**E.G.S. PILLAY ENGINEERING COLLEGE, NAGAPATTINAM.**

**DEPARTMENT OF CIVIL ENGINEERING**

**COURSE PLAN**

**COURSE CODE : CE6704 COURSE NAME : ESTIMATION AND QUANTITY SURVEYING**

**SEMESTER : VII SEM.CIVIL “A” & “B” ACADEMIC YEAR : 2016-2017**

**COURSE DURATION : JULY – NOVEMBER 2016 CLASS ROOM : PG 301 & 207**

**FACULTY DETAILS : Mr. S.SANTHOSHKUMAR, Asst. Prof/ Civil Engineering**

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| **PURPOSE** | To impart Knowledge about Estimation and Quantity Surveying |
| **PREREQUISITE** | Construction Planning and Scheduling |
| **INSTRUCTIONAL OBJECTIVES** | 1. To evaluate the various aspects of estimating of quantities of items of works involved in buildings and other structures. 2. To analyze the rates of work, documentation of tender & contract and valuation of properties of the various works. 3. To understand the preparation of reports for assessment of various works. |
| **COURSE OUTCOME** | After completion of this course, students can able to   1. Identify the quantity and rates of work involved in building. –K3 2. Identify the quantity and rates of work involved in other miscellaneous structure. –K3 3. Interpret the quantities required for the given specification. –K2 4. Explain the various the types of contract documents and tender. – K2 5. Identify the value of the building. –K3 6. Summarize a report on the quantity of works involved in roadways, water supply and sanitary installation. - K2 |

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| Course designed by | | | Anna University, Chennai (R 2013) | | | | | |
| 1 | Category | GENERAL  (G) | | | BASIC SCIENCES  (B) | | ENGINEERING SCIENCES  AND TECHNICAL ART  (E) | **PROFESSIONAL**  **SUBJECTS**  **(P)** |
|  | | |  | |  | **x** |
| 2 | Broad area | THEORY | | | | PLANNING & DESIGN | ESTIMATION | GENERAL |
|  | |  | | | X |  |
| 3 | Course co-coordinator | | | | | | Mr.S.SANTHOSHKUMAR | |

**Direct assessment details**

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| **Name of assessment** | **Internal Marks** | **Topics** | **Duration** |
| Unit Test | 20 | Unit I | 2periods |
| Daily Test 1 | Unit II | 1 period |
| Daily Test 2 | Unit III | 1 period |
| Daily Test 3 | Unit IV | 1 period |
| Cycle Test -1 | II & III Units | 3 Hrs |
| Cycle Test -2 | IV & V Units | 3Hrs |
| Model Exam | Entire Syllabus | 3 Hrs |
| Assignments |  | Entire Syllabus |  |
| Innovative Assignment | Content Beyond Syllabus |  |
|  |  |  |  |
| Total | 20 |  |  |

**DETAILED LESSON PLAN**

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| **UNIT I : ESTIMATE OF BUILDINGS**   |  |  |  | | --- | --- | --- | | **LECTURE** | **TUTORIAL** | **PRACTICAL** | | **11 Hrs.** | **0Hr** | **0 Hr** |   **Load bearing and framed structures – Calculation of quantities of brick work, RCC, PCC, Plastering, white washing, colour washing and painting / varnishing for shops, rooms, residential building with flat and pitched roof – Various types of arches – Calculation of brick work and RCC works in arches – Estimate of joineries for panelled and glazed doors, windows, ventilators, handrails etc.** | | | | | | | |
| **Session No** | **Topics to be covered** | **Instruction Delivery** | | | **Testing Method** | **Instructional objective** | **Course Outcome** |
| **Method** | **Teaching Aids** | **Level** |
| **1** | Load bearing and framed structures | Lecture with discussion | Videos | APPLY | Tests, Assignments | To evaluate the various aspects of estimating of quantities of items of works involved in buildings and other structures. | CO1: Upon completion of this course, the student will be able to Identify the quantity and rates of work involved in building. –K3 |
| **2** | Calculation of quantities of brick work |
| **3** | Calculation of quantities of RCC, PCC |
| **4** | Calculation of quantities of Plastering, white washing, colour washing |
| **5** | Calculation of quantities of painting, varnishing for shops, residential building with flat roof |
| **6** | Calculation of quantities of pitched roof |
| **7** | Calculation of quantities of Various types of arches |
| **8** | Calculation of brick work and RCC works in arches |
| **9** | Estimate of joineries for panelled and glazed doors, windows, ventilators, handrails etc. |
| **10** | Problems |
| **11** | Load bearing and framed structures |
| **CUMULATIVE HOURS = LECTURE - 11, TUTORIAL – 0** | | | | | | | |

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| **UNIT II : ESTIMATE OF OTHER STRUCTURES**   |  |  |  | | --- | --- | --- | | **LECTURE** | **TUTORIAL** | **PRACTICAL** | | **10 Hrs.** | **0 Hr.** | **0 Hr.** |   Estimating of septic tank, soak pit – sanitary and water supply installations – water supply pipe line – sewer line – tube well – open well – estimate of bituminous and cement concrete roads – estimate of retaining walls – culverts – estimating of irrigation works – aqueduct, syphon, fall. | | | | | | | |
| **Session No** | **Topics to be covered** | **Instruction Delivery** | | | **Testing Method** | **Instructional objective** | **Course Outcome** |
| **Method** | **Teaching Aids** | **Level** |
| **1** | Estimating of septic tank | Lecture with discussion | PPT & Videos | APPLY | Tests,  Assignments | To evaluate the various aspects of estimating of quantities of items of works involved in buildings and other structures. | CO2: Upon completion of this course, the student will be able to Identify the quantity and rates of work involved in other miscellaneous structure. –K3 |
| **2** | Estimating of soak pit |
| **3** | Estimating of sanitary and water supply installations |
| **4** | Estimating of water supply pipe line, sewer line |
| **5** | Estimating of tube well |
| **6** | Estimating of open well |
| **7** | Estimate of bituminous roads |
| **8** | Estimate of cement concrete roads |
| 9 | Estimate of retaining walls, culverts |
| 10 | Estimating of irrigation works aqueduct, syphon and fall. |
| **CUMULATIVE HOURS = LECTURE - 21, TUTORIAL – 0** | | | | | | | |

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| **UNIT III: SPECIFICATION AND TENDERS**   |  |  |  | | --- | --- | --- | | **LECTURE** | **TUTORIAL** | **PRACTICAL** | | **8 Hrs.** | **0 Hr.** | **0 Hr.** |   **Data – Schedule of rates – Analysis of rates – Specifications – sources – Preparation of detailed and general specifications – Tenders – TTT Act – e-tender – Preparation of Tender Notice and Document – Contracts – Types of contracts – Drafting of contract documents – Arbitration and legal requirements.** | | | | | | | |
| **Session No** | **Topics to be covered** | **Instruction Delivery** | | | **Testing Method** | **Instructional objective** | **Course Outcome** |
| **Method** | **Teaching Aids** | **Level** |
| **1** | Data – Schedule of rates – Analysis of rates | Lecture with discussion | Videos | Apply  &  Understand | Tests,  Assignments | To analyze the rates of work, documentation of tender & contract and valuation of properties of the various works. | CO3: Upon completion of this course, the student will be able to Choose the quantities required for the given specification. –**K3**  CO4: Upon completion of this course, the student will be able to Explain the various the types of estimate, tender and contract documents. – **K2** |
| **2** | Specifications – sources |
| **3** | Specification problems |
| **4** | Preparation of detailed and general specifications |
| **5** | Tenders – TTT Act – e-tender |
| **6** | – Preparation of Tender Notice and Document |
| **7** | Contracts – Types of contracts |
| 8 | Drafting of contract documents – Arbitration and legal requirements. |
| **CUMULATIVE HOURS = LECTURE - 29, TUTORIAL – 0** | | | | | | | |

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| **UNIT IV:** **VALUATION**   |  |  |  | | --- | --- | --- | | **LECTURE** | **TUTORIAL** | **PRACTICAL** | | **08 Hrs.** | **0 Hr.** | **0 Hr.** |   Necessity – Basics of value engineering – Capitalised value – Depreciation – Escalation – Value of building – Calculation of Standard rent – Mortgage – Lease | | | | | | | |
| **Session No** | **Topics to be covered** | **Instruction Delivery** | | | **Testing Method** | **Instructional objective** | **Course Outcome** |
| **Method** | **Teaching Aids** | **Level** |
| **1** | Necessity, Basics of value engineering | Lecture with discussion | Videos | Analysis | Tests,  Assignments | To analyze the rates of work, documentation of tender & contract and valuation of properties of the various works. | CO5: Upon completion of this course, the student will be able to identify the value of the building. –K3 |
| **2** | Capitalized value |
| **3** | Depreciation |
| 4 | Escalation |
| 5 | Value of building |
| **6** | Calculation of Standard rent |
| **7** | Mortgage |
| 8 | Lease |
| **CUMULATIVE HOURS = LECTURE - 37, TUTORIAL – 0** | | | | | | | |

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| **UNIT V: REPORT PREPARATION**   |  |  |  | | --- | --- | --- | | **LECTURE** | **TUTORIAL** | **PRACTICAL** | | **8 Hrs.** | **0 Hr.** | **0 Hr.** |   Principles for report preparation – report on estimate of residential building – Culvert – Roads – Water supply and sanitary installations – Tube wells – Open wells. | | | | | | | |
| **Session No** | **Topics to be covered** | **Instruction Delivery** | | | **Testing Method** | **Instructional objective** | **Course Outcome** |
| **Method** | **Teaching Aids** | **Level** |
| **1** | Principles for report preparation | Lecture with discussion | Videos | Understand | Tests,  Assignments | To understand the preparation of reports for assessment of various work | CO6: Upon completion of this course, the student will be able to Summarize a report on the quantity of works involved in roadways, water supply and sanitary installation. - K2 |
| **2** | Report on estimate of residential building |
| **3** | Report on estimate of Culvert |
| 4 | Report on estimate of Roads |
| **5** | Report on estimate of Water supply and sanitary installations |
| **6** | Report on estimate of Tube wells |
| 7 | Report on estimate of Open wells. |
| 8 | Principles for report preparation |
| **CUMULATIVE HOURS = LECTURE - 45, TUTORIAL – 0** | | | | | | | |

**Text / Reference Books**

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| **Sl. No.** | **Title of the Book** | **Author(s)** | **Publisher** |
| **TEXT BOOKS** | | | |
| T1 | Estimating and Costing in Civil Engineering | Dutta, B.N. | UBS Publishers & Distributors Pvt. Ltd., 2003 |
| T2 | A Text Book of Estimating and Costing | Kohli, D.D and Kohli, R.C | S.Chand & Company Ltd., 2004 |
| **REFERENCES** | | | |
| R1 | PWD Data Book. |  |  |
| R2 | Tamilnadu Transparencies in Tender Act, 1998 |  |  |
| R3 | Arbitration and Conciliation Act, 1996 |  |  |
| R4 | Standard Bid Evaluation Form, Procurement of Goods or Works |  | The World Bank, April  1996. |
| **REFERENCE WEBSITES** | | | |
| 1 | [www.wikipedia.com](http://www.wikipedia.com) | | |
| 2 | [www.NPTEL.com](http://www.NPTEL.com) | | |

**GAP ANALYSIS:**

To satisfy the

Course Outcome number 1 (Identify the quantity of work involved in building and other miscellaneous structure. –K3)

&

Course Outcome number 2 (Choose the quantities required for the given specification. –K3),

Content beyond syllabi to be exposed to the student through the field visit.

**CONTENT BEYOND SYLLUBI:**

Estimator 2.0 software in construction projects

**COURSE INCHARGE**

**Programme Name: B.E. Civil Engineering**

**Programme Educational Objectives (PEOs):**

PEO1: Graduates will actively engage in problem solving using engineering principles to address the evolving needs of the society.

PEO2: Graduates will have successful career in civil engineering practice and research activities.

PEO3: Graduates will serve the society with professional ethics and integrity.

**Programme Outcomes (POs): Graduates will be able to**

(PO1) Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

(PO2) Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

(PO3) Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

(PO4) Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

(PO5) Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

(PO6) Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

(PO7) Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

(PO8) Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

(PO9) Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

(PO10) Communicate effectively 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.

(PO11) Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

(PO12) Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

**Programme Specific Outcomes (PSOs): Graduates will able to**

1. Graduates will be able to apply appropriate methodology for geotechnical, structural design and analysis, material selection, planning, scheduling estimation and costing, using modern tool in construction field.

2. Graduates will be able to service to the development of public health and environmental safety of the society with ethical values.

3. Graduates will be able to pursue lifelong learning and professional development to face challenging and emerging needs of the society.

**Mapping Table: COs of CE6704: Estimation and Quantity surveying Vs POs & PSOs**

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| Course Outcomes (COs) |  | Program Outcomes (POs) | | | | | | | | | | | |
| PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO LEVEL | K3 | K4 | K5 | K5 |  |  |  |  |  |  |  |  |
| CO1 | K3 | **3** | **2** | **1** | **-** | **1** |  |  |  |  |  | 3 |  |
| CO2 | K3 | **3** | **2** | **1** | **-** | 1 |  |  |  |  |  | 3 |  |
| CO3 | K2 | **2** | **1** | **-** | **-** | - |  |  |  |  |  | 3 |  |
| CO4 | K2 | **2** | 1 | - | - | - |  |  |  |  |  | 3 |  |
| CO5 | K3 | **3** | 2 | 1 | - | - |  |  |  |  |  | 3 |  |
| CO6 | K2 | **2** | 1 | - | - | - |  |  |  |  |  | 3 |  |

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| Course Outcomes (COs) |  | PSO1 | PSO2 | PSO3 |
| CO LEVEL | K3 | K4 | K4 |
| CO1 | K3 | 3 | - | - |
| CO2 | K3 | 3 | - | - |
| CO3 | K2 | 3 | - | - |
| CO4 | K2 | 2 | - | - |
| CO5 | K3 | 3 | - | - |
| CO6 | K2 | 2 | - | - |

**Note: Adequate Support by the COs to Pos and PSOs: 3- High 2- Medium 1- Low**