



“Guideline & Policies for Ph.D in Engineering Management at CASE”

PhD Cycles, Requirement, Policies, List of Majors, Subjects, Course Load, Core Courses, Required and Elective Courses, Categories, and Academic Related Issues, including Explanatory Notes

Department of Engineering Management

CASE

Reviewed by
Sub Committee of BPGS CASE-UET, Taxila

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Chairman,
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1.0.0 Ph.D Cycle at EM Dept, CASE

1. **Admission Test (Twice a year)**
 - a. **Written**, (GMAT Format including English Test)
 - b. **Interview (By a Board consisting of Industry Experts /Professionals/Academicians/Subject Specialist).**
 - c. **Criteria:** Previous Qualification, Publications, Research, Teaching, Management Experience, Societal Responsibility, National Contribution, Special Achievements, References etc.
2. **Admission Approval of UET.**
3. **Course Work Plan & and Roll No. Issuance from UET**
4. **Courses Work Stage** (Minimum Ten Graduate Level Courses from Approved Plan (After MSc.) in Consultation of Engg Mgmt Dept in the light of PhD Guideline for Courses).
5. A “**Test of English for Technical Analysis**” - (**TETA**) to be conducted by CASE, (Mandatory to pass before DQE).
6. **Passing Doctoral Qualifying Exam (DQE).**
 - a. **Written** (Twice a year, Comprehensive test of all subject studied)
 - b. **Oral** (Interview by Board of Professors/Subject Specialist, may include a presentation on assigned topic).
7. **Proposal Writing and Research in Consultation** with Advisor
8. **Approval of PhD Research Committee** from UET, Taxila.
9. **PhD Proposal Public Defense and Notification of UET**
10. **Declaring PhD Candidacy.**
11. **30 credit Hour of Dissertation Work.**
12. **Final Research Dissertation Defense.**
13. **Notification of Successful Defense.**
14. **Award of PhD Degree.**
15. **Maximum period 07 years.**

1.1.0. A **PhD Guidance Committee** under the chairmanship of President CASE/His nominee, for MEM is overall responsible for smooth conduct and execution of these policies at PhD Program in Dept of Engg Mgmt, CASE.

1.1.1. Composition of PhD Guidance Committee

President of PhD Committee: President CASE or His Nominee/Chairperson EM Dept CASE

Secretary: Chairperson/His nominee from Engg Mgmt Dept, CASE

Members of PhD Guidance Committee.

1. **Dr. Azhar M. Khan**
2. **Dr. Nadeem Ehsan**
3. **Prof. Saif R Khan**
4. **Prof. Faheem Ul Islam**
5. **Dr. Memona Rauf Khan**

2.0.0 Minimum PhD Requirements (also see CASE PhD Eligibility Criteria)

2.1.1. Must be a PhD Material that is:

- a. Masters from approved list of UET with minimum of 18 years formal education from HEC Recognized University.
- b. Student to display a very decent, mature, consistent & composed behavior, coupled with research aptitude.
- c. Clear, visible commitment for acquisition of Knowledge.



- d. Professional and serious attitude with Good Communication and Demonstrated Good Writing Skills.
 - e. Extreme fairness and highest level of ethical practices and professional integrity.
 - f. Must abide by CASE academic and administrative Policies.
 - g. In all cases preference for admission will be given to Masters/BSc in Engineering Student
- 2.1.0 Minimum of Ten Graduate Level Courses (from Approved Plan of Engineering Management Department) to be taken at Course work stage.
 - 2.2.0 Total of min. 30 Credit Hours of Research Work after Passing DQE.
 - 2.3.0 Minimum **3.5 GPA out of Scale of 4.0 is required** for Sitting in “**Doctoral Qualifying Examination**” (DQE). Student can repeat maximum of one course with more than one Grade up.
 - 2.4.0 In DQE students need to pass both written and Oral exams separately with two chances each.
 - 2.5.0 Students will be given two chances ONLY, to pass DQE. Any student with 2 Cs in his/her PhD Programme, will not be eligible to appear in DQE. Anyone with **three Cs** will be struck off from the program. Any one gets “**F Grade**” will be withdrawn from PhD Program.
 - 2.6.0 One credit hour course in “**Dissertation Writing**” is mandatory for everyone before starting writing Dissertation.
 - 2.7.0 Two Foreign experts from technically advanced countries will evaluate the final Research Dissertation.
 - 2.8.0 A **PhD Guidance Committee** under the chairmanship of President CASE/His nominee may review any exception.
 - 2.9.0 Two Credit Hour Course of “**Research Proposal Development Techniques**” seminar is also mandatory to attend for all PhD students.
 - 2.10.0 One Credit Hour course on “**Professional Ethics**” is also mandatory for all PhD students.
 - 2.11.0 To qualify for a PhD degree it is required to publish **One International Publication** in the journals as per list of HEC (List of HEC recommended Journals attached with these guidelines).



3.0.0 Engineering Management List of Majors (Area of Specialization) and Relevant Courses

3.1.0 Manufacturing Management

1. Productivity Engineering & Management.
2. Production & Operations Management.
3. Manufacturing Engineering and Management/Manufacturing Strategies/ Work and Method Study
4. Manufacturing Systems /Supply Chain Management/Industrial Automation and Robotics/ Introduction to CAD / CAM
5. Maintenance Engineering and Management//Manufacturing Technologies/ Industrial Costing and Estimation
6. Enterprise Resource Planning/Concurrent Engineering Management/ Special Topics in Manufacturing Management

3.2.0. Construction Management

1. Construction Management
2. Seminar in Construction Management / Project Monitoring Evaluation and Control
3. Construction Cost Management /Resource and Cost Management
4. Engineering Contract Management/Engineering, and Industrial Laws
5. Projects, Quality, Risk and Procurement Management/ Engineering Contract Management.
6. Computer Applications in Project Management/Supply Chain Management

3.3.0. Software (SW) Project Management

1. Software Project Management
2. Software Quality Management
3. Software Engineering II
4. Software Technology Management
5. Software Risk & Configuration Management
6. Special Topics in Software Engineering/ Engineering Contract Management

3.4.0. Management of Technology

1. Technology Management
2. Marketing of Technology/Supply Chain Management
3. Seminar in Competitiveness and Technology
4. Transfer of Technology/Engineering Contract Management
5. Concurrent Engineering Management/Special Topics in Technology Management/Enterprise Resource Planning/Electronic Government/Technology and Entrepreneurship
6. Managing Technological Innovation / Seminar in Technology, Governance and Globalization

3.5.0. Project Management

1. Computer Application in Project Management
2. Engineering Contract Management/ Engineering, and Industrial Laws
3. Engineering Project Management
4. Project Monitoring Evaluation and Control/Cost Benefit Analysis
5. Project Life Cycle Mgmt/Resource and Cost Management.
6. Project Quality Risk and Procurement Management /Supply Chain Management



3.6.0. Telecom Business Management

1. Telecom Business Management
2. Telecom Law and Regulations / Engineering Contract Management/ Engineering, and Industrial Laws
3. Telecom System Management / Special topics in Telecom Management
4. Wireless & Satellite Technology Management/ Fundamental of Telecom Networks
5. Telecom Finance, Cost and Interconnection.
6. Program Management in Telecom Organizations/ Resource and Cost Management.



Course Work Requirement and Guideline For PhD in Engineering Management

4.0.0. Applicant with Masters from approved list of UET and 18 years of Formal Education, Engineering/Technical/Computer/Non Business Background. (10-14 Courses)

4.1.0. Three Categories of Courses for Direct Entrants

- a. Core Courses (5-7)
- b. Required Courses (1-3) different from Engineering and non Engineering Background
- c. 3-5 From Major Area

4.2.0. Core Courses (first Five are mandatory for every one)

- a. Research Methodology for Technical Managers (PhD Level Course)
- b. Industrial Psychology and Sociological Aspects in Technical Org. (PhD Level)
- c. Seminar in Technology & Competitiveness (PhD Level)
- d. Business and Technical Communication (may be exempted above 23 years of experience).
- e. Industrial & Development Economics. (PhD Level Course).
- f. Technology, Governance & Globalization. (PhD Level).
- g. Technology, International Trade and Economic Development (PhD Level).
- h. Productivity Engineering and Management /Quality Improvement in Technical Concerns.
- i. Quantitative and Qualitative Method (PhD Level Course)/ Independent Research/Cost Benefit Analysis.

4.3.0. Required Courses For Engineering/Technical Background (1-3 Courses)

- a. Management of Technical Organization and Practices
- b. Finance for Technical Mangers.
- a. Engineering Project Management

4.4.0. Three to Five Courses From Respective Areas of Specialization.

If someone has already done most of courses in his/her previous Masters program, yet minimum of 10 courses required to be taken. No exceptions.

1. One Course from Own Major
2. Do.
3. Do.
4. Do.
5. Do.
6. Do.



Course Work Requirements and Guideline For PhD in Engineering Management Category Two

5.0.0. Applicant with Masters from approved list of UET and 18 years of Formal Education. Business Background. (10-14 Courses)

5.1.0. Three Categories of Courses for Direct Entrants

- a. Core Courses (6-7)
- b. Required Courses (1-3) different from Engineering and non Engineering Background
- c. Courses from Major Area (3-5).

5.1.0. Any Six Core Courses (First Five Mandatory for Every One)

- a. **Research Methodology for Technical Managers (PhD Level Course)**
- b. **Industrial Psychology and Sociological Aspects in Technical Org. (PhD Level)**
- c. **Seminar in Technology & Competitiveness (PhD Level)**
- d. **Business and Technical Communication** (may be exempted above 23 years of experience).
- e. **Productivity Engineering and Management /Quality Improvement in Technical Concerns.**
- f. **Technology, Governance & Globalization. (PhD Level)**
- g. **Technology, International Trade and Economic Development (PhD Level)**
- h. **Quantitative and Qualitative Method (PhD Level Course)**
- i. **Engineering Project Management/Independent Research/ Cost Benefit Analysis**

6.1.0. Required Courses for Non-Engineering/Non-Technical Background. (1-3 out of Four)

- a. Management of Technology
- b. Transfer of Technology
- c. Supply Chain Management
- d. Technology and Entrepreneurship/Managing Technological Innovation

7.1.0. Four to Six Courses From Respective Areas of Specialization.

If someone has already done most of courses in his/her previous Masters program, yet minimum of 10 courses required to be taken. No exceptions.

Course from Own Major

1. Do.
2. Do.
3. Do.
4. Do.
5. Do.



Course Work Requirement/Guideline For PhD in Engineering Management

Category Three

8.0.0 MEM Graduates (10 –14 Courses).

- 1) Core Courses 6-7
- 2) Required Courses from Major: 4-6

8.1.0. Core Courses (First Six are mandatory)

- a. **Research Methodology for Technical Managers**
- b. **Industrial Psychology and Sociological Aspects in Technical Org.**
- c. **Seminar in Technology & Competitiveness.**
- d. **Technology, Governance & Globalization.**
- e. **Technology, International Trade and Economic Development**
- f. **Business and Technical Communication (may be exempted above 23 years of experience).**
- g. **Quantitative and Qualitative Method/Industrial and Development Economics.**
- h. **Productivity Engineering and Management /Independent Research./Cost Benefit Analysis.**

8.2.0. Four - Six Courses From Major/Elective leading to Research

1. **One Course from Own Major**
2. **Do.**
3. **Do.**
4. **Do.**
5. **Do.**
6. **Do.**



9.0.0. Eligibility Criteria of PhD Engineering Management

- M.Sc. Engineering Management
 - MBA with minimum five years of experience and 18 years of formal education
 - M.Sc./MS in any engineering discipline with minimum of 10 year of professional experience
 - M.Sc. (Mathematics/Physics/Chemistry/Statistics/Computer Sciences), M.Com, MA (Economics, Pharmacy), MPA, Chartered Accountants, ACMA with 18 years of formal education in total and 8 years technical/engineering management experience
 - A minimum GPA of 2.75/4.00 in Bachelor's degree and 3.00/4.00 in M.Sc. is required
- Preference should be given according to the following eligibility parameters:
 - i) Students with MEM degree.
 - ii) 18 years of formal education with Masters in Engineering Discipline.
 - iii) 18 years of formal education with Bachelors in Engineering Discipline and Masters in Management/Administration.

10.0.0. Explanatory Notes

10.1.0. Note One:

HEC and MEM scholars are encouraged to choose major at their early stage and must do maximum courses from their own /selected majors at masters level, this will help them at their course work stage. They may take maximum of four courses from their major at MEM stage.

10.2.0. Note Two:

Minimum Courses after MEM from CASE in order for them to appear in DQE is **Ten Graduate Level Courses from Approved Research Plan.**

10.3.0. Note Three:

“Business Communication for Technical Managers” Course Mandatory for CASE MEM Graduate.

A **“Test of English for Technical Analysis” - (TETA)** to be conducted by CASE, Twice a year. Passing of TETA is Mandatory before appearing in **Doctoral Qualifying Examination (DQE).**

10.4.0. Note Four:

After providing relevant proof by any student, Engineering Management, Department, CASE, may exempt highly qualified and experienced professionals, who already had done some similar courses from elsewhere or has vast & extensive relevant experience but in any case, HEC /UET basic academic requirements will always be considered.

10.5.0. Note Five:

Engineering Management Dept, CASE may require any student to take more courses, as deem appropriate in a specific area to overcome his/her deficiency.

10.6.0. Note Six:

No PhD scholar can **appear in DQE unless** he/she has done his all assigned courses with minimum CGPA requirement and has passed TETA. Application for sitting in DQE is to be submitted eight weeks prior the start of DQE exam. It is student's responsibility to pass the TETA exam and fulfill all related requirements including GPA before he/she applies for DQE.



10.6.1. Note Seven:

DQE is conducted Twice a Year (Summer and Fall).

10.7.0. Note Eight:

10.7.1. Registration Policy during PhD in various phases.

All students, who have passed DQE and are in “**Proposal Defense Phase**” must register minimum of 03 credit hours in each semester to save cancellation of program. Any student who, does not register any course nor take semester off is liable to be removed.

10.8.0. Note Nine:

Special Dossiers are being maintained for every PhD scholar where his/her achievements, publications, personal conduct with professors, attitude towards staff and colleagues, level of response to CASE policies/ instructions, record of moral values and teaching experience, adherence to societal obligations, special research aptitude will be recorded periodically.

Any student, who does not provide complete academic documents, do not make course plan or do not cooperate with CASE registration office/Coordinator may be fined, warned or could be expelled from the PhD Program due to “**Lack of Response**” or violating CASE/UET/HEC, PhD Rules and Policies.

10.9.0. Note Ten:

Chairman, Engineering Management in consultation and /or approval of President may review cases of seasoned professionals and senior academician and researchers etc. In this regard, any student with 21 yrs plus Management Experience of Technical Organization, and with a strong academic/research background, may be required to take a minimum of 09 graduate level Courses in his/her course work stage. MEM Graduate from CASE with 23 yrs plus Management experience of Technical Organization, and with a strong academic back ground, this requirement could further be relaxed upto 08 subjects).

In case of 28 years plus pure management exposure to top National level or International environment /or MS plus teaching /research experience/ from abroad, this may be further reduced to SEVEN Graduate Level Courses only, while with 30 years experience this may further relaxed up to SIX Graduate level courses. In that case, student needs to prove his /her extra ordinary credentials/ standing both at educational & management level. But in any case, any change must conform to minimum HEC Requirements for PhD.

10.10.0. Note Eleven:

CASE expects that all PhD Students posses strong written and communication skills. CASE is not responsible in any way for any one’ failure to qualify in TETA due to poor written communication skills. For PhD students at EM Dept, CASE is offering some addition courses like “Business and Technical Communication” etc. We encourage students to register these courses to enhance their writing skills even from other places.

10.11.0. Note Twelve:

Students are encouraged to develop habit of spending time in libraries and on the net and discuss topics with respective Supervisors. HEC Scholars doing MEM must realize that unless they prove themselves that they prove themselves that they are PhD Material, their Admission in PhD will remain doubtful.

10.12.0. Note Thirteen:

Special Residency Requirements in Islamabad Area is a must up to six month including one complete semester stay for all PhD Students (Having Distance Learning Option). During such stay, they are required to regularly visit



to CASE Campus, counsel with relevant professors, involved in academic activities like Library Consulting, Research Paper Writing, attending Technical Conferences etc.

10.13.0. Note Fourteen:

These PhD guidelines provide general direction for course work etc. CASE may evaluate any student with exception and keeping in view his/her extra qualification and experiences reconsider/readjust his/her course load plan in the light of general spirit of guidelines.