



CENTRE FOR COAL TECHNOLOGY

Session 2012-14



FACULTY OF ENGINEERING AND TECHNOLOGY

University of the Punjab
Qaid e Azam Campus Lahore



Message from Worthy Vice-Chancellor

The University of the Punjab is the parent university of all universities of Pakistan. It has maintained its excellence in education, training and research in various fields of arts, social sciences, engineering and technology. The University aims at high standards of quality, education compatible with national needs and comparable to international universities of high repute abroad.

The Faculty of Engineering & Technology is one of the most developed faculties of the university. It has developed since 1917 with a long history of dedicated and devoted teachers and researchers in various fields of Engineering & Technology. The faculty comprises of Institute of Chemical Engineering & Technology, College of Engineering & Emerging Technologies, Institute of Quality and Technology Management, Centre for Coal Technology and Department of Textile Engineering.

Coal is a primary energy source which is mostly exploited worldwide for generation of electricity. The sustainable progress of our neighboring countries like China and India including many other developing and developed countries depend upon appropriate utilization of their coal resources. Fortunately Pakistan is bestowed with 185 billion tonnes of coal including 175 billion tonnes belonging to Thar. Despite these sizable coal deposits, their impact on local energy sector is negligible. The main reason is obviously the non-availability of mono functional coal based institutions which could provide trained manpower to solve the energy problems of the country.

Realizing this situation, the University of the Punjab has established the Centre for Coal Technology in 2003. The centre offers two years M.Sc. degree in Coal Technology. It is a matter of great satisfaction that the students graduated from this centre are performing well in coal related industry in the country and abroad.

The University is committed to provide best possible facilities to the Centre for Coal Technology in terms of Faculty staff, laboratories, libraries and environment for R & D activities, etc. I hope that the qualified students of this Centre will play their role in the coal based industries with strong commitment to maintain the flag of the University high in the sky.

Message from the Dean of the Faculty



Welcome to the Faculty of Engineering and Technology. We offer the best engineering environment coupled with the intellectual and technological resources. Faculty of Engineering and Technology is uniquely positioned to educate 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. Technologists are the builders of better world for mankind. The prestigious Centre for Coal Technology under the Faculty of Engineering and Technology, University of the Punjab, has been consistently catering to the needs of qualified and trained professional manpower in the form of coal technologists for the respective national industries over the past nine years. The alumni of the centre have prodigiously contributed towards the development of coal industry as well as various allied industries in Pakistan. Their performance has been commendable.

In year 2003, the Centre for Coal Technology was established under the Faculty. At present, the Centre is offering two years master degree in the subject of Coal Technology.

Keeping in view the modern needs of coal power generation systems, mining and coal processing sector in the country, centre for coal Technology is developing human resource. The CCT offers M.Sc. coal technology.

The teaching staff at the Centre for Coal Technology is highly qualified, competent, dedicated, erudite, professionally experienced, and adequately capable of shaping the future technologists.

Taking this opportunity, I call upon the prospective graduates to transform the flashes of scientific imagination and engineering inspiration that form the stepping-stones, for making impossible of today the possible of tomorrow. The staunch challenge confronting the future technologist is the ultimate exploitation of national resources through indigenous engineering & technology development.

Faculty of Engineering & Technology is producing outstanding engineers, with great moral values, who are contributing in a prosperous and technologically advanced Pakistan and I look forward to scintillate future of the technologist profession and our beloved country.

Pakistan Zindabad



Message from the Director Centre for Coal Technology

Coal has been a reliable fuel since industrial revolution worldwide and has played a key role in the economic empowerment across the globe. Economically recoverable reserves of coal are available in more than 70 countries worldwide, and in each major world region. With authorities reporting some 850 billion tons of coal as currently recoverable (the geological resource is far larger), it is clear that coal will be with us for many decades, if not centuries, to come. In contrast, proven oil and gas world reserves are equivalent to around 42 and 60 years respectively at current production levels. Coal provides 26% of global primary energy needs and generates 41% of the world's electricity.

In Pakistan, despite of having 185 billion tons of coal (greater than Crude Petroleum reserves of Saudi Arabia and Iraq combined in terms of oil equivalent) the share of energy obtained from coal is only 7.3%. Pakistan consumed about 8 million tones (3.64 million tones indigenous and balance imported) of coal last year and only 2.1% of which was used for power generation. However, there is a paradigm shift in the approach of Pakistan Government and a lot of efforts are being put lately to produce electricity from Thar Coal (175 billion tones) and other coal deposits in Punjab.

Centre for Coal Technology was established in 2003 under the Faculty of Engineering & Technology to provide Technical Manpower in the country and research backup of the following purposes:

- ❖ Coal Gasification
- ❖ Coal fired electricity generation
- ❖ Domestic utilization of coal
- ❖ Substitution of furnace oil/ natural gas by coal in the industrial sector
- ❖ Transfer of coal technology from the developed/developing countries to Pakistan
- ❖ Spread of knowledge, experience and skill to the public within the country by integrating results on indigenous coal

Eight batches of this centre have been passed and placed successfully in those industries that use coal as major fuel. Centre for Coal Technology has research and student laboratories comprising equipment of worth more than Rs. 21 million.

Coal technology has promising job employment opportunities in the cement industry, thermal power generation, industries using coal for power generation and steam like chemicals, paper, textile and steel mills and business sector dealing in coal.

Faculty

Teaching Faculty is the most valuable assets of any Educational Institution and this Centre rightly takes pride of having the services of excellent teachers listed below.

Name	Designation	Qualification
 Dr. Shahid Munir	Professor (Director)	B.Sc. (Chem. Engg.) PU M.Sc. (Chem. Engg.) PU M.B.A (Marketing) PU Ph. D (Energy & Environment Engg.) Leeds UK
 Dr. Shafqat Nawaz	Professor (on contract)	B.Sc. (Chem. Engg.) PU M.Sc. (Chem. Engg.) PU Ph.D. (Fuel Engg.) Leeds, UK
 Engr. Khurram Shahzad	Assist. Professor	BSc (Chem. Engg.) PU M.Sc. (Chem. Engg.) UET
 Dr. Javaid Akhtar	Lecturer	B.Sc. (Chem. Engg.) PU M.Sc. (Chem. Engg.) South Korea Ph.D. (Chem. Engg.) Malaysia

 Mr. M. Usman Rahim	Lecturer	B.Sc. from PU M.Sc. (Coal Tech.) PU (On Study Leave for PhD. at University of Curtains W. Australia)
 Miss Sumaira Kanwal	Lecturer	B.Sc. from PU M.Sc. (Coal Tech.) PU M. Phil, (Environmental Sc.) PU
 Mr. Khurram Shahzad	Research officer	B.Sc. from PU M.Sc. (Coal Tech.) PU

VISITING FACULTY

Name	Designation	Qualification
 Dr. Naseeruddin Sheikh	• Former Member Technology, PCSIR • Former Member Board of Directors & Chairman Technical Committee on Saindak Copper-Gold Project.	B.Sc. Hons. M.Sc.(Chem.) PU, Ph.D. (Mineral Process Engg.) UBC Canada
Prof. M. Asghar Ali Butt	(Retd.) Professor Institute of Chemical Engg. & Tech. PU, Lahore	B.Sc. Hons. M.Sc.(Chem.) PU, Ph.D. (Chem.) UK
 Mr. Ghulam Yasin	Lecturer in Hailey College of Commerce PU, Lahore	B.com. PU M.Sc. (Computer Science) PU
 Mr. Muhammad Sarfraz Akram	Lecturer in Institute of Chemical Engineering, PU, Lahore	B.Sc. (Chem. Engg.) PU M.Sc. (Chem. Engg.) PU MBA (Marketing) PU

Academic Programs at the Centre for Coal Technology

Degree Duration:

M.Sc. Coal Technology

2 Years

Eligibility for Admission in M. Sc. Coal Technology

1. B. Sc. with **Chemistry** as one of the subjects or equivalent examination with at least 2nd Division and age not more than 26 years are eligible for admission. 50% seats are reserved for graduates from Punjab University and rest 50% shall be filled on open merit basis.

Or

2. Postgraduate Diploma in Chemical Technology

Basic Criteria for Admission in M. Sc. Coal Technology

Marks Obtained $(\frac{1}{4} \text{ Matric} + \frac{1}{5} \text{ F. Sc.} + \text{total B. Sc.})$ = **A**

Total Marks $(\frac{1}{4} \text{ Matric} + \frac{1}{5} \text{ F. Sc.} + \text{total B. Sc.})$

Additional Marks:

Hafiz-e-Quran: 20 marks

Note: “A” above will be multiplied by 100.

Order of Preference Session

Two marks will be deducted from the marks obtained out of 100 marks for each late year to a maximum of two years.

Total No. of Seats Available

Merit + Reserve = Total

30 + 9 = 39

Note: Reserved seats shall be allotted only to students eligible according to the Regulations for Admission in accordance with Admission Regulations Blue Book 2012.

Course outlines

M.Sc. Coal Technology

FIRST SEMESTER

Paper	Subject	Total Marks		Credit Hours	
		Theory	Practical	Theory	Practical
MCT-301	Coal Chemistry	100	--	3	--
MCT-302	Coal Geology	100	100	3	1
MCT-303	Coal Characterization	100	100	3	1
MCT-304	Applied Mathematics	100	--	3	--
MCT-305	Coal Mining – I	100	--	3	--
	Total	500	200	15	2

SECOND SEMESTER

Paper	Subject	Total Marks		Credit Hours	
		Theory	Practical	Theory	Practical
MCT-306	Size Reduction and Classification of Coal	100	100	3	1
MCT-307	Stoichiometry and Combustion Calculations	100	--	3	--
MCT-308	Coal Combustion Technology -I	100	--	3	--
MCT-309	Computer Applications	100	100	3	1
MCT-310	Coal Mining –II	100	--	3	--
	Total	500	200	15	2

THIRD SEMESTER

Paper	Subject	Total Marks		Credit Hours	
		Theory	Practical	Theory	Practical
MCT-401	Coal Processing Technology -I	100	--	3	--
MCT-402	Coal Conversion Technology-I	100	100	3	1
MCT-403	Coal Combustion Technology II	100	--	3	--
MCT-404	Mine Safety	100	--	--	--
MCT-405	Research Thesis		100	--	3
	Total	400	200	12	4

FOURTH SEMESTER

Paper	Subject	Total Marks		Credit Hours	
		Theory	Practical	Theory	Practical
MCT-406	Clean Coal Technology	100	100	3	1
MCT-407	Coal processing Technology -II	100	--	3	--
MCT-408	Coal Conversion Technology-II	100	--	3	--
MCT-409	Financial Marketing and Resource Management	100		3	--
MCT-405	Research Thesis		100		3
	Total	400	200	12	4
GRAND TOTAL		1800	800	54	12

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 (2 - 5) weeks in stretch), change of course and/or foreign visits (2 – 5) weeks in a stretch), the teacher will give extra (make-up) materials to the student to compensate the deficiency because of said absence after permission by Departmental Examination Committee to appear in the examinations of the course.
- 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.
- iv. The student having class attendance less than 75% in a particular course will be required to repeat the course when it is offered again. The student will be awarded grade FW i.e forced withdrawl and will not be counted towards calculation of GPA/CGPA.

EVALUATION SYSTEM

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

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

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	--

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

Re-sit Examination on Medical Ground:

The students who cannot appear in examination because of valid excuse/reason as approved by the head of department shall be allowed to appear in re-sit examination within one week after the examination subject to the payment of special examination fee Rupees 1000/- for each course. If the number of courses is more than 2 then a lump sum of Rs. 2500/- shall be paid as special examination fee to the department. 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 5(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.

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 of 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.

Method for Calculation of the Final CGPA:

- i. Add up grade points of all Semesters to obtain grand total and then divide the grand total by total number of credits of the course studied. The resulting figure will represent the Cumulative Grade Point average secured by a candidate. The CGPA will be reported up to two decimals for the award of medal/distinction and determination of merit position. If two or more candidates having the same CGPA, as the case may be.
- ii. The students obtaining CGPA of 3.7 or above will be declared eligible for the role of honours.
- iii. For the award of Gold Medal or some other award(s), the 1st position will be calculated on CGPA basis of the whole course.
- iv. For the award of Gold Medal, roll of honors and all other distinctions of Punjab University, a student must have passed all the examinations at least in B grade, in the first attempt.

Probation:

The promotion of a student on probation will be allowed twice during whole semester. If a student in the first semester obtains CGPA less than 2.0 and greater than or equal to 1.5, will be considered on probation. In case student does not achieve minimum desired CGPA 2.0 in any semester after availing opportunity of two probation, he/she shall be dropped from the roll of the Department.

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 (1st 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 2nd (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, semester, a student will be required to repeat those courses of the second, fourth, semester in which he had failed.
7. If a student gets D grade, he/she can repeat the course when offered to improve his/her grade.
8. In case a student repeats the course(s) for the improvement of grade(s) which he/she if has already taken, the better of the two grades of the course(s) will be counted for CGPA calculations.

Minimum requirement for the award of Master's Degree:

- i. A candidate must have qualified, in accordance with the existing Rules and Regulation in each one of the semesters from I –IV separately, i.e by securing at least a “D” Grade in the course(s) as to fulfill the requirements laid down in (ii & iii) below:
- ii. He/ She must have earned the prescribed number of credits required for the Master's Degree i.e 66 credits.
- iii. He/ She must have obtained a minimum Cumulative Grade Point Average of 2.00.

Cancellation of Admission:

If a student fails to attend any lecture during the first four weeks of the commencement of the semester as per announced schedule, his/her admission stands cancelled automatically without any notice.

Hostel Accommodation:

The University of the Punjab provides hostel accommodation to a fairly large number of students from outside Lahore. Placement in University hostels is arranged on a priority basis by the Chairman Hall Council, Quaid-e-Azam Campus, Lahore on the recommendation of the Director.

Medical Facilities:

Services of the University Medical Officers are available to the students residing in University hostels 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 checkup of the students.

Rules Relating to Discipline:

No student shall:

- (i) say or do anything which might adversely affect the honour and prestige of Pakistan or University and Teachers,
- (ii) smoke in the Classroom, Laboratory, Workshop, Library and Examination Hall,
- (iii) form, or associate with an Organization/Society/Club, or any other body, promoting caste distinctions and inciting parochial/linguistic/ regional feeling,
- (iv) organize, or hold any function within the precincts of the University except in accordance with the prescribed rules and regulations,
- (v) 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,
- (vi) 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,
- (vii) indulge in immoral activities, use indecent language, wear immodest dress, make indecent remarks, jokes or gestures or behave in an improper manner,
- (viii) cause disturbance to others,

- (ix) keep or carry weapons, narcotics, immoral or subversive literature,
- (x) disturb peace and tranquility of the Institution,
- (xi) Use insalutary or abusive language or resort to violence against a fellow student or employee of the University.

Disciplinary action by the Director of a University Teaching Department of an Institute/Discipline Committee 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 Director, discipline Committee 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 upto three periods at one time under intimation to the 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.

Laboratories:







Admission Forms

Admission forms will be available from the Centre for Coal Technology w. e. f. **27-08-2012:**

Admission Schedule for M.Sc. Coal Technology

Details	Date	Day
Availability of Forms	27-08-2012	Monday
Last date for submission of form	05-09-2012	Wednesday
First Merit List	08-09-2012 (10:00 am)	Saturday
Last date for submission of dues	11-09-1012	Tuesday
Second Merit List	12-09-2012 (09:00 am)	Wednesday
Last date for submission of dues	14-09-2012	Friday
Third Merit List	17-09-2012 (9:00 am)	Monday
Last date for submission of dues	18-09-2012	Tuesday
Fourth Merit List	19-09-2012	Wednesday
Last date for submission of dues	20-09-2012	Thursday
Commencement of classes	24-09-2012	Monday

Disclaimer

The prospectus provides information about admission and course outlines for MSc. Coal Technology at the Centre for Coal Technology. This may be taken as source of information for admission purposes and the department reserves the rights to change/amend rules and regulations applicable to the students according to the University regulations.



Centre for Coal Technology

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