

Procurement Management

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| Course Code CEM-300 | Credit Hours 3-0 |
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Course Description

This course revolves around the concept, mechanism, operationalization and management of procurement. It shall enable the UG engineering students to understand the technical, ethical, legal, financial and sustainability concerns of procurement and its management. The course shall educate the students in the areas of procurement processes, policies and regimes, and their contractual and legal infrastructures, strategic and operational considerations, and technical and financial matters

Text Book:

Reference Book:

1. Lysons, K., & Farrington, B. (2016). Procurement and Supply Chain Management (9th Edition). Pearson Higher Ed.
2. Barry Crocker, D., Jessop, David Farmer, David J. V. Jones, & Peter J. H. Baily (2015). Procurement, Principles & Management (11th Edition). Pearson.
1. Sollish, F., & Semanik, J. (2012). The procurement and Supply manager's Desk Reference, 2nd Edition. John Wiley & Sons.
2. Dominick, C., & Lunney, S. R. (2012). The Procurement Game Plan: Winning Strategies and Techniques for Supply Management Professionals. J. Ross Publishing.
3. PPRA Rules (2004, 2011), Regulations (2010, 2011) and Guidelines (2009).

Prerequisites :

Nil.

ASSESSMENT SYSTEM FOR THEORY

| | Without Project (%) | With Project/Complex Engineering Problems (%) |
|-------------|----------------------------|--|
| Quizzes | 15 | 10-15 |
| Assignments | 10 | 5-10 |
| Mid Terms | 25 | 25 |

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|-------------------|----|-------|
| Project | - | 5-10 |
| End Semester Exam | 50 | 45-50 |

ASSESSMENT SYSTEM FOR LAB

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| Lab Work/ Psychomotor Assessment/ Lab Reports | 70% |
| Lab Project/ Open Ended Lab Report/ Assignment/ Quiz | 10% |
| Final Assesment/ Viva | 20% |

Teaching Plan

| Week No | Topics/Learning Outcomes |
|----------------|---|
| 1 | Introduction to procurement and its life cycle |
| 2 | Supply chain and the role of procurement |
| 3 | Procurement management process |
| 4 | National Public Procurement Regulatory Authorities (PPRAs), requirements, rules and procedures, and procurement commissions |
| 5 | International procurement arrangements and guidelines |
| 6 | Procurement planning and budgeting |
| 7 | Tendering and bidding process |
| 8 | Contract management and administration |
| 9 | Grievance/dispute resolution |
| 10 | Administrative reviews and audits |
| 11 | Procurement ethics and sustainability |
| 12 | Latest trends in procurement and use of technologies |
| 13 | Local and international case studies |

Practical: Nil.

Artificial Intelligence in The Built Environment

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|------------------------------|----------------------------|
| Course Code CE-451 | Credit Hours 3-0 |
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Course Description

This course will introduce students to fundamental concepts of coding, computing, machine learning, and artificial intelligence, thus providing them with modern research tools necessary to develop state-of-the-art industrial and academic output

Text Book:

1. S. Russell and P. Norvig, Artificial Intelligence: A Modern Approach, Prentice Hall, 2nd Edition
2. The History of Artificial Intelligence Author Chris Smith, Brian McGuire, Ting Huang,
3. Tarabishy, S., Kosicki, M., & Tsigkari, M. (2021). Artificial Intelligence for the Built Environment. Springer International Publishing.

Reference Book:

Prerequisites :

Nil.

ASSESSMENT SYSTEM FOR THEORY

| | Without Project (%) | With Project/Complex Engineering Problems (%) |
|-------------------|---------------------|---|
| Quizzes | 15 | 10-15 |
| Assignments | 10 | 5-10 |
| Mid Terms | 25 | 25 |
| Project | - | 5-10 |
| End Semester Exam | 50 | 45-50 |

ASSESSMENT SYSTEM FOR LAB

| | |
|--|-----|
| Lab Work/ Psychomotor Assessment/ Lab Reports | 70% |
| Lab Project/ Open Ended Lab Report/ Assignment/ Quiz | 10% |
| Final Assesment/ Viva | 20% |

Teaching Plan

| Week No | Topics/Learning Outcomes |
|---------|---|
| 1 | Introduction to AI and Machine Learning Overview of AI techniques AI-based applications in Building Information Modeling Overview of AI in built environment |
| 2 | PEAS Concept, Inputs, Outputs, Processes, |

| | |
|----|--|
| | AI agents, Agent function and agent program, Agent and Environment Types |
| 3 | Exploration of Datasets and their Analysis Data collection and analysis techniques, Data-driven decision-making algorithms |
| 4 | Frequent pattern Mining, Search algorithms, Initial and goal states |
| 5 | Supervised vs Unsupervised Machine Learning Techniques Exploration of Supervised Learning Techniques |
| 6 | Regression Analysis Linear regression Logistic Regression |
| 7 | Clustering, Bayes Classification, KNN Classification |
| 8 | Basics of Python Programming Introduction to Anaconda IDE |
| 9 | MSE |
| 10 | Overview of Artificial neural network (ANN) models, Usage of ANNs in different applications |
| 11 | Building Information Modelling Modelling in Revit |
| 12 | Modelling in Revit (Contd.) Basics of Python Programming in BIM |
| 13 | Weka's exploration and its usage |
| 14 | Case Studies Intelligent transportation system Soil Mechanics |
| 15 | Case Studies Intelligent scheduling, resource allocation, and risk management |
| 16 | Case Studies Use of AI in Structural Design Open AI construction |
| 17 | Project/ Major Assignment Demos and Vivas |
| 18 | ESE |

Practical: Nil