Faculty

S. #.	Name	Qualification	Designation
1	Engr. Rameez Saqib	B.E (Civil)	Head of Department
2	Engr. Naraindas	B.E, (Civil)	Assistant Professor
3	Arch. Muhib Saqib	B. Arch	Assistant Professor
4	Arch. Ahmed Faraz	B. Arch (Architecture)	Assistant Professor
5	Engr. Sultan Shaikh	B.E., ME (Civil)	Lecturer
6	Engr. Irfan Ali Shar	B. E. (Civil)	Lecturer
7	Engr. Muhammad Yasir	B. E. (Civil)	Lecturer
8	Engr. Rahil Imtiaz Kandhir	B. E. (Civil)	Lecturer

Visiting:

S. #.	Name	Qualification	Designation
1	Engr. Abdul Hafeez Kandhir	B.E, PGD (Civil)	Associate Professor
2	Engr. Atif Ghafoor	B.E (Civil)	Assistant Professor
3	Mr. Abdul Hayee	B. Tech Hons. (Civil)	Lab. Lecturer
4	Mr. Hasib-ul-Hassan	B. Tech Hons. (Civil)	Lab. Lecturer
5	Engr. Huzaifa Athar	B.E (Civil)	Lecturer

6.1.2 Faculty of Basic Science & Related Courses:

The Related Studies department is one of the important departments of the college. It provides support to all technologies of the college and meets requirements of technology disciplines in imparting communication skill & science education. The department offers courses in Applied Mathematics, Physics, Chemistry, Islamic Studies, Ethics, Pakistan Studies and communication skill.

Permanent Faculty

S. #.	Name	Qualification	Designation
1	Miss. Bushra	BS (Mathematics)	Lecture
2	Mr. Mukesh	BS (Mathematics)	Lecture
3	Mr. Waseem Ahmed	MSc. (Chemistry)	Assistant Professor

Visiting Faculty

S. #.	Name	Qualification	Designation
1	Mr. Wajid Hussain Laghari	M.A (Islamiat)	Assistant Professor
2	Mr. Saifullah Jamali	M. Phil (Pak Study)	Associate Professor

Standard-6.2

Discipline and sufficient time must be provided for scholarly activities and professional development. Also, effective programs for faculty development must be in place.

Faculty concurrency in the discipline is determined based on the criterion set by the Mehran UET in the light of HEC guidelines. All faculty members submit their professional resumes on HEC Performa number 9 (Faculty Resume) once a year (Annexure-G). This information is compared with the existing criterion set by university for the concurrency of the post.

All full time faculty members are allocated teaching hours as per HEC defined limit which enables the faculty to have enough spare time to perform scholarly activities and improve their knowledge and skills.

Faculty members are provided with adequate resources for research and academic activities. Every faculty members has been provided with computer system and access to internet. Faculty members have also access to library materials for academic and research activities. Professional training is also provided to faculty if required to enhance their capabilities.

The HCST encourages the faculty to participate in research activities by providing them sufficient financial support within or outside university.

Faculty development

Standards	Y/N
Faculty resume has been prepared in line with HEC	Yes
Full time faculty have sufficient time for scholarly activities and professional development	Yes
Any faculty development program is conducted	Yes
Faculty programs are evaluated	Yes
Evaluation results of faculty are used for improvements	Yes

Standard 6-3:

All faculty members should be motivated and have job satisfaction to excel in their profession

Faculty members are motivated through public appreciation and documented appreciation (annual performance evaluation report) by the In-Charge QEC Program on regular basis.

The faculty survey of the program using HEC Performa number 5 indicates the mix reactions of the faculty, which indicates that teaching load be distributed evenly and more relaxed environment be generated. Faculty Surveys results are attached in Annexure D. Criterion 7: Institutional Facilities

Criterion – VII

Institutional Facilities

Criterion-7:

INSTITUTIONAL FACILITIES

Institutional facilities, including library, class rooms and offices need improvement to support the objectives of the overall programs of the college. Class rooms and offices are be adequate to enable faculty to carry out their responsibilities.

Standard 7-1:

The institution must have the infrastructure to support new trends such as e-learning.

The HCST has provided e-learning facilities to faculty members and students. Each faculty member has a computer system with access to internet and e- learning library section.

Students have been provided a number of computer systems in the library to access e-learning section. Every student has been provided with user ID to access the e-learning resources from within the college library.

The support staff to look after the e-learning resources is sufficient in number, trained and responsive. The university has provided enough funding to support the e-learning.

7.1.1Facilities Available for Students:

7.1.1.1 Internet Facility:

Limited internet facility is available for students.

7.1.1.2 Canteen:

The facility of delicious food and beverages at College canteen is available for the students with its friendly environment. It serves traditional meals and drinks prepared with a hygienic way so that the students may get healthy and fresh food to eat and enjoy. Students are supposed to maintain a neat and clean environment of the canteen. They are responsible for leaving no waste/ trash on the floors or tables.

7.1.1.3 Health Centre:

The HCST Health Centre, managed by experienced senior Dr. Jawad Ahmed Sodhar and Medical personnel including supporting staff. The center caters to the medical needs of the college.

HCST has basic first aid unit and a physician for the facilitation of students, faculty and staff; currently there is one medical practitioner in the BHU. The appointment of female doctor is in process.

7.1.1.4 Faculty Offices:

Offices with in adequate facilities are available for the faculty.

7.1.1.5 Placement Office:

A placement office is maintained under the supervision of an officer / Industrial Coordinator. The officer keeps a close contact with different local and national industrial units regarding their requirements of technical personals. He recommends names of passed out students for practical training. This office also keeps in touch with manager of industries regarding knowledge and skill requirements of technicians/supervisors they require.

7.1.1.6 Industrial Tours:

Local as well as national visits to industrial units are arranged by this college. These visits are arranged for all the three technologies during the academic year. This helps in exposing them to industrial units where they learn about the industrial environment as well as requirements for technicians working there. This widens the mental and technical vision of the students. Thus a close liaison is strived to be achieved between Technical Education and Industries.

7.1.1.7 Literary Society:

In order to arouse and polish the literary capabilities among the students, the literary society of the students has been formed. It is supervised by incharge literary society. Naat Khawani, Quiz competition, debates, and declamation contests are regularly organized by this society.

7.1.1.8 Games & Sports:

Since its inception in 2008, games and sports have been one of the important foci of HCST's endeavor to facilitate all-round development of student physical and mental abilities. Every year an Annual Social Meet is organized in the college where along with cultural activities indoor and outdoor sports are held.

A sports Officer is appointed in the College who has been coaching the different sports time to time. The sports facilities include a tennis courts, basketball courts, badminton courts, cricket football, and hockey. The Sports equipment are available in the sports throughout the day. Different teams for the different

sports do not only participate at city level but do go to participate in all over Pakistan under the guidance and supervision of the sports officer

7.1.1.9 Annual Functions:

At the end of every academic year, annual functions are held regularly. In this function, students who have achieved excellence in different events are awarded with prizes and certificates. This has created a healthy competitive atmosphere in the College.

Societies

Beside extensive academic activities, students are provided the opportunity to develop and enhance their qualities regarding leadership qualities, literary skills etc. Different activities under societies made for the purpose are arranged for students in guidance of the teachers to achieve the above objectives.

7.1.1.10 Industrial linkage:

A placement office is maintained under the supervision of Mr. Furqan Umair, a liaison officer /Industrial Coordinator. The officer keeps a close contact with different local and national industrial units regarding their requirements of technical personals. He recommends names of passed out students for practical training. This office also keeps in touch with manager of industries regarding knowledge and skill requirements of technicians/supervisors they require.

Standard 7.2:

The library must possess an up-to-date technical collection relevant to the Program and must be adequately staffed with professional personnel.

LIBRARY

The college has big library having a variety of books on technical, general and literary topics. The library facility is available for students & staff. This aims at enhancing and supplementing the student readers. At least three to four text books each year are issued to a student. Besides this, national newspapers, journals etc. come regularly to keep students well informed of news and technological developments. It has a collection of more than three thousand books containing text books, reference books, written reports, project thesis, generals and religious books and encyclopedias etc. Rules and regulations regarding issue/return of books etc. are followed in the library.

Standard-7.3:

Class room must be adequately equipped and offices must be adequate to enable faculty to carry out their responsibilities.

Enough class rooms are available to run the program as per desired schedule, nearly all the class rooms are provided with modern teaching learning resources, such as white boards, OHP and multimedia etc. In few class rooms, there is a need of up-gradation of multimedia and other resources. The work orders have been initiated and procurement process is in progress,. A brief description is as follows:

Criterion – VIII

Institutional Support

Criterion-8:

INSTITUTIONAL SUPPORT

The HCST administration is trying to provide all the possible facilities to the departments and has been struggling hard for the up gradation of departments and establishing M. Tech program, new faculties and institutes.

Standard-8.1:

There must be sufficient support and financial resources to attract and retain high quality faculty and provide the means for them to maintain competence as teachers and scholars.

In order to groom the faculty, MUET usually offers various trainings, workshops and seminars for faculty. The HCST is also trying to attract highly qualified faculty. HCST allocates enough financial resources each year to hire competent faculty as required.

As already listed in standard 5-3, Faculty members are retained by giving them good remuneration, favorable teaching environment, research facilities and management support.

As listed in standard 6-2, Faculty members are provided with adequate resources for research and academic activities to maintain their competence. Every faculty members has been provided with computer system and access to internet. Faculty members have also access to library materials for academic and research activities. Professional training is also provided to faculty if required to enhance their capabilities.

Standard 8.2:

There must be a adequate number of high-quality graduate students, research assistants and Ph.D. students.

The HCST is newly established so there is no research assistant. However, B. Tech students since HCST offers only B. Tech program therefor we are perusing for M. Tech program and for different research projects in the university.

Standard 8.3:

Financial resources must be provided to acquire and maintain Library holdings, laboratories and computing facilities.

We have adequate funds to run the program smoothly in heads of equipment, infrastructure, management, books, consumable material and salaries of faculty. All the financial matters of the overall department are managed by the HCST Finance Directorate.

Conclusion

The self-assessment report of the Department of Civil Technology, HCST Hyderabad is an important document, which gives strengths and weaknesses of the program. The management is striving hard to improve infrastructure for establishment of contusive environments for studies. The faculty is focused on imparting quality education, introduction of new and innovative techniques and conduct of quality research to produce competent technologists. The report has been prepared after evaluating the program in the light of 8 criterion and 31 standards given in HEC's Self-Assessment Manual. The program mission objectives and outcomes are assessed and strategic plans are presented to achieve the goal, which are again measurable through definite standards. Teachers' evaluation revealed satisfactory standards. Alumni surveys revealed variable results with regards to knowledge, interpersonal skills, management and leadership skill. Weaknesses are identified which are related to space, laboratories and equipment. Improvements in curriculum design and infrastructure are suggested which are based upon set, well defined and approved criteria. Pre-requisites are fully observed, examinations are held on schedules, academic schemes are prepared well in advance, transparent admission, registration and recruiting policy, excellent student teacher ratio are some of the strong areas of this program. The numbers of courses along with titles and credit hours for each semester, course contents for degree program, are thoroughly planned. Their efficacy was measured through different standards and it was found to be satisfactory.

The facilities and shortcomings in the laboratory have been discussed. It was concluded that laboratory facilities and class rooms need further improvement. The need of refresher courses for the fresh faculty on method of teaching cannot be overemphasized.

Proper steps are taken to guide the students for program requirements, communication, meetings, tutorial system, tours, students-teacher interaction etc. Some improvements have been suggested. As regards the process control covering admission, registration, recruiting policy, courses and delivery of material, academic requirements, performance and grading, NTC as well as Higher Education Commission have set forth proper rules, which are properly followed. At present there are nineteen faculty members who are highly qualified in their fields. However, faculty members need motivation for advanced knowledge, research and external training.

Institutional facilities were measured through Criterion 3; infrastructure, library, class room and faculty offices and in each case, short comings and limitation are highlighted. Institutional facilities need to be strengthened. Accordingly, institutional support will greatly promote and strengthen academic, management and leadership capabilities.
In conclusion, the strong and weak areas of the program are as under:-

Strong Areas:

a) Curriculum Design, development and organization are based upon set, well defined and approved criteria
b) Pre-requisites fully observed
c) Examinations on schedule.
d) Academic Schemes fully prepared in advance
e) The number of courses along with their titles and credit hours for each semester, course contents

for degree program are fully planned
f) Transparent admission, registration and recruiting policy
g) A very powerful and expanded international library
h) PEC & HEC rules fully followed
i) Excellent Students-Teacher Ratio

Weaknesses:

a) Class rooms improvements
b) New & State of the art equipment for Labs
c) Lack of books for the student
d) Transport quality is not good

Salient recommendations of Chairman AT's presentations are:-

Class Room Improvements:

a) Some class rooms have inadequate seating capacities
b) Shape of class rooms-(Problem of light and echo)
c) Multimedia projector and overhead projector requirement in a few classes
d) Lights and Fans and ACs especially in summer
e) Whiteboard should be dispersive
f) Sound system for bigger classrooms
g) All big rooms should be reserved for classes only.

Laboratory Equipment:

a) Laboratory Equipment's Up-gradation

Regular Teacher Training:

a) Excellent communication skills are required
b) Training of Young Faculty
c) Improve the Teaching Methodology
d) Preparation and delivery of lectures
e) Evaluation of students

Facilities for Students:

a) Common Room for Male students
b) Ample sitting facilities in lawns and under shade
c) Sport facilities -(Basketball, Badminton, Table tennis, Cricket ground)
d) Industrial and Educational tours

Faculty Development:

a) Indigenous Plans for faculty development
b) Practical skills should be enhanced
c) Research facilities and funds
d) Balance of teaching workload and research activities
e) Student teacher ratio should be adequate
f) Technical training regarding handling of Laboratory and Classroom equipment (Handling of ACs, Handling of Multimedia Projectors, Handling of PCs, Handling of laboratory equipment)

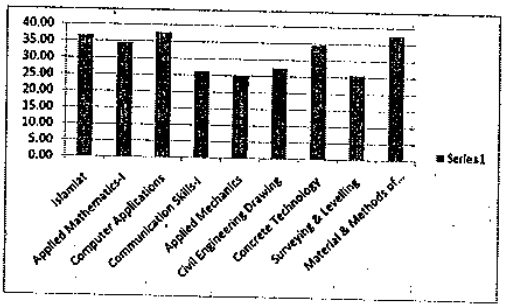
Annexure-A

Course Evaluation Survey

ANNEXURE-A

Student Course Evaluation Questionnaire
(Filled by each Student at the time of Course Completion)
B. Tech (4-Year) Program
Department of Civil Technology
Consolidated Average Result

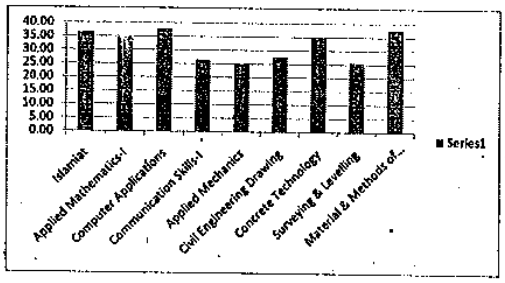
Year	S #	Teacher's Name	Course No	COURSE EVALUATION		Students		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Not Aattempted	Total
				Course Title	Average	Enrolled	Present	Quality Points						
								5	4	3	0	0	0	12
1st Year (Batch 2018)	1	Mr. Wajid Hussain Laghari	CH-111	Islamiat	36.61	153	135	60.00	34.00	1.10	1.90	1.00	2.00	100
	2	Mr. Haresh Kumar	CS-122	Applied Mathematics-I	34.50	153	135	70.00	10.00	8.00	7.00	0.00	0.00	95
	3	Engr. Irfan somro	CT-132	Computer Applications	37.83	153	135	66.60	25.00	7.00	1.40	0.00	0.00	100
	4	Mr. Ahmed Faraz	CT-142	Communication Skills-I	26.38	153	135	40.00	10.00	25.50	12.50	8.00	4.00	100
	5	Engr. Muhammad Awais	CT-153	Applied Mechanics	25.00	153	135	40.00	10.00	20.00	10.00	10.00	10.00	100
	6	Arch. Mohib Saqib	CT-163	Civil Engineering Drawing	27.58	153	135	45.00	10.00	22.00	12.00	8.00	3.00	100
	7	Engr. Naraindas	CT-173	Concrete Technology	34.78	153	135	50.50	40.40	1.10	4.00	2.00	2.00	100
	8	Engr. Nabeel Ali Khan	CT-183	Surveying & Levelling	25.67	153	135	38.00	16.00	18.00	8.00	5.00	15.00	100
	9	Engr. Raheel Imtiaz	CT-193	Material & Methods of Construction	37.83	153	135	66.60	25.00	7.00	1.40	0.00	0.00	100



ANNEXURE-A

Student Course Evaluation Questionnaire
(Filled by each Student at the time of Course Completion)
B. Tech (4-Year) Program
Department of Civil Technology
Consolidated Average Result

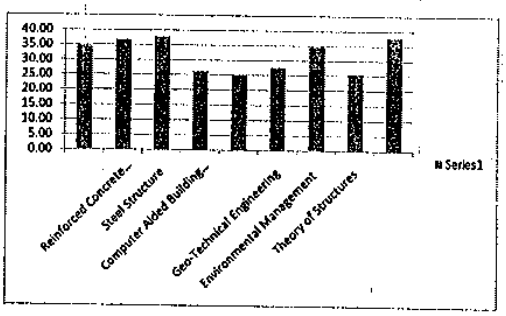
Year	S #	Teacher's Name	Course No	COURSE EVALUATION		Students		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Not Aattempted	Total
				Course Title	Average	Enrolled	Present	Quality Points						
								5	4	3	0	0	0	12
2nd Year (Batch 2018)	1	Mr.Saifullah Jamali	CH-211	Pakistan Studies	34.78	122	98	50.50	40.40	1.10	4.00	2.00	2.00	100
	2	Mr. Haresh Kumar	CS-222	Applied Mathematics-II	36.84	122	98	80.10	5.90	6.00	8.00	0.00	0.00	100
	3	Engr. Muhammad Azeem	CT-232	Quantity Surveying & Contract Document	37.83	122	98	66.60	25.00	7.00	1.40	0.00	0.00	100
	4	Engr. Muhammad Azeem	CT-243	Soil Mechanics	26.38	122	98	40.00	10.00	25.50	12.50	8.00	4.00	100
	5	Engr. Muhammad Awais	CT-253	Fluid Mechanics	25.00	122	98	40.00	10.00	20.00	10.00	10.00	10.00	100
	6	Engr. Naraindas	CT-263	Mechanics of Materials	27.58	122	98	45.00	10.00	22.00	12.00	8.00	3.00	100
	7	Engr. Nabeel Ali Khan	CT-273	Highway & Transportation Engineering	34.78	122	98	50.50	40.40	1.10	4.00	2.00	2.00	100
	8	Engr. Nabeel Ali Khan	CT-283	Water Supply & Waste Water Management	25.67	122	98	38.00	16.00	18.00	8.00	5.00	15.00	100
	9	Engr. Ahmed Faraz	CT-293	Engineering Geology	37.83	122	98	66.60	25.00	7.00	1.40	0.00	0.00	100
	10	Engr. Farhad	CT-2101	Hydrology	27.58	122	98	45.00	10.00	22.00	12.00	8.00	3.00	100
	11	Engr. Raheel Imtiaz	CT-2112	Material Testing, Repair & Maintenance	34.78	122	98	50.50	40.40	1.10	4.00	2.00	2.00	100
	12	Engr. Muhammad Azeem	CT-2122	Occupational Health and safety	37.83	122	98	66.60	25.00	7.00	1.40	0.00	0.00	100



ANNEXURE-A

Student Course Evaluation Questionnaire
(Filled by each Student at the time of Course Completion)
B. Tech (4-Year) Program
Department of Civil Technology
Consolidated Average Result

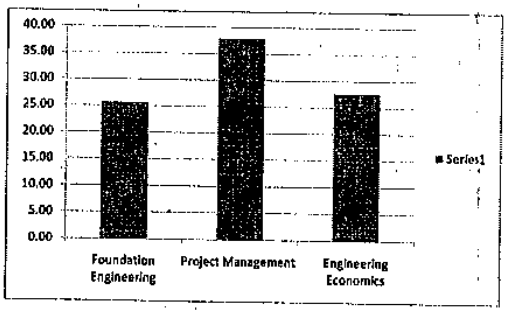
Year	S #	Teacher's Name	Course No	COURSE EVALUATION		Students		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Not Aattempted	Total
				Course Title	Average	Enrolled	Present	Quality Points						
								5	4	3	0	0	0	12
3rd Year (Batch 2016, 2017 & Bridge B-2018)	1	Engr. Mohammad Azeem	CT-313	Irrigation & Hydraulics Structures	34.78	309	240	50.50	40.40	1.10	4.00	2.00	2.00	100
	2	Engr. Muhammad Awais	CT-323	Reinforced Concrete Structure	36.84	309	240	80.10	5.90	6.00	8.00	0.00	0.00	100
	3	Engr. Narainds	CT-332	Steel Structure	37.83	309	240	66.60	25.00	7.00	1.40	0.00	0.00	100
	4	Engr. Ahmed Faraz	CT-342	Computer Aided Building Modeling & Design	26.38	309	240	40.00	10.00	25.50	12.50	8.00	4.00	100
	5	Engr. Raheel Imtiaz	CT-353	Pavements Design and Maintenance	25.00	309	240	40.00	10.00	20.00	10.00	10.00	10.00	100
	6	Engr. Muhammad Awais	CT-363	Geo-Technical Engineering	27.58	309	240	45.00	10.00	22.00	12.00	8.00	3.00	100
	7	Engr. Nabeel Ali Khan	CT-373	Environmental Management	34.78	309	240	50.50	40.40	1.10	4.00	2.00	2.00	100
	8	Engr. Shankar Lal	CT-382	Theory of Structures	25.67	309	240	38.00	16.00	18.00	8.00	5.00	15.00	100
	9	Engr. Mohammad Azeem	CT-391	Introduction to Earthquake Engineering	37.83	309	240	66.60	25.00	7.00	1.40	0.00	0.00	100



ANNEXURE-A

Student Course Evaluation Questionnaire
(Filled by each Student at the time of Course Completion)
B. Tech (4-Year) Program
Department of Civil Technology
Consolidated Average Result

Year	S #	Teacher's Name	Course No	COURSE EVALUATION		Students		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Not Aattempted	Total
				Course Title	Average	Enrolled	Present	Quality Points						
								5	4	3	0	0	0	12
4th Year (Batch 2015)	1	Engr. Narainda	CT 412	Foundation Engineering	25.67	76	60	38	16	18	8	5	15	100
	2	Engr. Farhad	CT 422	Project Management	37.83	76	60	67	25	7	1	0	0	100
	3	Engr. Raheel Imtiaz	CT 432	Engineering Economics	27.58	76	60	45	10	22	12	8	3	100



Annexure-B

Faculty Course Review Survey

HYDERABAD COLLEGE OF SCIENCE & TECHNOLOGY, HYDERABAD

(Affiliated With Mehran University of Engineering. & Technology, Jamshoro)

Faculty Course Review Report

(To be filled by each teacher at the time of Course Completion)

For completion by the course instructor and transmission to Head of Department or his/her nominee (Dept. Quality Coordinator) together with copies of the Course Syllabus outline

Department:	Civil		Faculty:	Yasin Samoon	
Course Code:	CE 273	Title:	Highway & Transportation Engineering		
Session:	Batch	Semester: Annual	Autumn ☐	Spring ☐	Summer ☐
Credit Value:	04	Level:		Prerequisites:	
Name of Course Instructor:	Yasin Samoon	No. of Students Contact Hours	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)					

Distribution of Grade/Marks and other Outcomes: (adopt the grading system as required)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	173/199	29	28	16			100		26	173
Post-Graduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	No Grade		Withdrawal	Total
No. of Students										

Overview/Evaluation (Course Co-coordinator's Comments)

Feedback: first summarize then comment on feedback received from:
(These boxes will expand as you type in your answer.)

1) Student (Course Evaluation) Questionnaires

Student's Course evaluation Form filled by Students and should satisfactorily performance

2) External Examiners or Moderators (if any) Yes, one external for every subject

HYDERABAD COLLEGE OF SCIENCE & TECHNOLOGY, HYDERABAD

(Affiliated With Mehran University of Engineering. & Technology, Jamshoro)

3) Student /staff Consultative Committee (SSCC) or equivalent, (if any)

SSCC is available in the department and regularly look after the matter

4) Curriculum: comment on the continuing appropriateness of the Course curriculum in relation to the intended learning outcomes (course objectives) and its compliance with the HEC Approved / Revised National Curriculum Guidelines

Course learning out-comes have set according to the guidelines and meet requirements of Standard

5) Assessment: comment on the continuing effectiveness of method(s) of assessment in relation to the intended learning outcomes (Course objectives)

course objective discuss every year with alumne students stake holder graduate student. Also reviewed by the department Committee

6) Enhancement: comment on the implementation of changes proposed in earlier Faculty Course Review Reports

Most of the proposed changes attend and also some of them implemented

7) Outline any changes in the future delivery or structure of the Course that this semester/term's experience may prompt

No Need of change in out-line of course

Name: M. Yasir Samoon Date: 18/5/2019
(Course Instructor)

Name: _____ Date: _____
(Head of Department)

HYDERABAD COLLEGE OF SCIENCE & TECHNOLOGY, HYDERABAD

(Affiliated With Mehran University of Engineering. & Technology, Jamshoro)

Faculty Course Review Report

(To be filled by each teacher at the time of Course Completion)

For completion by the course instructor and transmission to Head of Department or his/her nominee (Dept. Quality Coordinator) together with copies of the Course Syllabus outline

Department:	Civil		Faculty:	Raheel Ahmed	
Course Code:	CT232	Title:	Quantity Surveying & Contract Documents		
Session:	Batch	Semester: Annual	Autumn ☐	Spring ☐	Summer ☐
Credit Value:	04	Level:		Prerequisites:	
Name of Course Instructor:	Raheel Ahmed	No. of Students Contact Hours	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)					

Distribution of Grade/Marks and other Outcomes: (adopt the grading system as required)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	173/199	29	28	16			100		26	173
Post-Graduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	No Grade		Withdrawal	Total
No. of Students										

Overview/Evaluation (Course Co-coordinator's Comments)

Feedback: first summarize then comment on feedback received from:
(These boxes will expand as you type in your answer.)

1) Student (Course Evaluation) Questionnaires

Students course evaluation form filled by Students and showed satisfactory performance

2) External Examiners or Moderators (if any) Yes, one external for examining

3) Student /staff Consultative Committee (SSCC) or equivalent, (if any)
SSCC is available in the department and regularly look after the matter

4) Curriculum: comment on the continuing appropriateness of the Course curriculum in relation to the intended learning outcomes (course objectives) and its compliance with the HEC Approved / Revised National Curriculum Guidelines
Course learning outcome have set according to the guidelines and meet requirement of standard

5) Assessment: comment on the continuing effectiveness of method(s) of assessment in relation to the intended learning outcomes (Course objectives)
course objective discuss every year with alumnie student stake holders graduate student and reviewed by the department committee

6) Enhancement: comment on the implementation of changes proposed in earlier Faculty Course Review Reports
Most of the proposed changes attend and also some of them implemented

7) Outline any changes in the future delivery or structure of the Course that this semester/term's experience may prompt
No need of change in outline of course

Name: Rakeel Imtiaz _____ Date: 18/5/2019
(Course Instructor)

Name: _____ Date: _____
(Head of Department)

HYDERABAD COLLEGE OF SCIENCE & TECHNOLOGY, HYDERABAD

(Affiliated With Mehran University of Engineering. & Technology, Jamshoro)

Faculty Course Review Report

(To be filled by each teacher at the time of Course Completion)

For completion by the course instructor and transmission to Head of Department or his/her nominee (Dept. Quality Coordinator) together with copies of the Course Syllabus outline

Department:	Civil		Faculty:	Raheel Imtiaz	
Course Code:	CT 253	Title:	Fluid Mechanics		
Session:	Batch	Semester: Annual	Autumn ☐	Spring ☐	Summer ☐
Credit Value:	04	Level:		Prerequisites:	
Name of Course Instructor:	Raheel Imtiaz	No. of Students Contact Hours	Lectures	Other (Please State)	
			Seminars		
Assessment Methods: give precise details (no & length of assignments, exams, weightings etc)					

Distribution of Grade/Marks and other Outcomes: (adopt the grading system as required)

Undergraduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	F	No Grade	Withdrawal	Total
No. of Students	173/199	29	29	16			100	100	26	173
Post-Graduate	Originally Registered	%Grade A	%Grade B	%Grade C	D	E	No Grade		Withdrawal	Total
No. of Students										

Overview/Evaluation (Course Co-coordinator's Comments)

Feedback: first summarize then comment on feedback received from:
(These boxes will expand as you type in your answer.)

1) Student (Course Evaluation) Questionnaires

Students course evaluation form filled by students and showed satisfactory performance

2) External Examiners or Moderators (if any) Yes, one external for every ~~Student~~ Subject

HYDERABAD COLLEGE OF SCIENCE & TECHNOLOGY, HYDERABAD

(Affiliated With Mehran University of Engineering. & Technology, Jamshoro)

3) Student /staff Consultative Committee (SSCC) or equivalent, (if any)

SSCC is available in the department and regularly took after the matter

4) Curriculum: comment on the continuing appropriateness of the Course curriculum in relation to the intended learning outcomes (course objectives) and its compliance with the HEC Approved / Revised National Curriculum Guidelines

Course learning outcomes have set according to the guidelines and meet requirements of standard

5) Assessment: comment on the continuing effectiveness of method(s) of assessment in relation to the intended learning outcomes (Course objectives)

Course objective discuss every year with alumne Students whose holding Graduation Student and reviewed by the department committee

6) Enhancement: comment on the implementation of changes proposed in earlier Faculty Course Review Reports

Most of the proposed changes attend and also some of them implemented

7) Outline any changes in the future delivery or structure of the Course that this semester/term's experience may prompt

No need of change in outline of course

Name: Rafeel Imtiaz (Course Instructor) Date: 13/5/2019

Name: _____ (Head of Department) Date: _____

Annexure-C

Survey of Graduating Student

ANNEXURE-C

Survey of Graduating Students

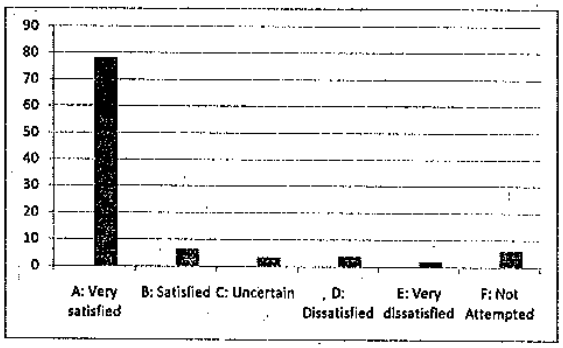
(To be filled out by graduating students in last semester / year before the award of degree)

The survey seeks graduating students' input on the quality of education they received in their program and the level of preparation they had at university. The purpose of this survey is to assess the quality of the academic programs. We seek your help in completing this survey.

Program: B. Tech (Hons)
Batch: 2016
Department: Civil Technology
No. of Graduating Students: 75

CONSOLIDATED RESULT OF GRADUATING STUDENTS SURVEY

	Quality of Academic Program	A: Very satisfied	B: Satisfied	C: Uncertain	D: Dissatisfied	E: Very dissatisfied	F: Not Attempted	Total
1	The work in the program is too heavy and induces a lot of pressure	40	10	10	9	5	1	75
2	The program is effective in enhancing team-working abilities.	65	4	4	2	0	0	75
3	The program administration is effective in supporting learning.	60	5	5	3	1	1	75
4	The program is effective in developing analytical and problem solving skills.	69	2	1	1	1	1	75
5	The program is effective in developing independent thinking.	73	2	0	0	0	0	75
6	The program is effective in developing written communication skills.	64	5	3	2	1	0	75
7	The program is effective in developing planning abilities.	64	3	2	2	2	2	75
8	The objectives of the program have been fully achieved	71	1	1	1	1	0	75
9	Whether the contents of curriculum are advanced and meet program objectives	61	4	4	2	2	2	75
10	Faculty was able to meet the program objectives	60	5	2	2	3	3	75
11	Environment was conducive for learning	66	6	2	1	0	0	75
12	Whether the Infrastructure of the department was good.	63	3	2	2	3	2	75
13	Whether the program was comprised of Co-curricular and extra-curricular activities	40	20	5	3	4	3	75
14	Whether scholarships/ grants were available to students in case of hardship	0	1	0	0	0	74	75
15	The internship experience is effective in enhancing	35	4	4	20	2	10	75
16	Ability to work in teams	34	20	5	10	6	0	75
17	Independent thinking	70	2	2	1	0	0	75
18	Appreciation of ethical Values	71	2	1	1	0	0	75
19	Professional development	64	4	2	3	0	2	75
20	Time management skills	69	1	1	1	1	2	75
21	Judgment	70	3	2	0	0	0	75
22	Discipline	69	2	2	1	1	0	75
23	The link between theory and	70	1	1	1	1	1	75
	Total	1348	110	61	68	34	104	1725



Grade	%age
A: Very satisfied	78.14
B: Satisfied	6.38
C: Uncertain	3.54
D: Dissatisfied	3.94
E: Very dissatisfied	1.97
F: Not Attempted	6.03
Total	100.00

Annexure-D

Faculty Survey

ANNEXURE-D

Faculty Survey

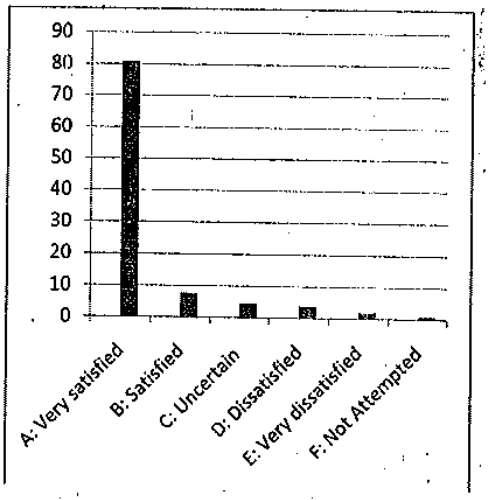
(To be submitted on annual basis by each faculty member)

The Purpose of this survey is to assess faculty members' satisfaction level and the effectiveness of programs in place to help them progress and excel in their profession. We seek your help in completing this survey and the information provided will be kept in confidence. **Indicate how satisfied are you with each of the following aspects of you situation at your department?**

Program: B. Tech (Hons)
Batch: 2016
Department: Civil Technology
No. of Faculty Teachers: 22

CONSOLIDATED RESULT OF FACULTY SURVEY

	Quality of Academic Program	A: Very satisfied	B: Satisfied	C: Uncertain	D: Dissatisfied	E: Very dissatisfied.	F. Not Attempted	Total
1	Your mix of research, teaching and community service.	18	1	1	1	1	0	22
2	The intellectual stimulation of your work.	15	2	2	2	1	0	22
3	Type of teaching / research you currently do.	19	1	1	1	0	0	22
4	Your interaction with students.	15	2	1	1	1	2	22
5	Cooperation you receive from colleagues.	20	2	0	0	0	0	22
6	The mentoring available to you.	22	0	0	0	0	0	22
7	Administrative support from the department.	17	2	2	1	0	0	22
8	Providing clarity about the faculty promotion process.	16	3	0	1	1	1	22
9	Your prospects for advancement and progress through ranks.	18	2	1	1	0	0	22
10	Salary and compensation package.	21	1	0	0	0	0	22
11	Job security and stability at the department.	16	4	- 2	0	0	0	22
12	Amount of time you have for yourself and family.	18	1	1	1	1	0	22
13	The overall climate at the department.	19	1	1	1	0	0	22
14	Whether the department is utilizing your experience and knowledge	15	2	2	2	1	0	22
Total		**249**	**24**	**14**	**12**	**6**	**3**	**308**



Grade	%age
A: Very satisfied	80.84
B: Satisfied	7.79
C: Uncertain	4.55
D: Dissatisfied	3.90
E: Very dissatisfied	1.95
F: Not Attempted	0.97
Total	**100**

Annexure-E

Alumni Survey

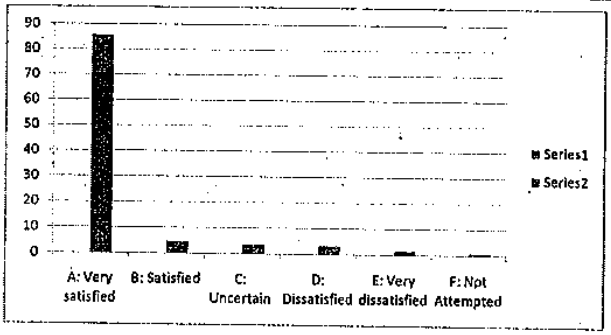
ANNEXURE-E

Alumni Survey

The purpose of this survey is to obtain alumni input on the quality of education they received and the level of preparation they had at the university (name of the university). The purpose of this survey is to assess the quality of the academic program. We seek your help in completing this survey.

Survey conducted and feed back received by 32 x-students of different working batches working in various organizations

Quality of Academic Program		A : Excellent	B: Very good	C: Good	D: Fair	E: Poor	F: Not Attempted	Total
I Knowledge	1. Math, Science and Engineering Skills	25	3	2	2	0	0	32
	2. Problem formulation and solving skills	26	2	1	1	1	1	32
	3. Collecting and analyzing appropriate data	28	1	1	1	1	0	32
	4. Ability to link theory to practice	30	1	1	0	0	0	32
	5. Ability to design a system component or process	29	1	1	1	0	0	32
	6. Computer knowledge	25	2	1	1	1	2	32
II Communication Skills	1. Oral communication	24	3	2	1	1	1	32
	2. Report writing	29	2	1	0	0	0	32
	3. Presentation skills	30	1	1	0	0	0	32
III Interpersonal Skills	1. Ability to work in teams	28	1	1	1	1	0	32
	2. Independent thinking	28	1	1	1	1	0	32
	3 Appreciation of ethical values	25	1	2	4	0	0	32
	4. Professional development	28	2	1	1	0	0	32
IV Work Skills	1.Time management skills	28	1	1	1	1	0	32
	2. Judgment	26	1	1	1	1	1	31
	3. Discipline	28	1	1	1	1	0	32
Total		437	24	19	17	9	5	511



Grade	%age
A: Very satisfied	85.52
B: Satisfied	4.70
C: Uncertain	3.72
D: Dissatisfied	3.33
E: Very dissatisfied	1.76
F: Not Attempted	0.98
Total	100.00

Annexure-F

Employer Survey

ANNEXURE-F

Employer Survey

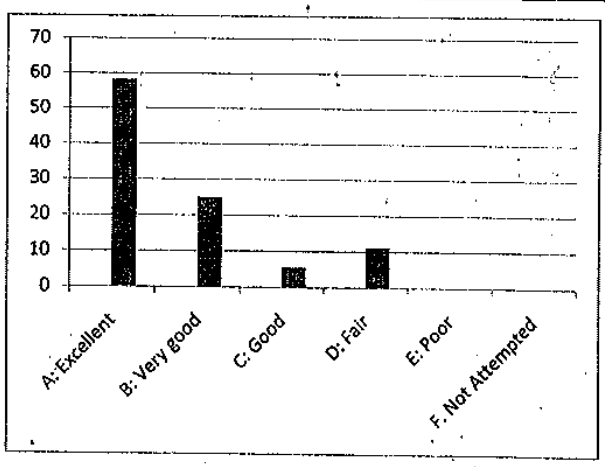
(To be filled in by Employer - after the completion of each academic year)

Name of Employer & Designation: **Mr. Saqib Qaisar Khan, Principal**

Name of Employer & Designation: **Mr. Moula Bux Laghari, Director**

Prgram: **B. Tech (4-Year)**

Quality of Education			In Put						
			A: Excellent	B: Very good	C: Good	D: Fair	E: Poor	F. Not Att	Total
I. Knowledge.	1	Math, Science, Humanities and professional discipline, (if applicable)	2						2
	2	Problem formulation and solving skills	2						2
	3	Collecting and analyzing appropriate data	1	1					2
	4	Ability to link theory to Practice		2					2
	5	Ability to design a system component or process	2						2
	6	Computer knowledge.	2						2
II. Communication Skills	1	Oral communication	2						2
	2	Report writing	2						2
	3	Presentation skills	1			1			2
III. Interpersonal Skills	1	Ability to work in teams	1			1			2
	2	Leadership		1		1			2
	3	Independent thinking		1		1			2
	4	Motivation	1	1					2
	5	Reliability		1	1				2
	6	Appreciation of ethical values	1		1				2
IV. Work skills	1	Time management skills	2						2
	2	Judgment	1	1					2
	3	Discipline	1	1					2
Total			**21**	**9**	**2**	**4**	**0**	**0**	**36**



Grade	%age
A: Excellent	58.33
B: Very good	25.00
C: Good	5.56
D: Fair	11.11
E: Poor	0.00
F. Not Attempted	0.00
Total	100

Annexure-G

Faculty Resume

Faculty Resume

Name:	Engr. Rameez Saqib
Personal:	S/O Saqib Qaisar Khan H. No; 4-B, Unit: 8-A Latifabad Hyderabad Cell No: 0345-3574711 Email: engr.rameez@hotmail.com
Experience	Five Years In Construction Company as a Site & Two Year as a HS Engineer Two Months in EPA One and Half Year in Technical College as a Lecturer
Honors and Awards	NIL
Memberships	Registered with PEC
Graduate Students Post docs Undergraduate Students Honor Students	NIL
Service Activity	NIL
Brief Statement of Research Interest	NIL
Publications	NIL
Research Grants and Contracts	NIL
Other Research or Creative Accomplishments	NIL
Selected Professional Presentations	NIL

Faculty Resume

Name	**Naraindas Bheel** **S/o Malook Bheel**
Personal	**Address:** Malook Bheel Colony Near Agricultural Complex Office Mithi, Tharparkar, Sindh, Pakistan. **Cell No** : +923413801485 **Email** : **naraindas04@gmail.com**
Experience	• May 2016 – February 2017, Site Engineer, Abdullah sports tower Hyderabad, Sindh. • March 2017 – June 2018, Site Engineer, Agra Construction company Hyderabad, Sindh.
Honors and Awards	• Awarded with "HEC Scholarship" for Bechlor Degree. • Awarded Excellent Student Certificate at QUCEST. • Awarded 1st Position Certificate at QUEST Nawabshah. • Awarded with Sheild along with Certificate of winner Structural Project at Qucest. • Awarded Silver Medal For having secured First position throughout four year in Civil Engineering @ QUEST Nawabshah.
Memberships	• Pakistan Engineering Council PEC No. CIVIL/43161.

Graduate Students	**Year**	**Degree**	**Name**
	2017-2019	M.E (Structural in process)	MUET, Jamshoro
	2012-2016	B.E (Civil Engineering)	QUEST Nawabshah

Service Activity	Nil
Brief Statement of Research Interest	• Advanced Materials • Fiber Reinforced Concrete • Structural Concrete Design • Quantity Surviving and Estimation of Civil Works
Publications	• Narain Das Bheel, Sohail Ahmed Abbasi, SL Meghwar, Fahad Ali Shaikh, "Effect of Human Hair as Fibers in Cement Concrete", International Conference on Sustainable Development in Civil Engineering (ICSDC-2017). • Narain Das Bheel, Shanker lal Meghwar, Samiullah Sohu, Ashok Kumar, Ali Raza Khoso and Zubair Hussain Shaikh, "Experimental Study on Recycled Concrete Aggregates with Rice Husk Ash as Partial Cement Replacement", International Civil Engineering Journal of Iran (www.CivilJournal.org). • Narain Das Bheel, Shanker lal Meghwar, Suhail Ahmed Abbasi , Lalchand, Jabbar Ahmed Mugeri and Rameez Ali Abbasi, "Effect of Rice Husk Ash and Water-Cement Ratio on Strength of Concrete", International Civil Engineering Journal of Iran.

	• Zubair Hussain Shaikh, Naraindas Bheel, Ali Aizaz Dayo, Irfan Ali Shar, Abdul Wahab Abro, "Effect of Sugar Cane Bagasse Ash on Mechanical Properties of Concrete" First South Asia Conference on Earthquake Engineering (SACEE'19), Karachi, Pakistan. • **Naraindas Bheel**, Ali Aizaz Dayo, Asaf Nawaz Khan, Nisar Ahmed Gabol and Ahmed Faraz Wagan, "EFFECT OF RICE HUSK ASH ON THE FRESH AND HARDENED PROPERTIES OF CEMENT CONCRETE" First South Asia Conference on Earthquake Engineering (SACEE'19), Karachi, Pakistan. • **Naraindas Bheel**, Fareed Ahmed Memon, Shanker Lal Meghwar, Abdul Wahab Abro and Irfan Ali Shar, "Millet Husk Ash as Environmental Friendly Material in Cement Concrete" 5th International Conference on Energy and Environmental and Sustainable Development 2018 (EESD-2018). • Zubair Hussain Shaikh, **Naraindas Bheel**, Ali Aizaz Dayo, Irfan Ali Shar, Abdul Wahab Abro, "Utilization Of Sugar Cane Bagasse Ash As Partial Replacement Of Cement in Concrete", 5th International Conference on Energy and Environmental and Sustainable Development 2018 (EESD-2018). • Irfan Ali Shar, Zubair Hussain Shaikh, **Naraindas Bheel**, Abdul Wahab Abro and Ali Aizaz Dayo "EXPERIMENTAL STUDY OF WASTE GLASS POWDER AS A PARTIAL CEMENT REPLACEMENT IN CONCRETE", 5th International Conference on Energy and Environmental and Sustainable Development 2018 (EESD-2018). • Mian Jawaduddin Pirzada, Sheeraz Ahmed Memon, **Narain Das Bheel**, Farhad Ali, Nisar Ahmed Gabol, Abdul Wahab Abro, "Synthetic Grey Water Treatment Through FeCl3-Activated Carbon Obtained from Cotton Stalks and River Sand", International Civil Engineering Journal of Iran (www.CivilJournal.org) *(in process).*
Research Grants and Contracts	Nil
Other Research or Creative Accomplishments	• Capable to work confidentially on Windows7, Ms-office and Internet browsing. • AutoCAD 2D. • ETABS and SAFE
Selected Professional Presentations	Presented paper in "Three days International coference on sustainable development in Civil Engineering 2017 @ MUET Jamshoro".

Faculty Resume

Name	**Mohib Saqib Khan**
Personal	Banglow 4-B Unit 8 A Latifabad Hyderabad. **Mobile:**03453599736 **Email:**mohib_sqkhan@hotmail.com
Experience	**1:Rehmania consultants: (3 year)** 1) Planning 2)Rendering 3) Graphics 4)Client Dealing 5) Site supervision **2: Indus Medical College:** Working As Personal Architect For Indus Medical College. **3:HOBBIES** Working officially with hobbies
Honors and Awards	---Nil---
Memberships	---Nil---
Graduate Students	---Nil---
Service Activity	**1)Residential projects** Multiple size of house projects have been finalized at different areas of Hyderabad and outside of Hyderabad, which includes 120 sqyd , 160 sqyd 200 sqyd , 400 and 600 sqyd. **2)Commercial projects** Different size of shops at **S.R.T.C** complex, and at **BOULEVARD** mall Hyderabad. At unique shopping mall main auto bhan road Hyderabad, furnishing of flats of **ORIENT mall** main auto bhan road **Hyderabad.** And several other projects regarding with the interior design, many of the renovation projects have been finalized.
Brief Statement of Research Interest	1) Auto C A D (2d and 3d) 2) V-ray rendering (MAX) 3) Photo shop 4) Lumion 5) Ms Office / Power Point/ Word/ Excel
Publications	---Nil---
Research Grants and Contracts	---Nil---
Other Research or Creative Accomplishments	---Nil---
Selected Professional Presentations	---Nil---

FACULTY RESUME

Name:	**Architect. Ahmed Faraz Wagan**
Personal:	Cell.#. : 03366875377 – 03133284439 E-Mail :farazwagan@gmail.com Add. :H. #. 250, Mir Colony Tando Jam Hyderabad
Experience:	1: **Lecturer** • @ Hyderabad College of Science & Technology Hyderabad, (H.C.S.T) 2: **Rehmania Consultants** • @Rehmania Consultants (03 Years) 3: **Indus Medical College, Tando Muhammad Khan** • Worked as Personal Architect for Indus Medical College, (I.M.C) @ Tando Muhammad Khan 4: **Official with N.A.V.T.T.C, Hyderabad** • Official Assessor • Evaluating Students Assessment
Education:	Bachelor in Architecture, Mehran University Engineering & Technology, (M.U.E.T), Jamshoro
Membership:	Pakistan Council of Architect and Town Planning (P.C.A.T.P)
Service Activity:	• Residential Projects: Multiple Size of house projects finalized at different areas of Hyderabad and outside of Hyderabad. • Commercial Projects: Different size of shops at S.R.T.C Complex and at BOULEVARD Mall Hyderabad.
Brief Statement: of Research Interest	• Recycling and reuse of building waste in Construction
Publications:	--- Nil ---
ResearchGrants: And Contracts	--- Nil ---
Other Research: or Creative Accomplishments	--- Nil ---
SelectedProfessional: Presentations	--- Nil ---

Faculty Resume

Name	**Sultan Shaikh**
Personal	Contact No: +92-333-1379710 Email : **sultan11civil@gmail.com** Address : Flat # 6/A5 Al-Rehman Tower opposite Marvi Lawn Main WadhuWah Road Qasimabad, Hyderabad, Pakistan
Experience	• **Sep 2018 –Present,** Lecturer, Hyderabad College of Science & Technology, Hyderabad (*Affiliated with Mehran UET Jamshoro*) • **Sep 2018 -Present ,** Lecturer (visiting), Government College of Technology, Hyderabad (*Affiliated with Mehran UET Jamshoro*) • **Aug – Sep 2018,** Research Assistant, Project (Situational Analysis of Waste Management at Processing facilities at United Energy Pakistan Limited) funded by UEPL • **Jan – May 2018,** Research Assistant, Project (Baseline survey of knowledge, attitude and practices of WASH in Ward no 3, Thatta) funded by NRSP • **Jan – May 2017,** Research Assistant, Project (An assessment of Environmental Degradation of Manchar Lake) funded by USAID
Honors and Awards	• Exchange Student at University of Utah, USA (Aug – Dec 2016) • Runner-up in Poster Competition at U.S Pakistan Center for Advanced Studies in Water, MUET, Jamshoro(Oct 2016) • Runner-up in Declamation Contest on World Environment Day 2017 theme at MUET, Jamshoro(June 2017) • Prime Minister Laptop awarded by Prime Minister of Pakistan on good academic records of bachelor's studies (2015) • Prize of 10,000 PKR/year for study duration of 4 years on better performance during undergraduate studies by Mehran UET Jamshoro → 2011 – 2015
Memberships	Pakistan Engineering Council as Registered Engineer (R.E) – **CIVIL/38788**
Brief Statement of Research Interest	1. Groundwater desalination and remediation 2. Water and wastewater treatment and reuse 3. Interaction between surface and groundwater

Publications	**Published in Conference Proceedings** • N, Zohaib., Kaleemullah., W, Farhan., A, Shoaib., **Shaikh, S.**, K, Hafeez., "Precipitation trend analysis by using TRMM 3B42 product" 4th International Conference on Energy, Environment & Sustainable Development, MUET Jamshoro 2016 **Presented in Conferences** • Imran, Uzma., **Shaikh, S.**, "Climate Change and Sustainability of the Manchar Lake – An overview", International Science-Policy Conference on Climate Change, Islamabad, Pakistan, 2017 • **Shaikh, S.** et al., 2017. "Determination of Groundwater Quality Using Electrical Resistivity Survey", 1st Young Researchers National Conference on Water and Environment 2017. • Uzma I., RB Mahar, Kamran Ansari, **Shaikh, S.**, Naila G., Rafi uz Zaman, (2017). "Analysis of water quality of MUET water treatment & distribution system by taking into account seasonal variations", 1st Young Researchers' National Conference on Water and Environment 2017. • Saeed M., Ansari K., Uzma I., **Shaikh S.**, Azizullah., (2017). Water Quality assessment in Kotri Barrage and its canals", 1st Young Researchers' National Conference on Water and Environment 2017. **Currently working on** • **Title:** Exploring potable groundwater sources surrounding Manchar Lake
Other Research or Creative Accomplishments	• IX1D, AutoCAD, Primavera P6, Adobe Photoshop,

Faculty Resume

Name	*IRFAN ALI SHAR*
Personal	*Contact# 03053005447* *Village Darbelo Tehseel Kandiaro, district Naushahroferoze.*
Experience	• October 2018 , Lecturer , HCST Hyderabad • July 2017 - Sept2017, NRSP Tando Muhammad Khan • Feb2016 - Feb2017, SMADB pvt.ltd
Honor and Awards	*Awarded with "Certificate of Excellence" from the University*
Memberships	*Pakistan Engineering Council*
Graduate Students Undergraduate Students *Honour Students*	
Service Activity	
Brief Statement of Research Interest	*Cement replacement in concrete,* *Glass and fiber reinforcement in concrete,* *Fine and coarse aggregate replacement in concrete,*

Publications	○ Zubair Hussain Shaikh, Naraindas Bheel, Ali Aizaz Dayo, **Irfan Ali Shar,** Abdul Wahab Abro, "Effect of Sugar Cane Bagasse Ash on Mechanical Properties of Concrete" First South Asia Conference on Earthquake Engineering (SACEE'19), Karachi, Pakistan. ○ Naraindas Bheel, Fareed Ahmed Memon, Shanker Lal Meghwar, Abdul Wahab Abro and **Irfan Ali Shar**, "Millet Husk Ash as Environmental Friendly Material in Cement Concrete" 5th International Conference on Energy and Environmental and Sustainable Development 2018 (EESD-2018). ○ Zubair Hussain Shaikh, Naraindas Bheel, Ali Aizaz Dayo, **Irfan Ali Shar,** Abdul Wahab Abro, "Utilization Of Sugar Cane Bagasse Ash As Partial Replacement Of Cement in Concrete", 5th International Conference on Energy and Environmental and Sustainable Development 2018 (EESD-2018). ○ **Irfan Ali Shar**, Zubair Hussain Shaikh, Naraindas Bheel, Abdul Wahab Abro and Ali Aizaz Dayo "EXPERIMENTAL STUDY OF WASTE GLASS POWDER AS A PARTIAL CEMENT REPLACEMENT IN CONCRETE", 5th International Conference on Energy and Environmental and Sustainable Development 2018 (EESD-2018).
Research Grants and Contracts.	-
Other Research or Creative Accomplishments	-
Selected Professional Presentations	-

Faculty Resume

Name	**Muhammad Yasir Samoo**
Personal	Contact: 03049288402 Address E-87 Gulistan-E-Sajjad Qasimabad Hyderabad
Experience	• April 2018 , Lecturer , HCST Hyderabad • April 2018, Visiting lecturer GCT Hyderabad
Honor and Awards	Certification on world Environment day Organized by USAID
Memberships	Mehran University Society of Civil Engineers
Graduate Students Postdocs Undergraduate Students Honour Students	Nil
Service Activity	NIL
Brief Statement of Research Interest	Identification of key performance indicators and factor effecting them for Building performance in construction industry of Pakistan
Publications	Nil
Research Grants and Contracts.	Nil
Other Research or Creative Accomplishments	Conference paper in ICSDC 2017 Identification of key performance indicators for Building performance in construction industry of Pakistan
Selected Professional Presentations	Nil

Faculty Resume

Name	**Raheel Imtiaz**
Personal	Contact: 03363071219 Address. B.#.46 Marvi Garden Jamshoro Road Qasimabad Hyderabad
Experience	• November 2018 , Lecturer , HCST Hyderabad Up to Present • March 2016 to August 2018
Memberships	Pakistan Engineering Council
Graduate Students **Postdocs** **Undergraduate Students** **Honour Students**	• M.E Construction Management (Research Doing) MUET B.E Civil 2016
Service Activity	NIL
Brief Statement of Research Interest	Supply Chain Management in Construction, Procurement Management and Automation in Construction Management
Publications	Nil
Research Grants and Contracts.	Nil
Other Research or Creative Accomplishments	AutoCAD, ETABS, Adobe Photoshop, MS OFFICE
Selected Professional Presentations	Nil

FACULTY RESUME

Name:	**Architect. Ahmed Faraz Wagan**
Personal:	Cell.#. : 03366875377 – 03133284439 E-Mail :farazwagan@gmail.com Add. :H. #. 250, Mir Colony Tando Jam Hyderabad
Experience:	1: **Lecturer** • @ Hyderabad College of Science & Technology Hyderabad, (H.C.S.T) 2: **Rehmania Consultants** • @Rehmania Consultants (03 Years) 3: **Indus Medical College, Tando Muhammad Khan** • Worked as Personal Architect for Indus Medical College, (I.M.C) @ Tando Muhammad Khan 4: **Official with N.A.V.T.T.C, Hyderabad** • Official Assessor • Evaluating Students Assessment
Education:	Bachelor in Architecture, Mehran University Engineering & Technology, (M.U.E.T), Jamshoro
Membership:	Pakistan Council of Architect and Town Planning (P.C.A.T.P)
Service Activity:	• Residential Projects: Multiple Size of house projects finalized at different areas of Hyderabad and outside of Hyderabad. • Commercial Projects: Different size of shops at S.R.T.C Complex and at BOULEVARD Mall Hyderabad.
Brief Statement: of Research Interest	• Recycling and reuse of building waste in Construction
Publications:	--- Nil ---
ResearchGrants: And Contracts	--- Nil ---
Other Research: or Creative Accomplishments	--- Nil ---
SelectedProfessional: Presentations	--- Nil ---

Faculty Resume

Name:	Atif Ghafoor
Personal:	S/O Abdul Ghafoor Kandhir H. No; Q# B-4, Mehran University Colony Jamshoro Cell No: 0300-3057861 Email: engratif_ce@yahoo.com
Experience	NIL
Honors and Awards	NIL
Memberships	Registered with PEC
Graduate Students Post docs Undergraduate Students Honor Students	NIL
Service Activity	NIL
Brief Statement of Research Interest	NIL
Publications	NIL
Research Grants and Contracts	NIL
Other Research or Creative Accomplishments	NIL
Selected Professional Presentations	NIL

Faculty Resume

Name:	Abdul Hayee Kandhir
Personal:	S/O Abdul Rasheed Kandhir H. No; C-4/01, MUET Society Jamshoro Cell No: 0333-2715850 Email: abdulhayeek30@gmail.com
Experience	NIL
Honors and Awards	NIL
Memberships	NIL
Graduate Students Post docs Undergraduate Students Honor Students	NIL
Service Activity	NIL
Brief Statement of Research Interest	NIL
Publications	NIL
Research Grants and Contracts	NIL
Other Research or Creative Accomplishments	NIL
Selected Professional Presentations	NIL

Faculty Resume

Name:	Haseeb-ul-Hassan Shaikh
Personal:	S/O Ghulam Nabi Shaikh H. No: 290-/38, Ibrahim Shah Ka Chowk, Kakir ka Pir, Hyderabad Cell No: 0333-2713501 Email: haseebshaikh2011@gmail.com
Experience	Internship at Habib Fida Ali Architects (2007-2008) Al-Hamra Architects (2009-2012) Pak Consultants (2013-2015)
Honors and Awards	NIL
Memberships	NIL
Graduate Students Post docs Undergraduate Students Honor Students	NIL
Service Activity	NIL
Brief Statement of Research Interest	NIL
Publications	NIL
Research Grants and Contracts	NIL
Other Research or Creative Accomplishments	NIL
Selected Professional Presentations	NIL

Faculty Resume

Name	Bushra Aftab
Personal	Cell.#. : 03337779802 E-Mail : bushra.shah17@gmail.com Address : 9-A khuda Hafiz Board Airport Road Unit No:12, Latifabad, Hyderabad
Experience	• **Lecturer:** @ Hyderabad College of Science & Technology, Hyderabad (HCST) 1st September, 2018 to Present • **Senior Teacher:** @ The London City School System: 7thDecember,2017 to 29th August,2018 • **Coaching Teacher:** @American Communication Council: 19thDecember,2017 to 19th September,2018
Honors and Awards	---Nil---
Memberships	---Nil---
Graduate Students	BS (Mathematics) from University of Sindh, Jamshoro
Service Activity	Gives Tuition to Poor Students Free of Cost.
Brief Statement of Research Interest	Application of Mathematics in Engineering Field
Publications	---Nil---
Research Grants and Contracts	---Nil---
Other Research or Creative Accomplishments	---Nil---
Selected Professional Presentations	---Nil---

FacultyResume

Name:	Mukesh Kumar
Personal:	Address: House no#123 Gulshan-e-habib Qasimabad, Hyderabad, Pakistan Email: mukeshmeghwar94@gmail.com Contact no: +923337467883
Experience	• Sep 2018 –Present, Lecturer, Hyderabad College of Science & Technology, Hyderabad (Affiliated with Mehran UET Jamshoro
HonorsandAwards	• Prime Minister Laptop awarded by Prime Minister of Pakistan on good academic records of bachelor's studies (2016) Prize of 48,000 PKR/year for study duration of 4 years on better performance during undergraduate studies by Mehran UET Jamshoro→ 2014 – 2017
Memberships	
Graduate Students Post Graduate Postdocs Undergraduate Students Honour Students	
Service Activity	
Brief Statement of	
Publications	
Research Grants and	
Other Research or Creative Accomplishments	IX1D, AutoCAD, Primavera P6, Adobe Photoshop,

Faculty Resume

Name:	Muhammad Waseem
Personal:	S/O Nazar Muhammad Qureşhi Add: H.No: 161/B Phase-I Kohsar Cooperative Housing Society Airport Road Latifabad Hyderabad Cell No: 0301-3599417, 0331-3367488
Experience	18 Years Teaching Experience
Honors and Awards	NIL
Memberships	NIL
Graduate Students Post docs Undergraduate Students Honor Students	NIL
Service Activity	NIL
Brief Statement of Research Interest	NIL
Publications	NIL
Research Grants and Contracts	NIL
Other Research or Creative Accomplishments	NIL
Selected Professional Presentations	NIL

Faculty Resume

Name:	Wajid Hussain Laghari
Personal:	S/O Moula Bux Laghari Add: H.No: b-2/18 Railway Cooperative Housing Society Unit-3 Latifabad Hyderabad Cell No: 0332-3993443
Experience	Work as a Lecturer March 2016 to Present (two Years) @GBDC, Qasimabad Hyderabad Work as a Lecturer August 2017 to Present @HCST, Hyderabad Work as a Lecturer Nov 2011 to Feb 2016 (Five Years) @GMSDC, Hyderabad Work as a Lecturer August 2013 to July 2017 @NUML, Hyderabad Campus Work as a Religious Teacher March 2010 to Oct 2011 @CP (Prisons Police) Hyderabad Work as a Lecturer 2008 to 2010 @The Educators College Hyderabad Work as a Pesh Imam and Dawa Academy Incharge Nov 2004 to August 2010 @Isra University, Hyderabad
Honors and Awards	NIL
Memberships	NIL
Graduate Students Post docs Undergraduate Students Honor Students	NIL
Service Activity	NIL
Brief Statement of Research Interest	NIL
Publications	NIL
Research Grants and Contracts	NIL
Other Research or Creative Accomplishments	NIL
Selected Professional Presentations	NIL

Faculty Resume

Name:	Saifullah Jamali
Personal:	Add: Flat No: 2/7, HDA Apartment Block-D By Technical Center for Women, Qasimabad, Hyderabad Cell No: 0300-9764671, 0333-2741882 Email: jamalisaifullah32@yahoo.com
Experience	Teacher cum Accountant, Aquil Bright Kids Academy Qasimabad Hyderabad Social Organizer, Sindh Rural Development Society, Qasimabad Hyderabad Surveyor Observer, University of Sindh Memorial Education Trsut
Honors and Awards	NIL
Memberships	NIL
Graduate Students Post docs Undergraduate Students Honor Students	NIL
Service Activity	NIL
Brief Statement of Research Interest	NIL
Publications	NIL
Research Grants and Contracts	NIL
Other Research or Creative Accomplishments	NIL
Selected Professional Presentations	NIL

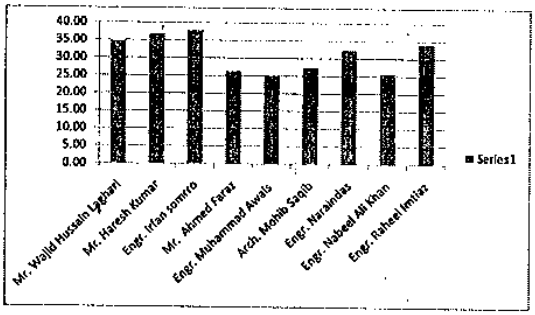
Annexure-H

Teacher Evaluation

ANNEXURE-H

TEACHER'S EVALUATION
(Filled by the students)
B. Tech (4-Year) Program
Department of Civil Technology
Consolidated Average Result

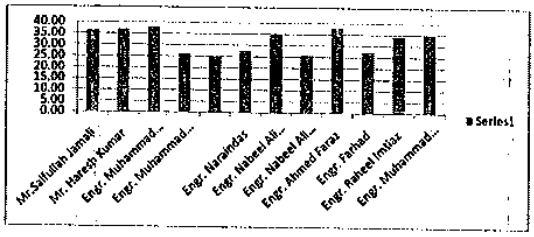
Year	S #	Course Code	Courses	TEACHER'S EVALUATION		Students		PERCENTAGE						Total
								A	B	C	D	E	F	
								Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Not Aattempted	
				Teachers Name	Average	Enrolled	Present	Quality Points						
								5	4	3	0	0	0	12
1st Year (Batch 2018)	1	CH-111	Islamiat	Mr. Wajid Hussain Laghari	34.78	153	135	50.50	40.40	1.10	4.00	2.00	2.00	100.00
	2	CS-122	Applied Mathematics-I	Mr. Haresh Kumar	36.84	153	135	80.10	5.90	6.00	8.00	0.00	0.00	100.00
	3	CT-132	Computer Applications	Engr. Irfan soomro	37.83	153	135	66.60	25.00	7.00	1.40	0.00	0.00	100.00
	4	CT-142	Communication Skills-I	Mr. Ahmed Faraz	26.38	153	135	40.00	10.00	25.50	12.50	8.00	4.00	100.00
	5	CT-153	Applied Mechanics	Engr. Muhammad Awais	25.00	153	135	40.00	10.00	20.00	10.00	10.00	10.00	100.00
	6	CT-163	Civil Engineering Drawing	Arch. Mohib Saqib	27.58	153	135	45.00	10.00	22.00	12.00	8.00	3.00	100.00
	7	CT-173	Concrete Technology	Engr. Narsindas	32.42	153	135	42.00	44.00	1.00	6.00	3.00	4.00	100.00
	8	CT-183	Surveying & Levelling	Engr. Nabeel Ali Khan	25.67	153	135	38.00	16.00	18.00	8.00	5.00	15.00	100.00
	9	CT-193	Material & Methods of Construction	Engr. Raheel Imtiaz	34.13	153	135	58.00	25.00	6.50	10.50	0.00	0.00	100.00



ANNEXURE-H

TEACHER'S EVALUATION
(Filled by the students)
B. Tech (4-Year) Program
Department of Civil Technology
Consolidated Average Result

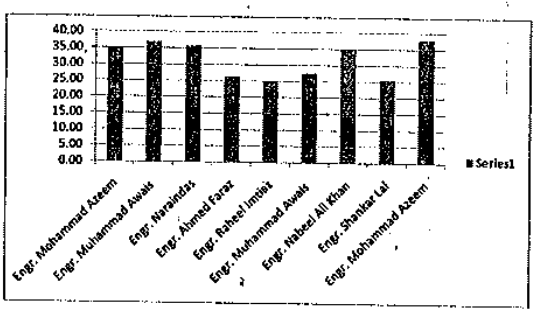
Year	S #	Course Code	Courses	TEACHER'S EVALUATION		Students		PERCENTAGE						Total
								A	B	C	D	E	F	
				Teachers Name	Average	Enrolled	Present	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Not Aattempted	
								Quality Points						
								5	4	3	0	0	0	12
2nd Year (Batch 2018)	1	CH-211	Pakistan Studies	Mr.Saifullah Jamali	36.58	122	98	64.50	28.30	1.10	4.00	2.10	0.00	100.00
	2	CS-222	Applied Mathematics-II	Mr. Haresh Kumar	36.84	122	98	80.10	5.90	6.00	8.00	0.00	0.00	100.00
	3	CT-232	Quantity Surveying & Contract Document	Engr. Muhammad Azeem	37.83	122	98	66.60	25.00	7.00	1.40	0.00	0.00	100.00
	4	CT-243	Soil Mechanics	Engr. Muhammad Azeem	26.38	122	98	40.00	10.00	25.50	12.50	8.00	4.00	100.00
	5	CT-253	Fluid Mechanics	Engr. Muhammad Awais	25.00	122	98	40.00	10.00	20.00	10.00	10.00	10.00	100.00
	6	CT-263	Mechanics of Materials	Engr. Naraindas	27.58	122	98	45.00	10.00	22.00	12.00	8.00	3.00	100.00
	7	CT-273	Highway & Transportation	Engr. Nabeel Ali Khan	34.78	122	98	50.50	40.40	1.10	4.00	2.00	2.00	100.00
	8	CT-283	Water Supply & Waste Water Management	Engr. Nabeel Ali Khan	25.67	122	98	38.00	16.00	18.00	8.00	5.00	15.00	100.00
	9	CT-293	Engineering Geology	Engr. Ahmed Faraz	37.83	122	98	66.60	25.00	7.00	1.40	0.00	0.00	100.00
	10	CT-2101	Hydrology	Engr. Farhad	27.33	122	98	45.00	10.00	21.00	12.00	9.00	3.00	100.00
	11	CT-2112	Material Testing, Repair & Maintenance	Engr. Raheel Imtiaz	34.21	122	98	50.50	38.00	2.00	6.00	1.50	2.00	100.00
	12	CT-2122	Occupational Health and safety	Engr. Muhammad Azeem	34.91	122	98	57.90	25.00	9.80	1.40	3.40	2.50	100.00



ANNEXURE-H

TEACHER'S EVALUATION
(Filled by the students)
B. Tech (4-Year) Program
Department of Civil Technology
Consolidated Average Result

Year	S #	Course Code	Courses	TEACHER'S EVALUATION		Students		PERCENTAGE						Total
								A	B	C	D	E	F	
								Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Not Aattempted	
				Teachers Name	Average	Enrolled	Present	Quality Points						
								5	4	3	0	0	0	12
3rd Year (Batch 2016, 2017 & Bridge B-2018)	1	CT-313	Irrigation & Hydraulics Structures	Engr. Mohammad Azeem	34.78	309	240	50.50	40.40	1.10	4.00	2.00	2.00	100.00
	2	CT-323	Reinforced Concrete Structure	Engr. Muhammad Awais	36.83	309	240	79.00	7.90	5.10	8.00	0.00	0.00	100.00
	3	CT-332	Steel Structure	Engr. Naraindas	35.68	309	240	61.50	25.00	6.90	6.60	0.00	0.00	100.00
	4	CT-342	Computer Aided Building Modeling & Design	Engr. Ahmed Faraz	26.38	309	240	40.00	10.00	25.50	12.50	8.00	4.00	100.00
	5	CT-353	Pavements Design and Maintenance	Engr. Raheel Imtiaz	25.00	309	240	40.00	10.00	20.00	10.00	10.00	10.00	100.00
	6	CT-363	Geo-Technical Engineering	Engr. Muhammad Awais	27.58	309	240	45.00	10.00	22.00	12.00	8.00	3.00	100.00
	7	CT-373	Environmental Management	Engr. Nabeel Ali Khan	35.13	309	240	50.50	40.40	2.50	3.50	1.10	2.00	100.00
	8	CT-382	Theory of Structures	Engr. Shankar Lal	25.67	309	240	38.00	16.00	18.00	8.00	5.00	15.00	100.00
	9	CT-391	Introduction to Earthquake Engineering	Engr. Mohammad Azeem	37.83	309	240	66.60	25.00	7.00	1.40	0.00	0.00	100.00



ANNEXURE-H

TEACHER'S EVALUATION
(Filled by the students)
B. Tech (4-Year) Program
Department of Civil Technology
Consolidated Average Result

Year	S.#	Course Code	Courses	TEACHER'S EVALUATION		Students		PERCENTAGE						Total
								A	B	C	D	E	F	
				Teachers Name	Average	Enrolled	Present	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Not Aattempted	
								Quality Points						
								5	4	3	0	0	0	12
4th Year (Batch 2015)	1	CT 412	Foundation Engineering	Engr. Naraindas	25.67	76	60	38.00	16.00	18.00	8.00	5.00	15.00	100
	2	CT 422	Project Management	Engr. Farhad	33.78	76	60	55.90	25.00	8.60	5.50	2.00	3.00	100
	3	CT 432	Engineering Economics	Engr. Raheel Imtiaz	27.58	76	60	45.00	10.00	22.00	12.00	8.00	3.00	100