# Prospectus

## 2023

# B.Sc. Engineering Courses

## Self Support Program

### Faculty of Chemical and Materials Engineering


بسم الله الرحمن الرحيم

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# Message from the Dean of the Faculty

Welcome to the Faculty of Chemical & Materials Engineering. We offer the best engineering environment coupled with the intellectual and technological resources. Faculty of Chemical & Materials Engineering is uniquely positioned to offer Outcome Based Education to the technological leaders of tomorrow. Our goal is to position our engineering graduates to be problem solvers, project leaders, communicators, and ethical citizens of a global community.

In this technology-driven era, the socio-economic status of a country is directly or indirectly gauged by its potent engineering skills. Engineers are the builders of better world for mankind. The prestigious Institute of Chemical Engineering & Technology under the Faculty of Chemical & Materials Engineering, University of the Punjab, has been consistently catering to the needs of qualified and trained professional manpower in the form of chemical engineers and metallurgical engineers for the respective national industries over the past many decades.

Chemical Engineering program holds a century old legacy in teaching and research. A two-year course, leading to B.Sc. Degree in Technical Chemistry was started in 1917. In 1948 the department was raised to the status of the Institute of Chemical Technology. During 1982, The Faculty of Engineering and Technology was established at University of the Punjab with the purpose of expanding its educational/training programs in the allied disciplines to meet the demands of newly emerging technologies in the country. In 2020, significant restructuring of faculties was carried out under the visionary leadership of Prof. Dr. Niaz Ahmad Akhtar (VC) to expand Faculty of Engineering and Technology into three faculties, Faculty of Chemical & Materials Engineering is one of them.

The teaching staff at the Faculty of Chemical & Materials Engineering is highly qualified, competent, dedicated, professionally skillful and adequately capable of shaping the future engineers. Taking this opportunity, I urge candidates to select this faculty for fulfilling their dreams of becoming competitive engineer into reality and I call upon the prospective graduates to transform the flashes of scientific imagination and engineering inspiration for making impossible of today to the possible of tomorrow. The challenge confronting the future engineers is the ultimate exploitation of national resources through indigenous engineering & technology development.

Graduates from this esteemed faculty are contributing for the socio-economic development of the country by serving as heads of various engineering organizations like like SNGPL, PARCO, Fatima Fertilizer Limited etc. as well as vice-chancellors of different universities. I look forward to scintillate future of the engineering profession and our beloved country.

**Prof. Dr. Abdullah Khan Durrani**
**DEAN**

# 1. FACULTY OF CHEMICAL & MATERIALS ENGINEERING

## 1.1 Brief History

1917: A two-year course, leading to B.Sc. Degree in Technical Chemistry was started by Punjab University at Forman Christian College Lahore.

1925 A two-year course was replaced by a three years course leading to B.Sc. (Hons) Degree followed by a one year M.Sc. (Hons.) course in Technical Chemistry.

1939 University of the Punjab merged the B.Sc. (Hons) course of Chemistry and Technical Chemistry by modifying the syllabi in such a manner that the B.Sc. (Hons) in Chemistry included the necessary course requirements for admission to M.Sc. (Hons) in Technical Chemistry.

1941 The department temporarily shifted at the Punjab College of Engineering and Technology, Mughalpura as an independent department of Chemical Technology.

1946 The department was shifted to Punjab University, Old Campus.

1948 The department was raised to the status of the Institute of Chemical Technology.

1950 A four-year Course in Chemical Technology was started.

1957 The improvement in syllabi and course of reading was carried out and this resulted, ultimately, in the Institution of parallel course leading to B.Sc. (Hons.) Tech degree in Chemical Engineering.

1966 Chemical Technology was accorded recognition as a professional subject by the University.

1970 The following professional degree courses were launched.

1. B.Sc. (Engg.) Chemical Engineering
2. B.Sc. (Engg.) Metallurgy and Materials Science
3. M.Sc. (Engg.) Chemical Engineering
4. M.Sc. (Engg.) Metallurgy and Materials Science

1982 The Faculty of Engineering and Technology was established at the University of the Punjab with the purpose of expanding its educational/training programs in the allied disciplines to meet the demands of newly emerging technologies in the country.

2002 Institute of Quality & Technology Management was established under the Faculty of Engineering & Technology.

2002 Centre for Coal Technology was established under the Faculty of Engineering & Technology.

2005 College of Engineering & Emerging Technology was established under the Faculty of Engineering & Technology.

2010 Department of Textile Engineering & Technology was established under the Faculty of Engineering & Technology.

2010 Department of Polymer Engineering & Technology was established under the Faculty of Engineering & Technology.

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## 1.2 B.Sc. (Engg.) Courses offered under the Faculty

### At the **Institute of Chemical Engineering & Technology**

**1.** B.Sc. (Engg.) Chemical Engineering

**2.** B.Sc. (Engg.) Chemical Engineering with specialization in Petroleum & Gas Technology

### At the **Institute of Metallurgy and Materials Engineering**

1. B.Sc. (Engg.) Metallurgy & Materials Engineering

## 1.3 INSTITUTE OF CHEMICAL ENGINEERING & TECHNOLOGY

Today practically almost all the chemical and process industry in the country is being manned by the graduates the institute of chemical engineering and technology. The alumni of the Institute have contributed significantly to the industrial growth and economic development of the country by helping in the design, construction, commissioning, operation and management of many important chemical plants, petroleum refineries and a number of allied industrial units. They are holding highly responsible positions in Pakistan Council of Scientific and Industrial Research, Pakistan Atomic Energy Commission, Chemical and Process Industries both in the private and public sector, Defense Organizations, Universities and Government Departments etc. Alumni also contributed in universities and industries at global level. The Institute has the unique honor that 19 of its alumni have been decorated with National Awards by the Government of Pakistan, which is the highest number from any single institution in the country.

The Institute has state of the art laboratories including unit operations, computer simulation, catalyst research lab and post graduate research labs. Institute offers Ph.D. program in addition to B.Sc. & M.Sc. in Chemical Engineering. The Institute is looking forward to launch new state-of-the-art engineering disciplines according to the market needs.

**Prof. Dr. Rafi Ullah Khan**

**DIRECTOR**

## 1.3.1. FACULTY

### Professors

**1. Dr. Abdullah Khan Durrani (Dean)**
B.Sc. (Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering
Ph.D. (University of the Punjab, Pak), P.E.

**2. Dr. Mahmood Saleem**[1] (On leave)
B.Sc. (Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering
Ph.D. (Graz University of Technology, Austria), P.E.

**3. Dr. Rafi Ullah Khan (Director)**
B.Sc. (Engg.) Chemical Engineering,
M.Sc. (Engg.) Chemical Engineering,
M.Sc. Computer Science,
Ph.D. (University of Karlsruhe, Germany), P.E.

**4. Dr. Shahid Munir**[2] (On leave)
B.Sc. (Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering, M.B.A. (Marketing)
Ph.D. (University of Leeds, UK), P.E.

**5. Dr. Syed Nadir Hussain**
B.Sc. (Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering
Ph.D. (University of Manchester, UK), P.E.

**6. Dr. Hafiz Muhammad Anwaar Asghar**
B.Sc. (Engg.) Chemical Engineering
M.Sc. (Engg) Chemical Engineering
Ph.D. (University of Manchester, UK), P.E.

**7. Dr. Muhammad Rashid Usman**
B.Sc. (Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering
Ph.D. (University of Manchester, UK), P.E.

**8. Dr. Amir Shafeeq**
B.Sc. (Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering
M.B.A. (Marketing),
Ph.D. (Universiti Teknologi PETRONAS, Malaysia), P.E

[1] Vice Chancellor, MCKRU, D.G.Khan
[2] Chairman Punjab Higher Education Commission (PHEC)

**9. Dr. Majid Majeed Akbar**
B.Sc. (Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering
Ph.D. (Universiti Teknologi PETRONAS, Malaysia), P.E.

**10. Dr. Javeed Ashraf Awan** (On leave)
B.Sc. (Engg.) Chemical Engineering,
M.Sc. (Engg.) Chemical Engineering,
Ph.D. (Ecole Nationale Superieur Des Mines De Paris, France)
Post-doc (Technical University of Denmark, Denmark)

## Associate Professors

**1. Dr. Ayyaz Muhammad**
B.Sc. (Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering
Ph.D. (Universiti Teknologi Petronas, Malaysia), P.E.

**2. Dr. Khurram Shahzad**
B.Sc.(Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering
Ph.D. (University of the Punjab, Pak), P.E.
Post-doc (University of Montreal, Canada)

**3. Dr. Rabya Aslam**
B.Sc. (Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering
Ph.D. (University of Erlangen-Nuremberg, Germany)

**4. Dr. Yousuf Jamal**
B.Sc. (Engg.) Chemical Engineering (ICET, PU)
M.Sc. (Engg.) Environmental Engineering (Texas A&M University USA)
Ph.D. (Engg.) Environmental Engineering (Texas A&M University USA)

**5. Dr. Javaid Akhtar**
B.Sc.(Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering, (KAIST, South Korea)
Ph.D. (Universiti Teknologi Malaysia, Malaysia), P.E.

## Assistant Professors

**1. Dr. Mudassar Azam**
B.Sc. (Engg.) Chemical Engineering,
M.Sc. (Engg.) Chemical Engineering, P.E.
Ph.D. (University of Vienna), Austria.

**2. Dr. Toor-e-Aiman Rizvi**
B.Sc. (Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering
Ph.D. (University of Leeds, UK), P.E.

**3. Dr. Asim Hassan Rizvi**
B.Sc. (Engg.) Chemical Engineering
M.Sc. (Engg.) Chemical Engineering
Ph.D. (University of the Punjab, Pak), P.E.

**4. Dr. Bilal Haider**
B.Sc. (Engg.) Chemical Engineering,
M.Sc. (Engg.) Chemical Engineering, P.E.
M.S. Total Quality Management
Ph.D. (University of Erlangen-Nuremberg, Germany)

**5. Dr. Syed Zohaib Javaid Zaidi**
B.Sc. (Engg.) Chemical Engineering,
M.Sc. (Engg.) Management (UET)
Ph.D. (University of Southampton, UK), P.E.

**6. Dr. Mujtaba Ikram**
B.Sc. Computational Physics (PU)
M.S. Materials and Surface Engineering (NUST)
Ph.D. Materials Science & Engineering (USTC Hefei, Anhui, China)

**7. Dr. Saadia Mumtaz**
B.Sc. Mathematics (PU)
M.Sc. Mathematics (PU)
Ph.D. Mathematics (PU)

**8. Dr. Usman Rashid**
B.Sc. (Engg). NFC Multan
M.Sc. University Technology Malaysia
Ph.D. University of Malaya, Malaysia

## Lecturers

**1. Mr. Ali Nadeem**
B.Sc. (Engg.) Chemical Engineering,
M.Sc. (Engg.) Chemical Engineering (PU)

## Lab Engineers

**1. Engr. Abid Mehmood**
B.Sc. (Engg.) Chemical Engineering,
M.Sc. (Engg.) Chemical Engineering.

**2. Engr. Nazish Aslam**
B.Sc. (Engg.) Chemical Engineering,
M.Sc. (Engg.) Chemical Engineering

**3. Engr. Syeda Youmneh Batool** (On Study Leave)
B.Sc. (Engg.) Chemical Engineering,
M.Sc. (Engg.) Chemical Engineering

## Professor Emeritus:

**1. Prof. Dr. Muhammad Arif Butt**
Ex-Dean & Director, Ex-Vice Chancelor (PU)
Institute of Chemical Engineering & Technology,
University of the Punjab, Lahore

**2. Prof. Dr. Niaz Ahmad Akhtar** (Sitara e Imtiaz)
Vice Chancelor QAU, Islamabad
Ex-Vice Chancelor (PU, Lahore), Ex-Vice Chancelor (NTU, Faisalabad)
Ex-Professor, Institute of Chemical Engineering & Technology,
University of the Punjab, Lahore

## Visiting Faculty

1. **Miss Rahat Naseem**
   Lecturer

2. **Hafiz Saeed Imran**
   Lecturer

3. **Osama Majeed Butt**
   Lecturer

4. **Miss Sheeba Irfan**
   Lecturer

5. **Mr. Muhammad Umer Shahzad**
   Lecturer

## 1.3.2. Academic Programs at the Institute of Chemical Engineering & Technology

| | Degree | Duration |
|---|---|---|
| 1. | B.Sc. (Engg.) Chemical Engineering | 4 yrs. |
| 2. | B.Sc. (Engg.) Chemical Engineering with specialization in Petroleum and Gas Technology | 4 yrs. |
| 3. | M.Sc. (Engg.) Chemical Engineering | 2 yrs. |
| 4. | Ph.D. (Engg.) Chemical Engineering | 3 yrs. |

**Our B.Sc. (Engg.) programmes are set on the Outcome Based Education (OBE) system as per Pakistan Engineering Council guidelines.**

### 1.3.3 Washington Accord and Outcome Based Education (OBE) system:

Pakistan Engineering Council (PEC) signed Washington Accord in 2017 which is an international agreement between bodies that are responsible for accrediting the Engineering Degree Programmes in their respective signatory countries. It is a globally recognized standard of engineering education and accreditation system. It grants equivalence of degrees at an international level which aims to benefit engineers with mobility across borders. Institute of Chemical Engineering and Technology has implemented Outcome Based Education System as per requirements of Washington Accord. This opens gates for our graduates to be of the same value as in the developed countries. Under OBE system the students get opportunity to go through a world class learning experience focused on 12 engineering attributes which transforms a student into a professionally trained human resource with ethical values.

#### 1.3.3.1 Vision of University of the Punjab

“University of the Punjab intends to be a leading public university in providing affordable educational opportunities to develop scientific, socio-cultural, economic and political leadership, through learner-centered teaching and research, while strengthening our identity at National and International level.”

### 1.3.3.2 Mission of the University

"Our mission is to provide a holistic education as such an approach has a twofold benefits. The first is that young people are nurtured to be sensitive, tolerant, humane and capable of thinking in a creative and critical way. The second is, that armed with a sense of history and equipped with knowledge and expertise, the graduates whom we send out into the world are in a better position to develop their leadership potential and make a positive contribution to the public life. We hope that understanding as they do, their role in the wider community of human kind and responsible to it, their action and attitudes will reflect their education."

### 1.3.3.3 Vision of the Institute

To be a world class engineering institute recognized for excellence in education, innovation and entrepreneurship leading to socio-economic development of society.

### 1.3.3.4 Mission of the Institute

The Institute of Chemical Engineering and Technology strives to:

- Provide a high-quality learning experience to produce Chemical Engineers to meet the human resource needs of the country.
- Provide technical skills in design, synthesis, optimization and operations that will equip graduates in assuming leadership positions in education, research and services.

### 1.3.3.5 Program Educational Objectives (PEOs)

The graduates from the Institute are expected to meet the following program educational objectives through our educational structure:

**PEO1:** Apply knowledge and skills to work effectively as productive Chemical Engineers and entrepreneurs (individually as well as a team member) in chemical process industries, academic and research organizations, chemical marketing and sales companies, and government departments.
**PEO2:** Constantly advance knowledge through professional training, research and lifelong learning.
**PEO3:** Work professionally and communicate effectively in order to devise technically sound and optimal solutions to engineering problems while observing ethical practices.

## 1.4 INSTITUTE OF METALLURGY & MATERIALS ENGINEERING

The Institute of Metallurgy and Materials Engineering (IMME) is recently upgraded status of former department of metallurgy & materials engineering which had a rich serving history of over five decades. The IMME is more recognized because of its popular degree programs, highly competent faculty, hi-tech teaching and research labs, successful academia-industry research ventures. The satisfied alumni in a large number are confidently serving national and international organizations at responsible positions. The graduates of this institute are playing a vital role in improving the deterrence of the country by serving at Atomic Energy Commission, NDC, AWC, and other defense related projects.

The B.Sc. (Engg.) Metallurgy & Materials program aims to produce engineers who could contribute effectively to the operation and development of Metallurgical and Materials' industries. The curriculum for B.Sc. (Engg.) degree through well synchronous revisions offer to inculcate scientific knowledge and technical skills in the graduates so that they can effectively work in industry, and research and development organizations. This degree program prepares students through teaching various courses, laboratory training and research activities to professionally understand, develop and manufacture wide range of materials including metals, alloys, composites, ceramics, polymers and other advanced materials for the next generation of products to design complex engineering systems.

In 2019, the IMME adopted to implement Out Come Based Education System obligated by Pakistan Engineering Council. This system makes concurrent BSc. engineering program equivalent to international standards offering students an opportunity to have a world class professional learning focused on full scale engineering attributes. We welcome talented students to join this course to shoulder the responsibility as metallurgy and materials engineers in building our nation and assisting all other engineering disciplines as needed by the society and industry.

**Prof. Dr. Mohsin Ali Raza**

**Director**

## 1.4.1 FACULTY

### Professors

1. **Dr. Mohsin Ali Raza**
   B.Sc. (Engg.) Metallurgy & Materials Science, (PU)
   M.Sc. (Engg.) Materials Science (KTH, Sweden), P.E.
   Ph.D. (University of Leeds, UK)

2. **Dr. Muhammad Kamran**
   B.Sc. (Engg.) Metallurgy & Materials Science (PU)
   M.Sc. (Engg.) Metallurgical Engineering, (NED), P.E.
   Ph.D. (University of Leoban, Austria)

3. **Dr. Tahir Ahmad**
   B.Sc. (Engg.) Metallurgy & Materials Science, (PU),
   M.Sc. (Engg.) Metallurgy & Materials Science, (PU), P.E.
   Ph.D (University Teknologi PETRONAS, Malaysia)

4. **Dr. Aqil Inam**
   B.Sc. (Engg.) Metallurgical Engineering and Materials Science,
   M.Sc. (Engg.) Metallurgy & Materials Science, (PU), P.E.
   Ph.D (University of Leeds, UK)

### Associate Professor

1. **Dr. Muhammad Umar Manzoor**
   B.Sc. (Engg.) Metallurgy & Materials Science (PU)
   M.Sc. (Engg.) Metallurgical and Materials Engineering (UET), P.E
   Ph.D (University of Ulster, UK)

### Assistant Professors

1. **Dr. Muhammad Atif Makhdoom**
   B.Sc. (Engg.) Metallurgical and Materials Engineering (UET)
   M.Sc. (Engg.) Metallurgical and Materials Engineering (UET) P.E
   Ph.D (University of Erlangen-Nuremberg, Germany)

2. **Dr. Muhammad Asif Hussain**
   B.Sc. (Engg.) Metallurgical and Materials Engineering (PU)
   M.Sc. (Engg.) Nanotechnology and Materials Engineering (GIKI)
   Ph.D (Kangwon National University, South Korea), R.E

3. **Dr. Waseem Amin**
   B.Sc. (Engg.) Metallurgical and Materials Engineering (UET)

M.Sc. (Engg.) Nanotechnology and Materials Engineering (GIKI)
Ph.D (Ruhr University Bochum, Germany), R.E

**4. Dr. Hafiz Kabeer Raza**

B.Sc. (Engg.) Metallurgical and Materials Engineering (UET)
M.Sc. (Engg.) Nanotechnology and Materials Engineering (GIKI)
Ph.D (King Fahad University of Petroleum and Minerals, Kingdom of Saudi Arabia) R.E

**7. Engr. Nuaman Alam Siddique**

B.Sc. (Engg.) Metallurgical and Materials Engineering (PU)
M.Sc. (Engg.) Metallurgical and Materials Engineering (UET) P.E

**8. Dr. Ameeq Farooq**

B.Sc. (Engg.) Metallurgy & Materials Engineering, (PU)
M.Sc. (Engg.) Metallurgy & Materials Engineering, (PU)
PhD (Engg.) Metallurgy & Materials Engineering, (PU), R.E

## Lecturers:

1. **Engr. Faraz Hussain**
   B.Sc. (Engg.) Metallurgy & Materials Science, (PU)
   M.Sc. (Engg.) Metallurgical and Materials Engineering, (UET), R.E

2. **Engr. Fahad Riaz**
   B.Sc. (Engg.) Metallurgy & Materials Science, (PU)
   M.Sc. (Engg.) Metallurgy & Materials Science, (PU), R.E

3. **Dr. Sehrish Mukhtar**
   B.Sc. (Engg.) Metallurgy & Materials Science, (PU)
   M.Sc. (Engg.) Metallurgy & Materials Science, (PU), R.E
   PhD (Engg.) Metallurgy & Materials Engineering, (PU), R.E

4. **Engr. Muhammad Haseeb Hassan**
   B.Sc. (Engg.) Metallurgy & Materials Engineering, (PU)
   M.Sc. Health, Safety & Environment, (Germany), R.E
   (on study leave abroad)

5. **Engr. Muhammad Ishtiaq**
   B.Sc. (Engg.) Metallurgy & Materials Science, (PU)
   M.Sc. (Engg.) Metallurgy & Materials Engineering, (UET), R.E
   (on study leave abroad)

## Lab Engineers:

1. **Engr. Zaeem Ur Rehman**
   B.Sc. (Engg.) Metallurgy & Materials Science, (BZU)
   M.Sc. (Engg.) Metallurgy & Materials Engineering, (UET), R.E

**2. Engr. Ms. Nosheen Maryman**
B.Sc. (Engg.) Metallurgy & Materials Science, (PU)
M.Sc. (Engg.) Metallurgy & Materials Engineering, (PU), R.E

## Visiting Faculty:

1. **Dr. Danish Ikram**
   Govt. Shalimar College, Baghbanpura, Lahore
2. **Prof. Dr. Hamid Ashraf Hamdani**
   Chairman Department of Arabic, University of the Punjab, Lahore
3. **Ms. Ayesha Naeem**
   Department of Philosophy, University of the Punjab, Lahore
4. **Mr. Karim Akhtar**
   **Ripha University, Lahore**
5. **Ms. Naureen Nazir**
6. **Ms. Shamim Liaqat**
7. **Dr. Uwais Sarwar**
8. **Hafiz Muhammad Abdullah**
9. **Engr. Misbah Ul Hassan**

## 1.4.2. Academic Programs offered at Institute of Metallurgy and Materials Engineering

| | Degree | Duration |
|---|---|---|
| 1 | B.Sc. (Engg.) Metallurgy & Materials Engineering | 4 years |
| 2 | M.Sc. (Engg.) Metallurgy & Materials Engineering | 2 years |
| 3. | Ph.D. (Engg.) Metallurgy and Materials Engineering | 4 years |
| 4. | Post-Graduate Diploma in Foundry Technology | 1 year |
| 5. | Post-Graduate Diploma in Corrosion Technology | 1 year |
| 6. | Short Courses | -- |

- **Vision of Institute of Metallurgy and Materials Engineering**

  Institute of Metallurgy and Materials Engineering (IMME) will be a leading and dynamic seat of learning for quality education, research, innovation, and entrepreneurship.

- **Mission of Institute of Metallurgy and Materials Engineering**

  The mission of the IMME is to provide a conducive environment for academics and research and to produce groomed and professionally sound individuals equipped with adequate knowledge and practical skills through quality education in the field of Metallurgy and Materials Engineering to contribute effectively in industry and research sector for the betterment of society.

- **Program Educational Objectives (PEO)**

  - PEO 1

    Students/Graduates are able to utilize their engineering knowledge and managerial skills to solve the challenging problems in industry and research sector

  - PEO 2

    Students/Graduates are able to enhance their engineering knowledge through continuous professional and personal development by learning modern engineering tools, techniques and practicing their applications in the context of social and environmental challenges.

  - PEO 3

    Students/Graduates are capable of contributing positively in society through practicing professional ethical values and communication skills.

# 2. ADMISSION RULES

## ELIGIBILITY

### 2.1 (a) General

- An applicant must have appeared in the combined Entry Test conducted by the University of Engineering & Technology, Lahore or NUST Islamabad or Punjab Univeristy (PU-E or PU-CSP) for the Academic Session 2023. (The tests are mandatory for admission on open academic merit and carry 33% weightage for determining merit.)
- An applicant must be domiciled in Punjab.
- An applicant must have passed his F.Sc./ICS/DAE Examination or equivalent examination in 2021, 2022 or Spring Examination 2023. The candidates placed in compartment in respective examination are not eligible.
- An applicant for admission to the B.Sc. (Engg.) First Semester on F.Sc./DAE basis or equivalent examination must not be above Twenty Four (24) years of age as on 7 August, 2023.

### 2.1 (b) For Admission on F.Sc. Basis:

In addition to fulfilling the general eligibility conditions as given in 2.1(a), an applicant seeking admission to B.Sc. (Engg.) must have passed the F.Sc. (Pre-Engineering) Examination from any recognized Board of Intermediate & Secondary Education of Pakistan or any other examination considered equivalent thereto by the Punjab University. The candidate with A-level qualification must submit O-level and A-level equivalence certificates from the Inter Board Committee of Chairmen (IBCC), Islamabad.

An applicant must have obtained at least 60% marks (excluding Hafiz-e-Quran) either in Intermediate Examination or on the basis of Aggregated Marks Percentage calculated as given below :

$$\mathbf{A} = \left\lceil \frac{(\text{Marks Obtained in F.Sc. or equivalent examinatio n}) + (\text{Hafiz - e - Quran})^{*}}{520} \right\rceil \times 67$$

$$\mathbf{T} = \left\lceil \frac{\text{Marks Obtained in Entry Test}}{\text{Total Marks}} \right\rceil \times 33$$

**Aggregated Marks Percentage = A + T**

* marks for Hafiz-e-Quran, if applicable, will be added as shown above.

### 2.1. (c) For Admission on Diploma Basis:

In addition to fulfilling the general eligibility conditions as given in 2.1(a), an applicant must have passed the Diploma of Associate Engineer Examination from the Board of Technical Education of Pakistan in the following relevant discipline:

- An applicant seeking admission to B.Sc. (Engg.) Chemical Engineering / B.Sc. (Engg.) Chemical Engineering with specialization in Petroleum & Gas must hold Diploma of Associate Engineer in Chemical Technology/Chemical Processing Technology/Chemical Technology with any specialization/ Petroleum Technology/Petrochemical.

- An applicant seeking admission to B.Sc. (Engg.) Metallurgy & Materials Engineering must hold Diploma of Associate Engineer in Metallurgy & Welding/ Foundry and Pattern Making/ Mechanical with any specialization and Glass, Ceramics and Pottery Development.

An applicant must have obtained at least 60% marks (excluding Hafiz-e-Quran) either in Diploma of Associate Engineer Examination or on the basis of Aggregated Marks Percentage calculated as given below:

$$\mathbf{A} = \left[ \frac{(\text{Marks Obtained in DAE})^{**} + (\text{Hafiz - e - Quran})^{*}}{3200} \right] \times 67$$

$$\mathbf{T} = \left[ \frac{\text{Marks Obtained in Entry Test}}{\text{Total Marks}} \right] \times 33$$

**Aggregated Marks Percentage = A + T**

* marks for Hafiz-e-Quran, if applicable, will be added as shown above.

** Marks obtained in DAE examination out of total marks other than 3200 will be converted on the basis of 3200 for calculating 'A'.

**Note:** If two or more candidates have equal aggregated marks percentage (up to three points of decimal), then their merit will be determined on the basis of the marks obtained in the one step lower examination Passed, and then on the basis of ages with percentage given to the elder candidate.

### 2.1.1. Procedure for Application

Application can be filled and submitted online at the university website.

Following documents are required at time of admission,

1. Photocopies of the following documents :
   (i) Matriculation certificate (along with original)
   (ii) F.Sc./Diploma or equivalent certificate (along with original)
   (iii) Photocopy of the result of Pre-Admission Combined Entry Test conducted by UET, Lahore for the current session.
   (iv) Character certificate
   (v) Domicile certificate (along with original)
   (vi) Hafiz-e-Quran certificate (if any): The candidate should produce a certificate from a well established Institution to the effect that he/she is a Hafiz-e-Quran. Moreover, the Faculty shall interview the candidate and make sure that he/she had learnt the Holy Quran by heart and can recite it from whatever portion he/she is required to recite.
   (vii) Migration certificate (in case the applicant has passed F.Sc./Diploma examination from a Board/University other than Board of Intermediate and Secondary Education, Lahore; Punjab University and Punjab Board of Technical Education, Lahore).
   (viii) Medical fitness certificate (on prescribed form) from registered Medical Practitioner to be submitted at the time of admission.
2. One 1.5" x 1.5" size latest photograph (to be affixed on the form).

Application incomplete/not submitted within due time in the said office of the Faculty will not be entertained. General waiting list along with list of the selected candidates for each course will be displayed on the university website only.

**NOTE :**

*(i)* *ONCE THE CANDIDATE HAS BEEN OFFERED HIS/HER HIGHER OPTION, LATER HE/SHE CANNOT BE CONSIDERED FOR HIS/HER LOWER OPTION IRRESPECTIVE OF SEATS AVAILABLE IN DISCIPLINES THEREIN. IN OTHER WORDS, THERE SHALL BE NO REVERSE PROCESSING FOR THE GENERATION OF SEQUENTIAL MERIT LISTS.*

*(ii)* *IF A CANDIDATE, ONCE SELECTED FOR ANY OPTION IN THE SELECTEES' LIST, DOES NOT DEPOSIT HIS/HER ADMISSION DUES, SHALL LOSE/ FORFEIT HIS/HER RIGHT TO BE CONSIDERED FOR THE HIGH OPTION(S) OF DISCIPLINES GIVEN BY HIM/HER IN HIS / HER APPLICATION FORM.*

The original documents of the candidates being admitted shall be retained by the Institute/Department until such time as deemed necessary. The candidate selected on open academic merit, shall then be depositing the dues in the Habib Bank Ltd., (New Campus Branch), Punjab University, Quaid-e-Azam Campus, Lahore by the closing hour of the bank till the due date mentioned in the admission schedule; failing which the seat will stand vacated automatically and shall be filled on academic merit from amongst the candidates placed on waiting list.

The admission of the candidate shall be cancelled at any stage in case he/she is found guilty of concealing the facts, supplying wrong information and producing bogus documents. Such applicants shall be liable for prosecution under the code of law.

3. Collect the Registration Card/slip from the office of the Institute of Chemical Engineering & Technology the same day after submitting the receipt of the Bank in original along with its two photocopies in order to regularize the provisional admission, failing which the admission of the candidates shall be cancelled.

## 2.1.2. Allocation of Seats for admission to the B.Sc. (Engg.) First Semester on open academic merit

### 2.1.2 (a) Self Support Program (Section B)

| Name of the Course | F.Sc. / Diploma Basis/ | Reserved Seats | Total |
|---|---|---|---|
| B.Sc. (Engg.) Chemical Engineering | 40 | 0 | 40 |
| B.Sc. (Engg.) Chemical Engineering with specialization in Petroleum & Gas Technology | 10 | 0 | 10 |
| B.Sc. (Engg.) Metallurgy & Materials Engineering | 50 | 0 | 50 |

# 3. Fee Structure

## 3.1 B.Sc. (Engg.) Courses (Self Support Program: Section B) 2022-2026

| Sr. No. | Particulars of Receipt/Head of Accounts | Semester | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | I | II | III | IV | V | VI | VII | VIII |
| 1 | Admission Fee, Breakage Fee, Tuition Fee* | 54400 | 54400 | 54400 | 54400 | 54400 | 54400 | 54400 | 54400 |
| 2 | Library Service | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| 3 | Identity Card | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | Field Work/Studies Tour | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| 5 | Electricity Charges | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 |
| 6 | P.U. Medical Fee | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |
| 7 | Bus Pass Charges | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 |
| 8 | University Registration Fee** | 4500 | -- | -- | -- | -- | -- | -- | -- |
| 9 | Examination Fee | 9487 | 9487 | 9487 | 9487 | 9487 | 9487 | 9487 | 9487 |
| 10 | Result Notification Fee | 100 | 100 | 100 | 100 | 100 | 475 | 100 | 475 |
| 11 | Mosque Fund | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 12 | Students General Fund | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | Department Society Fee | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | P.U. Internet Facility | 1000 | | 1000 | | 1000 | | 1000 | |
| 15 | PUSTC/PUWSTC Fee | 500 | -- | 500 | -- | 500 | -- | 500 | -- |
| 16 | Sports Fund (PUTDSA) | 200 | -- | 200 | -- | 200 | -- | 200 | -- |
| 17 | Sports Development Fund | 500 | -- | 500 | -- | 500 | -- | 500 | -- |
| 18 | PU Development Fund | 500 | -- | -- | -- | -- | -- | -- | -- |
| 19 | PU Library Security | 2000 | -- | -- | -- | -- | -- | -- | -- |
| 20 | Department Development Fund | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 |
| 21 | Student Welfare Fund | 500 | 00 | 500 | 00 | 500 | 00 | 500 | 00 |
| | **Total** | **81337** | **71937** | **74337** | **71937** | **74337** | **72312** | **74337** | **72312** |

******Only for those candidates who are not already registered with University of the Punjab.

## 4. MEDICAL FACILITIES

Services of the University Medical Officers are available to the students during working hours. The University maintains a Health Centre at the Campus where facilities for the treatment of outdoor patients exist. In case of serious illness and emergency, hospitalization can be arranged under the advice of the C.M.O./M.O. The University Medical Officer may conduct periodical check up of the students.


## 5. INDUSTRIAL TOURS

Students of the Faculty are provided an opportunity to enhance their technical knowledge and broaden their outlook by undertaking tours of factories located all over Pakistan. The expenditure of these tours is borne partly by the University.


Visit To Ghani Glass Industries 2022


# 6. FACTORY TRAINING

In order to gain practical experience in an industrial organization, job training is considered essential for the students. It also goes a long way in familiarizing the students with actual conditions in factories and various complex factors involved in their management and operation. Practical training for students is arranged by the Director / Principal / Chairman. The University shall not be responsible in the event of injury, damage or loss to the students during the course of attendance or training in or outside the University.

# 7. RULES RELATING TO DISCIPLINE

No student shall :

(i) utter, do, or propagate anything repugnant to Islam within and outside the precincts of the University/Institute/College/ Department,

(ii) say or do anything which might adversely affect the honor and prestige of Pakistan or University and Teachers,

(iii) smoke in the Classroom, Laboratory, Workshop, Library and Examination Hall,

(iv) form, or associate with an Organization/Society/Club, or any other body, promoting caste distinctions and inciting parochial/linguistic/ regional feeling,

(v) organize, or hold any function within the precincts of the University except in accordance with the prescribed rules and regulations,

(vi) collect money or receive donations or pecuniary assistance for or on behalf of the University or any University Organization except with the written permission of the competent authority,

(vii) stage, incite, or participate, in a walkout, strike or any other form of agitation which might create or is likely to create law and order problem for the University and affect or is likely to affect its smooth functioning,

(viii) indulge in immoral activities, use indecent language, wear immodest dress, make indecent remarks, jokes or gestures or behave in an improper manner,

(ix) cause disturbance to others,

(x) keep or carry weapons, narcotics, immoral or subversive literature,

(xi) disturb peace and tranquility of the Institution/College/Department,

(xii) use insalutary or abusive language or resort to violence against a fellow student or employee of the University.

(xiii) use mobile phone in the class room and examination hall

Disciplinary action by the Principal of a Constituent/Affiliated College/Chairman of a University Teaching Department/Director of an Institute/Discipline Committee/ Council against the student/s may be taken in one or more of the following forms depending upon the severity of the offence:

(i) A written warning may be issued to the students concerned and a copy of the same may be displayed on the Notice Board.

(ii) The matter may be reported to the Parents/Guardians and they may be called, if necessary.

(iii) A student may be fined. The fine imposed shall have to be deposited with the Treasurer, under intimation to the Principal/Director/Chairman/ Secretary Discipline Committee/Council as the case may be.

(iv) A student may be turned out of the class by the teacher concerned and be not permitted to attend the same course up to three periods at one time under intimation to the Principal/Chairman/Director.

**(v)** A student may be placed on probation for a fixed period not exceeding 3 months. If during the period of probation he fails to improve his conduct, he may be rusticated or expelled.

# PROGRAMME STRUCTURE

## FOR

## B.Sc. (Engg.) Chemical Engineering

**(1) B.Sc. (Engg.) Chemical Engineering**

**(2) B.Sc. (Engg.) Chemical Engineering**
**with specialization in Petroleum & Gas Technology**

**I$^{st}$ Semester**

| Paper | Course Code | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|
| I | CHE111 | Chemical Process Industries-I | 3 | 0 | 3 |
| II | MTH112 | Engineering Mathematics-I | 2 | 0 | 2 |
| III | NEN113 | Functional English | 2 | 0 | 2 |
| IV | HUM114 | Islamic Studies/Ethics* | 2 | 0 | 2 |
| V | PHY115 | Applied Physics | 3 | 0 | 3 |
| VI | CHEM116 | Applied Chemistry | 3 | 0 | 3 |
| VII | GEC117 | Engineering Drawing Lab | 0 | 3 | 1 |
| VIII | PHY118 | Applied Physics Lab | 0 | 3 | 1 |
| IX | CHEM119 | Applied Chemistry Lab | 0 | 3 | 1 |
| X | HUM100 | Quranic Translation | 1 | 0 | 0 |
| Total: | | | 16 | 9 | 18 |

**2$^{nd}$ Semester**

| Paper | Course Code | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|
| I | CHE121 | Chemical Process Industries-II | 3 | 0 | 3 |
| II | CHE122 | Chemical Engineering Principles-I | 3 | 0 | 3 |
| III | MTH123 | Engineering Mathematics-II | 3 | 0 | 3 |
| IV | GEC124 | General Engineering | 2 | 0 | 2 |
| V | CHEM125 | Physical Chemistry | 3 | 0 | 3 |
| VI | CHEM126 | Physical Chemistry Lab | 0 | 3 | 1 |
| VII | CHE127 | Chemical Process Industries Lab | 0 | 3 | 1 |
| VIII | CSC128 | Computer Aided Engineering Drawing Lab | 0 | 3 | 1 |
| IX | GEC129 | General Engineering Lab | 0 | 3 | 1 |
| Total: | | | 14 | 12 | 18 |

*Only for Non-Muslim students in place of Islamic Studies.

**3rd Semester**

| Paper | Course Code | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|
| I | CHE231 | Chemical Engineering Principles II | 3 | 0 | 3 |
| II | CHE232 | Heat Transfer | 3 | 0 | 3 |
| III | CHE233 | Fluid and Particle Mechanics-I | 3 | 0 | 3 |
| IV | HUM234 | Pakistan Studies | 2 | 0 | 2 |
| V | MTH235 | Engineering Mathematics-III | 3 | 0 | 3 |
| VI | CHE236 | Heat Transfer Lab | 0 | 3 | 1 |
| VII | CHE237 | Fluid and Particle Mechanics-I Lab | 0 | 3 | 1 |
| VIII | CSC238 | Computing and Computer Programming Lab | 0 | 3 | 1 |
| IX | HUM300 | Quranic Translation | 1 | 0 | 0 |
| Total: | | | 15 | 9 | 17 |

**4th Semester**

| Paper | Course Code | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|
| I | CHE241 | Particulate Technology | 3 | 0 | 3 |
| II | CHE242 | Chemical Engineering Thermodynamics-I | 3 | 0 | 3 |
| III | NEN243 | Technical Writing and Communication Skills | 3 | 0 | 3 |
| IV | CHE244 | Fluid and Particle Mechanics II | 3 | 0 | 3 |
| V | CHE245 | Particulate Technology Lab | 0 | 3 | 1 |
| VI | CHE246 | Fluid and Particle Mechanics-II Lab | 0 | 3 | 1 |
| VII | CHE247 | Computer Applications in Chemical Engineering Lab | 0 | 3 | 1 |
| Total: | | | 12 | 9 | 15 |

**5th Semester**

| Paper | Course Code | | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|---|
| I | Elective –I | CHE351A | Environmental Engineering | 2 | 0 | 2 |
| | | CHE351B | Natural Gas Engineering – I | | | |
| | | CHE351C | Nuclear Engineering | | | |
| II | CHE352 | | Chemical Engineering Thermodynamics-II | 2 | 0 | 2 |
| III | CHE353 | | Mass Transfer | 3 | 0 | 3 |
| IV | CHE354 | | Separation Processes-I | 3 | 0 | 3 |
| V | GEC355 | | Engineering Materials | 2 | 0 | 2 |
| VI | CHE356 | | Chemical Reaction Engineering | 3 | 0 | 3 |
| VII | CHE357 | | Separation Processes-I Lab | 0 | 3 | 1 |
| VIII | CHE358 | | Chemical Engineering Thermodynamics Lab | 0 | 3 | 1 |
| IX | CHE359 | | Chemical Reaction Engineering Lab | 0 | 3 | 1 |
| X | HUM500 | | Quranic Translation | 1 | 0 | 0 |
| Total: | | | | 16 | 9 | 18 |

**6th Semester**

| Paper | Course Code | | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|---|
| I | MGT361 | | Entrepreneurship | 2 | 0 | 2 |
| II | CHE362 | | Separation Processes-II | 3 | 0 | 3 |
| III | CHE363 | | Fuels and Combustion | 3 | 0 | 3 |
| IV | CHE364 | | Unit Processes | 2 | 0 | 2 |
| V | Elective – II | CHE365A | Polymer Engineering | 2 | 0 | 2 |
| | | CHE365B | Natural Gas Engineering – II | | | |
| | | CHE365C | Renewable Energy Engineering | | | |
| VI | CHE366 | | Separation Processes-II Lab | 0 | 3 | 1 |
| VII | CHE367 | | Fuels and Combustion Lab | 0 | 3 | 1 |
| VIII | CHE368 | | Unit Processes Lab | 0 | 3 | 1 |
| TOTAL: | | | | 12 | 9 | 15 |

| | |
|---|---|
| CHE 400 INTERNSHIP | CREDIT HOURS : 0 |

**7th Semester**

| Paper | Course Code | | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|---|
| I | MGT471 | | Production and Operations Management | 3 | 0 | 3 |
| II | CHE472 | | Chemical Plant Design | 3 | 0 | 3 |
| III | CHE473 | | Instrumentation and Process Control | 3 | 0 | 3 |
| IV | CHE474 | | Design Project Part I | 0 | 3 | 3* |
| V | Elective-III | CHE475A | Petrochemical Engineering | 2 | 0 | 2 |
| | | CHE475B | Petroleum Refinery Engineering –I | | | |
| | | CHE475C | Industrial Energy Systems | | | |
| VI | HUM476 | | Industrial Psychology, Sociology and Tolerance | 2 | 0 | 2 |
| VII | CHE477 | | Instrumentation and Process Control Lab | 0 | 3 | 1 |
| VIII | CHE478 | | Process Design and Simulation Lab | 0 | 3 | 1 |
| IX | HUM700 | | Quranic Translation | 1 | 0 | 0 |
| Total: | | | | 14 | 9 | 18 |

**8th Semester**

| Paper | Course Code | | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|---|
| I | MGT481 | | Industrial Management and Process Economics | 3 | 0 | 3 |
| II | CHE482 | | Process Analysis and Optimization | 3 | 0 | 3 |
| III | CHE483 | | Design Project Part II | 0 | 3 | 3* |
| IV | Elective – IV | CHE484A | Biochemical Engineering | 2 | 0 | 2 |
| | | CHE484B | Petroleum Refinery Engineering – II | | | |
| | | CHE484C | Food Engineering | | | |
| V | CHE485 | | Transport Phenomena | 3 | 0 | 3 |
| VI | CHE486 | | Chemical Plant Safety and Maintenance | 2 | 0 | 2 |
| VII | CHE487 | | Transport Phenomena Lab | 0 | 3 | 1 |
| Total: | 13 | | 6 | 17 | | |

GRAND TOTAL CREDIT HOURS = 136

*As per PEC/HEC Guidelines


# PROGRAMME STRUCTURE

## For

## B.Sc. (Engg.) Metallurgy & Materials Engineering

## Offered at

## Institute of Metallurgy and Materials Engineering

## Curriculum of B.Sc. (Engg.) Metallurgy & Materials Engineering

### First Semester

| Paper | Course Code | Course Title | Lecture Hours | ^Lab. Hours | Credit Hours |
|---|---|---|---|---|---|
| I | HUM 111 | Functional English | 3 | 0 | 3 |
| II | NSC 112 | Applied Chemistry | 3 | 3 | 4 |
| III | NSC 113 | Engineering Mathematics-I | 3 | 0 | 3 |
| IV | CSC 114 | Computer Science and Information Technology | 2 | 3 | 3 |
| V | MME 115 | Fundamentals of Metallurgy and Materials Engineering | 3 | 0 | 3 |
| VI | HUM 116 | Islamic Studies/Ethics* | 2 | 0 | 2 |
| VII | HUM 117 | The Holy Quran Translation | 0 | 3 | 0 |
| | | **Total** | **16** | **9** | **18** |

### Second Semester

| Paper | Course Code | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|
| I | MME 121 | Engineering Drawing | 0 | 3 | 1 |
| II | MME 122 | Workshop practice | 0 | 3 | 1 |
| III | MIN 123 | Mineral Processing | 2 | 3 | 3 |
| IV | NSC 124 | Engineering Mathematics-II | 3 | 0 | 3 |
| V | NSC 125 | Applied Physics | 3 | 3 | 4 |
| VI | HUM 126 | Pakistan Studies | 2 | 0 | 2 |
| VII | HUM 128 | The Holy Quran Translation | 0 | 3 | 1 |
| | | **Total** | **10** | **15** | **15** |

*Only for non-Muslim students in place of Islamic Studies.
^ 3 lab contact hours equivalent to 1 credit hour.

## Third Semester

| Paper | Course Code | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|
| I | HUM 211 | Communication skills | 2 | 0 | 2 |
| II | MME 212 | Physical Metallurgy | 3 | 3 | 4 |
| III | MME 213 | Ceramics Science and Engineering | 3 | 3 | 4 |
| IV | MME 214 | Engineering Mechanics | 3 | 0 | 3 |
| V | MSC 215 | Industrial Safety and Environmental Management | 3 | 0 | 3 |
| VI | HUM 216 | The Holy Quran Translation | 0 | 3 | 0 |
| | | **Total** | **14** | **9** | **16** |

## Fourth Semester

| Paper | Course Code | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|
| I | MME 221 | Mechanical behaviour of Engineering Materials | 3 | 3 | 4 |
| II | MME 222 | Polymer Science and Engineering | 3 | 0 | 3 |
| III | MME 223 | Materials Thermodynamics and Kinetics | 3 | 0 | 3 |
| IV | MME 224 | Foundry Engineering-1 | 2 | 3 | 3 |
| V | CSC 225 | Computer Aided Design Lab | 0 | 3 | 1 |
| VI | CSC 226 | MATLAB and Simulink Lab | 0 | 3 | 1 |
| VII | HUM 227 | Technical Writing | 2 | 0 | 2 |
| VIII | HUM 228 | The Holy Quran Translation | 0 | 3 | 1 |
| | | **Total** | **13** | **15** | **18** |

## Fifth Semester

| Paper | Course Code | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|
| I | MME 311 | Iron Manufacturing Technology | 2 | 0 | 2 |
| II | MME 312 | Foundry Engineering-II | 3 | 3 | 4 |
| III | MME 313 | Heat Treatment of Metals and Alloys | 3 | 3 | 4 |
| IV | MME 314 | Transport Processes | 3 | 0 | 3 |
| V | MME 315 | Metallurgical Manufacturing Processes | 3 | 0 | 3 |
| VI | HUM 316 | Critical Thinking and Reasoning | 2 | 0 | 2 |
| VII | HUM 317 | The Holy Quran Translation | 0 | 3 | 0 |
| | | **Total** | **16** | **9** | **18** |

## Sixth Semester

| Paper | Course Code | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|
| I | MME 321 | Corrosion Engineering | 3 | 3 | 4 |
| II | MME 322 | Welding and Joining Processes | 3 | 3 | 4 |
| III | MME 323 | Steel Manufacturing Processes | 3 | 0 | 3 |
| IV | MME 324 | Composite Materials | 2 | 0 | 2 |
| V | MME 325 | Polymeric and Composite Materials Lab | 0 | 3 | 1 |
| VI | CSC 326 | Computational Materials Science | 2 | 0 | 2 |
| VII | CSC 327 | Computer Applications in Materials Engineering Lab | 0 | 3 | 1 |
| VIII | HUM 328 | The Holy Quran Translation | 0 | 3 | 1 |
| | | **Total** | **13** | **15** | **18** |

## Seventh Semester

| Paper | Course Code | | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|---|
| I | MME 411 | | Tribology and Surface Engineering | 3 | 3 | 4 |
| II | MME 412 | | Materials Characterization | 2 | 3 | 3 |
| III | MME 413 | | Non-ferrous Metallurgy | 3 | 0 | 3 |
| IV | Elective-I | MME 414 A | Biomaterials | 2 | 0 | 2 |
| | | MME 414B | Nanomaterials and Nanotechnology | | | |
| V | MSC 415 | | Industrial Quality Management | 3 | 0 | 3 |
| VI | MME 416 | | Design Project – I | 0 | 3 | 3 |
| VII | HUM 417 | | The Holy Quran Translation | 0 | 3 | 0 |
| | | | **Total** | **16** | **12** | **18** |

## Eighth Semester

| Paper | Course Code | | Course Title | Lecture Hours | Lab. Hours | Credit Hours |
|---|---|---|---|---|---|---|
| I | MME 421 | | Powder Metallurgy | 2 | 0 | 2 |
| II | Elective-II | MME 422 A | Advanced Metallic Materials | 2 | 0 | 2 |
| | | MME 422 B | Advanced Fabrication Processes | | | |
| III | MSC 422 | | Production and Operations Management | 3 | 0 | 3 |
| IV | MSC 423 | | Entrepreneurship | 2 | 0 | 2 |
| V | HUM 424 | | Industrial Psychology and Sociology | 2 | 0 | 2 |
| VI | MME 425 | | Design Project – II | 0 | 3 | 3 |
| VII | HUM 426 | | The Holy Quran Translation | 0 | 3 | 1 |
| | | | **Total** | **14** | **6** | **15** |

**Total Credit Hours of the Course = 136**

# GENERAL REGULATIONS OF B.Sc. (ENGG.) DEGREE PROGRAMS

## 1. UNDER GRADUATE 4 YEARS B.Sc. (ENGG) PROGRAMME

i. There shall be two semesters in an academic year.

ii. Each semester will be of 18 working weeks: Sixteen weeks for teaching, one to two weeks for the conduct of examinations.

## 2. COURSE DESCRIPTIONS

Course contents, if revised, will be approved by the Board of Studies of the concerned department/faculty Board and Academic Council. The teachers concerned will be responsible for determining the details of the course. The Director/Chairman shall call the meeting of the teachers of the department for the purpose.

## 3. COURSE CREDITS

i. A minimum 124 credits are required for the 4 Years degree program. The said credits shall normally be earned in eight semesters.

ii. The minimum number of contact hours in a course will be 15 per semester for one credit hour course.

iii. A course may range from one credit hour to four credit hours.

iv. One credit hour stands for at least one hour class contact per week per semester. For practical/laboratory work 3 hours shall be considered equivalent to one credit hour.

v. Six (06) credit hours Research Project (dissertation) / project report / internship / special paper will be offered in the third and fourth years.

## 4. CLASS ATTENDANCE

i. A student must have attended at least 75% of the classes held in a course in order to be allowed to sit in the final examination.

ii. In case of absence as a result of late admission, medical grounds or change of course, the teacher will give extra (make-up) materials to the student to compensate the deficiency because of said absence.

iii. In case the student remains absent from the class for seven consecutive lectures without leave his/her name shall be removed from the rolls.

## 5. EVALUATION SYSTEM

i. The weightage of the test and assignment/sessional work will be as follows:

(a) Mid Term (test) 35%
(b) Assignment 25%
(c) Final Term (test) 40%
(d) To pass a course a student must obtain 'D' grade (50% marks) Cumulative in Assignments, Mid and Final Semester Examinations.

## 6. Duration of Examinations

In view of the weightage for the various examinations, the duration of the papers will be as follows:

| Term | Theory | Practical |
|---|---|---|
| Mid-Term Examination | One and half hour | As mentioned in the Time-Table |
| Final Term Examination | Two hours | -- |

**7.** Home assignments shall be deposited with the teacher concerned as scheduled by the teacher.

**8.** Re-sit Examination on Medical Ground: In case a candidate is unable to appear in part or whole of the (Mid-Term/Final) Examination of a semester on medical grounds, he may be allowed to appear in the special examination (Mid-Term/Final) to be arranged by the Department/ Institute/College, provided;

i) He/She fulfils the condition of having attended the prescribed number of lectures as laid down in Regulation 4(i & ii).
ii) He/She is admitted as patient in a recognized Hospital, or if he/she is not hospitalized, as defined above, the candidate will be examined by the University Medical Board comprising Chief Medical Officer and senior most Medical Officer of the University.

**9. Grading System**

1. Letter grading should only be used for representing the individual courses and not for semester GPA or CGPA.
2. Equivalence in letter grades and grade points will be as follows:

| Letter Grade | Grade Points |
|---|---|
| A | 4.00 |
| A- | 3.70 |
| B+ | 3.30 |
| B | 3.00 |
| B- | 2.70 |
| C+ | 2.30 |
| C | 2.00 |
| C- | 1.70 |
| D | 1.00 |
| F | 0.00 |

3. Maximum possible Grade Point Average is 4.00
4. Minimum Cumulative Grade Point Average is 2.00.
5. Calculation Grade Point Average (GPA) for a Semester.

   In order to calculate the GPA, multiply Grade Point with the Credit Hours in each course to obtain total grade points, add up to cumulative Grade Points and divide by the total number of Credit Hours to get the GPA for the Semester.

   Course with 'F' will be counted as 'Zero' Grade Point for calculation of semester Grade Point Average. Calculation of cumulative grade point average will only be made when a candidate has passed all the courses required for the award of degree.

6. The percentage of marks or values of grades other than given grade points should not be reported on the transcripts.

## 10. Rules for Promotions

1. At the end of the first Semester a student must obtain a minimum Grade Point average (GPA) of 2.00 to be promoted to the second semester.
2. In case a student is able to obtain GPA of 1.70 or more but less than 2.00 he /she will be promoted to the second Semester on probation ($I^{st}$ probation). The candidate, who fails to secure 1.70 GPA in the first semester, shall stand automatically dropped from the rolls of the Department /Centre/Institute/ College.
3. At the end of second semester, a student must obtain a minimum Cumulative Grade Point Average (CGPA) of 2.00 and must also pass at least 50% of the courses offered; by him/her in order to be promoted to the third semester. If the student does not achieve desired CGPA 2.0 but obtain CGPA > 1.7 will go to $2^{nd}$ (last) probation.
4. In all the following semesters a student has to maintain CGPA 2.00 for his /her promotion otherwise he/she will be removed. If a student has not availed opportunity of probation during the first two semesters then he/ she will have the right to avail probation twice in the following semesters.
5. In the third semester a student will be required to repeat those courses of the first semester in which he / she had failed.
6. In the fourth, sixth and eighth semester, a student will be required to repeat those courses of the second, fourth, sixth and /or eighth semester in which he/she had failed.
7. If a student gets D grade, he/she can repeat the course when offered to improve his/her grade.
8. A student, who completes all the courses and has not been required to repeat any course(s), obtains CGPA of less than 2.00 but not less than 1.90 at the end of $8^{th}$ semester may be allowed to repeat course (varying from 2 to 4 credit hours) in which he / she had obtained the lowest grades, in order to improve the CGPA so as to obtain the minimum of 2.00 CGPA failing which he / she shall not be awarded degree and removed from the rolls of the Department /Centre / Institute / College.
9. In case a student repeats the course which he / she have already taken, the old grades will be substituted with the new grades for CGPA calculations.
10. A student will be allowed to repeat a maximum of 18 credit hours courses.

## 11. Calculation of Final Result

1. Minimum requirements for the award of 4 years B.Sc. (Engg.) Degree

   i) A candidate must have qualified in accordance with the existing Rules and Regulations in each one of the I,II,III,IV,V,VI,VII and VIII Semesters, separately, i.e. by securing at least a 'D' in all course as to fulfill he requirements laid down in (ii) below:

   ii) He/She must have earned the prescribed number of credits required for the 4 years degree i.e., a minimum of 132 credits.

   iii) He/She must have obtained a minimum Cumulative Grade Point Average of 2.00.

   iv) He/She must have obtained 4-6 weeks industrial training.

2. Method for Calculation of the Final CGPA.

   i) Add up Cumulative Grade Points of each semester to obtain grand total and then divide the grand total by total no. of credits of the courses studied. The resulting figures will represent the Cumulative Grade Point average secured by a candidate. The CGPA will be reported up to two decimals but for the determination of merit position CGPA will be calculated up to any decimal.

   ii) The students obtaining CGPA of 3.70 or above will be declared eligible for role of honors

   iii) For the award of Gold Medal or some other award(s), the I$^{st}$ position will be calculated on CGPA basis of the whole course.

   iv) For the award of Gold Medal, roll of honors and all other distinction of Punjab University, a student must have passed all the examinations at least in B Grade, in the first attempt.

**NOTE**

**( Applicable to the schedule of all programmers )**

- **The candidate is required to see the lists of Selectees and schedule of payment of dues on the Notice Board of the Institute of Chemical Engineering & Technology. He/She will not be provided/sent the above-mentioned information by the Faculty through any other means.**
- **Once the candidate has been offered his/her higher option later he/she cannot be considered for his/ her lower option irrespective of seats available in disciplines therein. In other words, there shall be no reverse processing for the generation of sequential merit lists.**
- **If a candidate, once selected for any option in the selectees' list, does not deposit his/her admission dues, shall lose / forfeit his/ her right to be considered for the high option ( s) of disciplines given by him / her in his / her application form.**

# Disclaimer

**The prospectus is informational and should not be taken as binding on the Faculty. Each aspect of the educational setup, ranging from the admission procedure to the examination regulations or discipline, requires continual review by the competent authorities. The Faculty, therefore, reserves the right to change/amend any rule/s and regulations applicable to students whenever it is deemed appropriate or necessary.**


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