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| Engineering Project Management | | | |
| Course Code: | OTM 455 | **Semester:** | 7th |
| Credit Hours: | 2+0 | **Prerequisite Codes:** | Nil |
| Instructor: | Waseem Ahmad | **Class:** | BEE-12 C/D |
| Office: | Appointments by email | **Telephone:** | 03315076187 |
| Lecture Days: | Monday & Thursday | **E-mail:** | waniit2003@yahoo.com |
| Class Room: | Cr,s: 7 & 11 | **Consulting Hours:** | Mon (1100-1200) |
| Knowledge Group: | Humanities & Sciences | **Updates on LMS:** | After every lecture |

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| Course Description: | |
|  | The course introduces students to technical management and engineering concepts and principles. Course covers principles and applications to effectively manage technical projects, people, budgets and schedules, organizing and motivating people, and controlling activities, managing research, development, design, and production activities, directing projects, improving quality, and engineering ethics. |

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| Course Learning Outcomes (CLOs): | |  |  |
| At the end of the course the students will be able to: | | **PLO** | **BT Level\*** |
| 1. | Understand the concepts of Engineering Project management. | 1 | C-2 |
| 2. | Analyze different phases of project management including monitoring, controlling, designing, and planning. | 2 | C-4 |
| 3. | Calculate project costs for different Engineering projects by applying the concepts and techniques of project management. | 11 | C-3 |
| 4. | Design and plan projects by using project management approach. | 12 | C-5 |
|  | \* BT= Bloom’s Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain |  |  |

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| Program Learning Objects: | |
| Mapping of CLOs to Program Learning Outcomes   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **PLOs/CLOs** | **CLO1** | **CLO2** | **CO3** | **CLO4** | | PLO 1 (Engineering Knowledge) | √ |  |  |  | | PLO 2 (Problem Analysis) |  | √ |  |  | | PLO 3 (Design/Development of Solutions) |  |  |  |  | | PLO 4 (Investigation) |  |  |  |  | | PLO 5 (Modern tool usage) |  |  |  |  | | PLO 6 (The Engineer and Society) |  |  |  |  | | PLO 7 (Environment and Sustainability) |  |  |  |  | | PLO 8 (Ethics) |  |  |  |  | | PLO 9 (Individual and Team Work) |  |  |  |  | | PLO 10 (Communication) |  |  |  |  | | PLO 11 (Project Management) |  |  | √ |  | | PLO 12 (Lifelong Learning) |  |  |  | √ |  |  | | --- | | Mapping of CLOs to Assessment Modules and Weightages (In accordance with NUST statutes) | | To be filled in at the end of the course.   |  |  | | --- | --- | | **Assessments/CLOs** |  | | Quizzes: 10% |  | | Assignments: 10% |  | | OHT: 0% |  | | Mid Term Exam: 30% |  | | End Semester Exam:50% |  | | Total: 100 % |  | | | . |

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| Books: | | |
| Text Book: | Project Management – Achieving Competitive Advantage 3rd /5th Edition – Jeffrey K Pinto | |
| Reference | * Effective Project Management- Traditional Adaptive Extreme 3rd edition – Robert K Wysocki * [Jack R. Meredith](https://www.google.com/search?sa=X&rlz=1C1EJFC_enKR903KR910&hl=en&biw=1536&bih=722&sxsrf=ALeKk021nNTZs0KF5Pnoqs5jAiTCeVAgUg:1602141226601&q=Jack+R.+Meredith&stick=H4sIAAAAAAAAAOPgE-LVT9c3NEypKEwqK64oU-LSz9U3MC3LLY8v05LJTrbST8rPz9YvL8osKUnNiy_PL8q2SiwtycgvWsQq4JWYnK0QpKfgm1qUmpJZkrGDlREAzIkJ9VEAAAA&ved=2ahUKEwiA38OVuaTsAhUD-hQKHYcwBM4QmxMoATAPegQIDBAD), Project Management: A Managerial Approach 9th Edition, Samuel J Mantel Jr, Scott M Shafer. * Project Management: The Managerial Process 6th Edition, [Clifford F Gray, Erik W Larson, Gautam V Desai](https://www.google.com.pk/search?tbo=p&tbm=bks&q=inauthor:%22Harold+R.+Kerzner%22), | |
| Main Topics to be Covered: | | |
| The course spans over a number of different topics as under: | | |
| * Introduction to Engineering Management   + - Project, project management and history     - Traits of project management     - Project life cycle     - Project scope, scheduling and budget     - Knowledge areas of project management     - Project work breakdown structure (WBS)     - Project schedule management     - Gantt, CPM, PERT     - Critical Path Analysis (CPA)     - Project cost management | | * + - Cost crashing     - Project resource & team management     - Project quality management     - Project risks management     - Project stakeholder management     - Project procurement management     - Project closing |

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| Lecture Breakdown: | | | | |
|  | **Lecture1**  **Lecture2** | Intro to Project Management (part 1)  Intro to Project management (part 2) |  |  |
|  | **Lecture3**  **Lecture4** | Project life cycle  Project Selection and Portfolio Management |  |  |
|  | **Lecture5**  **Lecture6** | Knowledge areas of Project management  Project Scope Management |  |  |
|  | **Lecture7**  **Lecture8** | Work Breakdown Structure  Introduction to Project scheduling |  |  |
|  | **Lecture9**  **Lecture10** | Project schedule Management - CPM  Project Schedule Management - CPA |  |  |
|  | **Lecture11**  **Lecture12** | Project Schedule Management - PERT  Project Schedule Management - PERT |  | |
|  | **Lecture13**  **Lecture14** | Project Cost Estimation and Budgeting  Project Cost Estimation and Budgeting  part2 |  |  |
|  | **Week 8** | **Mid Term Exam** |  |  |
|  | **Lecture15**  **Lecture16** | Project Quality Management part1  Project Quality Management part2 |  |  |
|  | **Lecture17**  **Lecture18** | Teams & resource Management  Project management skills |  |  |
|  | **Lecture19**  **Lecture20** | Issues in Human Resource Management  Resolution of issues in HRM |  |  |
|  | **Lecture21**  **Lecture22** | Project Risk management  Project crashing |  |  |
|  | **Lecture23**  **Lecture24** | Project Stakeholder Management  Project Procurement Management |  |  |
|  | **Lecture25**  **Lecture26** | Project Integration Management  Project Closing |  |  |
|  | **Lecture27**  **Lecture28** | Leadership & Entrepreneurship  Business Strategy |  |  |
|  | **Week 16:** | **Final Exam** | | |

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| Grading Policy: | |
| Quiz Policy: | The quizzes will be unannounced and normally last for ten minutes. The question framed is to test the concepts involved in last few lectures. Number of quizzes that will be used for evaluation is at the instructor’s discretion. |
| Assignment Policy: | In order to develop comprehensive understanding of the subject, assignments will be given. Late assignments will not be accepted / graded. All assignments will count towards the total (No ‘best-of’ policy). The students are advised to do the assignment themselves. Copying of assignments is highly discouraged and violations will be dealt with severely by referring any occurrences to the disciplinary committee. The questions in the assignment are meant to be challenging to give students confidence and extensive knowledge about the subject matter and enable them to prepare for the exams. |
| Plagiarism: | SEECS maintains a zero-tolerance policy towards plagiarism. While collaboration in this course is highly encouraged, you must ensure that you do not claim other people’s work/ ideas as your own. Plagiarism occurs when the words, ideas, assertions, theories, figures, images, programming codes of others are presented as your own work. You must cite and acknowledge all sources of information in your assignments. Failing to comply with the SEECS plagiarism policy will lead to strict penalties including zero marks in assignments and referral to the academic coordination office for disciplinary action. |

**PLO Description**

(i) **Engineering Knowledge:** An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

(ii) **Problem Analysis:** An ability to identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

(iii) **Design/Development of Solutions:** An ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

(iv) **Investigation:** An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.

(v) **Modern Tool Usage:** An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering activities, with an understanding of the limitations.

(vi) **The Engineer and Society:** An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.

(vii) **Environment and Sustainability:** An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.

(viii) **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

(ix) **Individual and Team Work:** An ability to work effectively, as an individual or in a team, on multifaceted and /or multidisciplinary settings.

(x) **Communication:** An ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

(xi) **Project Management:** An ability to demonstrate management skills and apply engineering principles to one’s own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.

(xii) **Lifelong Learning:** An ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments.