ROYAL GLOBAL UNIVERSITY
GUWAHATI

# (ROYAL SCHOOL OF ARCHITECTURE)
# (RSA)

SYLLABUS & COURSE STRUCTURE 2025

## BACHELOR IN ARHITECTURE (B.ARCH)

**Table of Contents –**

| **COURSE STRUCTURE OF B.Arch** | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Semester | CORE COURSE (33) | credit | Ability Enhancement Compulsory course(AECC) (9) | credit | Ability Enhancement Elective Course (AEEC) (2) (Skill Based) | credit | Elective: Discipline Specific DSE-4 | credit | Minor Compulsory Courses (9) | Credit | Elective: Generic (GE) (8) | Credits | No of papers each semester | Total credits |
| **I** | Core1 **Architectural Design I** | **5** | **Communicative English – I** | **1** | | | | | **Basic Design & Visual Arts** | **3** | | | **9** | **26** |
| | Core2 **Graphics I** | **4** | **Behavioural Science-I *** | **1** | | | | | **Theory of Structures I & Mathematical tools** | **3** | | | | |
| | Core3 **Building Construction & Material I** | **5** | | | | | | | | | | | | |
| | Core4 **Architecture & Culture** | **2** | | | | | | | | | | | | |
| | Core5 **Workshop** | **4** | | | | | | | | | | | | |
| **II** | Core6 **Architectural Design II** | **8** | **Communicative English – II** | **1** | | | | | **Theory Of Structure II** | **3** | | | **9** | **28** |
| | Core7 **Graphics II** | **5** | **Behavioural Science-II** | **1** | | | | | **Surveying and Levelling** | **3** | | | | |
| | Core8 **Building Construction & Material II** | **4** | | | | | | | **Model Making** | **1** | | | | |
| | Core9 **History of Architecture I** | **2** | | | | | | | | | | | | |
| **III** | Core10 **Architectural Design III** | **8** | **Communicative English – III** | **1** | **AEEC/ SEC/-1*** | **2** | | | | | | | **9** | **26** |
| | Core11 **Building Construction & Material III** | **4** | **Environmental Science** | **2** | | | | | **Theory of Structure III** | **2** | | | | |
| | Core12 **Climate Responsive Architecture** | **2** | | | | | | | | | | | | |
| | Core13 **History of Architecture II** | **2** | | | | | | | | | | | | |
| | Core 14 **Building Services I** | **3** | | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **IV** | Core15 **Architectural Design IV** | **8** | **Communicative English -IV** | **1** | **AEEC/ SEC/-2*** | **2** | **DSE 1** | **3** | **Theory of Structure IV** | **3** | | | **8** | **26** |
| | Core16 **Building Construction & Material IV** | **4** | | | | | | | **Building Services II** | **3** | | | | |
| | Core17 **History of Architecture III** | **2** | | | | | | | | | | | | |
| **V** | Core18 **Architectural Design V** | **8** | **Communicative English -V** | **1** | | | **DSE-2** | **2** | | | **GE-1 Theory of Structures V** | **3** | **9** | **28** |
| | Core19 **Building Construction & Material V** | **4** | | | | | | | | | **GE–2 Open** | **3** | | |
| | Core20 **History of Architecture IV** | **2** | | | | | | | | | | | | |
| | Core21 **Building Services III** | **3** | | | | | | | | | | | | |
| | Core22 **Theory of Art and Architecture** | **2** | | | | | | | | | | | | |
| **VI** | Core23 **Architectural Design VI** | **8** | **Communicative English.-VI** | **1** | | | **DSE-3** | **3** | | | **GE-1 Theory of Structures VI** | **3** | **8** | **27** |
| | Core24 **Building Construction & Material VI** | **4** | | | | | | | | | | | | |
| | Core 25 **Working Drawing and BIM** | **3** | | | | | | | | | **GE-2 Open** | **3** | | |
| | Core26 **Building Services IV** | **2** | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| **VII** | Core27 **Architectural Design VII** | **8** | | | | | **DSE-4** | **3** | | | **GE-1 Advanced Construction & Services** | **3** | **8** | **26** |
| | Core28 **Town Planning I** | **3** | | | | | | | | | | | | |
| | Core29 **Urban Design** | **3** | | | | | | | | | **GE- 2 Open** | **3** | | |
| | Core30 **Advanced Structures** | **2** | | | | | | | | | | | | |
| | **Core** 31 **Research Methodology** | **1** | | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VIII** | Core32 **Architectural Design VIII** | **8** | | | | | | | | | **GE-1 Contemporary Architecture** | **3** | **8** | **26** |
| | Core 33 **Pre Thesis** | **2** | | | | | | | | | **GE- 2 Open** | **3** | | |
| | Core 34 **Town Planning II** | **3** | | | | | | | | | | | | |
| | Core 35 **Interior Design** | **3** | | | | | | | | | | | | |
| | Core 36 **Estimation and Costing** | **2** | | | | | | | | | | | | |
| | Core 37 **Construction & Project Management** | **2** | | | | | | | | | | | | |
| **IX** | Core 38 **Professional Training** | **26** | | | | | | | | | | | **1** | **26** |
| **X** | Core39 **Architectural Thesis** | **18** | | | | | | | | | | | **3** | **26** |
| | Core40 **Professional Practice & Constitutional Law** | **4** | | | | | | | | | | | | |
| | Core41 **Universal Design** | **4** | | | | | | | | | | | | |
| | **Extra credits can be earned in the 10th semester by a student (if he/she chooses to) through Mooc/Seminar/Self studies.** | | | | | | | | | | | | | |
| **Total** | | **197** | | **10** | | **4** | | **11** | | **21** | | **24** | **72** | **265** |

**Note: Study Tours to be compulsory part of Architectural Design from 2nd Year - 4th Year.**

| | | | | | | |
|---|---|---|---|---|---|---|
| | AEEC/SEC-1 (in third semester) | AEEC/SEC-2( in fourth semester) | **DSE-1** | | | **DSE-2** |
| | (Choose any one) | (Choose any one) | 1. Landscape Architecture<br>2. Adobe Photoshop<br>3. Photography<br>4. Adobe Illustrator | | | 1**.** Architectural Documentation<br>2. Low income Settlement Studies<br>3. Cultural Studies<br>4. Art in Architecture |
| **1** | Autocad | REVIT/ArchiCad/sketch up | **DSE -3** | | | **DSE 4** |
| **2** | **ILD-1** | **ILD-2** | 1. Green Buildings | | | 1. Disaster Mitigation & Management |
| **3** | **FRENCH-1** | **FRENCH-2** | 2. Sustainable cities & Communities | | | 2. Architectural Journalism |
| **4** | **C++** | **LATEX** | 3. Vernacular Architecture | | | 3. Traffic Awareness |
| | | | 4.Vastu in Architecture | | | 4. Landscape Patterns & Perception – Design Studio |
| **5** | **Any other course offered by other schools of RGU and opted by Student** | **Any other course offered by other schools of RGU and opted by Student** | | | | |

**Name of Course:B.Arch.**

**Programme Structure: 1st Year**

| **Total Credits of the Course: 265 Credits** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **1st semester B.Arch.** | | | | | | | |
| **Sl.No.** | **Subject Code** | **Names of subjects** | **L** | **T** | **P/S** | **C** | **TCP** |
| Core Subjects | | | | | | | |
| **1** | **ARC132C111** | **Architectural Design I** | **1** | **0** | **4**(S) | **5** | **5** |
| **2** | **ARC132C112** | **Graphics I** | **1** | **0** | **3**(S) | **4** | **4** |
| **3** | **ARC132C114** | **Building Construction & Materials I** | **1** | **0** | **4**(S) | **5** | **5** |
| **4** | **ARC132C105** | **Architecture & Culture** | **2** | **0** | **0** | **2** | **2** |
| **5** | **ARC132C117** | **Workshop** | **0** | **0** | **2** | **2** | **4** |
| Ability Enhancement Compulsory Courses (AECC) | | | | | | | |
| **6** | **CEN982A101** | **Communicative English -I** | **1** | **0** | **0** | **1** | **1** |
| **7** | **BHS982A104** | **Behavioral Science I** | **1** | **0** | **0** | **1** | **1** |
| Ability Enhancement Elective Courses (AEEC) | | | | | | | |
| | **NIL** | | | | | | |
| Minor Compulsory Courses (Offered by the Department) | | | | | | | |
| **8** | **ARC132M113** | **Basic Design & Visual Arts** | **2** | **1** | **1** | **4** | **5** |
| **9** | **ARC132M106** | **Theory of Structures I & Mathematical tools** | **3** | **0** | **0** | **3** | **3** |
| Generic Elective | | | | | | | |
| | **NIL** | | | | | | |
| | | | | | | | |
| **TOTAL** | | | | | | **27** | **30** |

| **2nd semester B.Arch.** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Subject Code** | **Names of subjects** | **L** | **T** | **P/S** | **C** | **TCP** |
| Core Subjects | | | | | | | |
| **1** | **ARC132C211** | **Architectural Design II** | **1** | **0** | **7**(S) | **8** | **8** |
| **2** | **ARC132C212** | **Graphics II** | **1** | **0** | **3**(S) | **4** | **4** |
| **3** | **ARC132C213** | **Building Construction & Materials II** | **1** | **0** | **4**(S) | **5** | **5** |
| **4** | **ARC132C204** | **History of Architecture-I** | **2** | **0** | **0** | **2** | **2** |
| Ability Enhancement Compulsory Courses (AECC) | | | | | | | |
| **5** | **CEN982A201** | **Communicative English -II** | **1** | **0** | **0** | **1** | **1** |
| **6** | **BHS982A204** | **Behavioral Science -II** | **1** | **0** | **0** | **1** | **1** |
| Ability Enhancement Elective Courses (AEEC) | | | | | | | |
| | **NIL** | | | | | | |
| Minor Compulsory Courses (Offered by the Department) | | | | | | | |
| **7** | **ARC132M205** | **Theory of Structures- II** | **3** | **0** | **0** | **3** | **3** |
| **8** | **ARC132M206** | **Surveying & Levelling** | **1** | **0** | **1** | **2** | **4** |
| **9** | **ARC132M217** | **Model Making** | **0** | **0** | **1** | **1** | **2** |
| Generic Elective | | | | | | | |
| | **NIL** | | | | | | |
| | | | | | | | |
| **TOTAL** | | | | | | **27** | **30** |

| **3rd Semester B.Arch.** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Subject Code** | **Names of subjects** | **L** | **T** | **P/S** | **C** | **TCP** |
| Core Subjects | | | | | | | |
| **1** | **ARC132C311** | **Architectural Design III** | **1** | **0** | **7**(S) | **8** | **8** |
| **2** | **ARC132C312** | **Building Construction and Material III** | **1** | **0** | **4**(S) | **5** | **5** |
| **3** | **ARC132C303** | **Climate Responsive Architecture** | **2** | **0** | **0** | **2** | **2** |
| **4** | **ARC132C305** | **History of Architecture II** | **2** | **0** | **0** | **2** | **2** |
| **5** | **ARC132C317** | **Building Services I** | **1** | **0** | **2** | **3** | **5** |
| Ability Enhancement Compulsory Courses (AECC) | | | | | | | |
| **6** | **CEN982A301** | **Communicative English -III** | **1** | **0** | **0** | **1** | **1** |
| Ability Enhancement Elective Courses (AEEC) | | | | | | | |
| **8** | **ARC132S318** | **Computer Application I** | **0** | **0** | **2** | **2** | **4** |
| Minor Compulsory Courses (Offered by the Department) | | | | | | | |
| **9** | **ARC132M306** | **Theory of Structures III** | **3** | **0** | **0** | **3** | **3** |
| Generic Elective | | | | | | | |
| | **NIL** | | | | | | |
| **TOTAL** | | | | | | **26** | **30** |

| 4th semester B.Arch. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Subject Code** | **Names of subjects** | **L** | **T** | **P/S** | **C** | **TCP** |
| Core Subjects | | | | | | | |
| **1** | **ARC132C411** | **Architectural Design IV** | **1** | **0** | **7**(S) | **8** | **8** |
| **2** | **ARC132C412** | **Building Construction and Material IV** | **1** | **0** | **3**(S) | **4** | **4** |
| **3** | **ARC132C404** | **History of Architecture III** | **2** | **0** | **0** | **2** | **2** |
| Ability Enhancement Compulsory Courses (AECC) | | | | | | | |
| **4** | **CEN982A401** | **Communicative English -IV** | **1** | **0** | **0** | **1** | **1** |
| Ability Enhancement Elective Courses (AEEC) | | | | | | | |
| **5** | **ARC132S417** | **Computer Application II** | **0** | **0** | **2** | **2** | **4** |
| Department Specific Elective Course (DSE) | | | | | | | |
| **6** | **ARC132D413** | **Landscape Architecture** | **2** | **0** | **1** | **3** | **4** |
| Minor Compulsory Courses (Offered by the Department) | | | | | | | |
| **7** | **ARC132M405** | **Theory of Structures IV** | **3** | **0** | **0** | **3** | **3** |
| **8** | **ARC132M416** | **Building Services II** | **2** | **0** | **1** | **3** | **4** |
| Generic Elective | | | | | | | |
| | **NIL** | | | | | | |
| **TOTAL** | | | | | | **26** | **30** |

| 5th semester B.Arch. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Subject Code** | **Names of subjects** | **L** | **T** | **P/S** | **C** | **TCP** |
| Core Subjects | | | | | | | |
| **1** | **ARC132C511** | **Architectural Design V** | **1** | **0** | **7**(S) | **8** | **8** |
| **2** | **ARC132C512** | **Building Construction and Material V** | **1** | **0** | **3**(S) | **4** | **4** |
| **3** | **ARC132C503** | **History of Architecture IV** | **2** | **0** | **0** | **2** | **2** |
| **4** | **ARC132C514** | **Building Services III** | **3** | **0** | **1** | **4** | **5** |
| **5** | **ARC132C508** | **Theory of Art and Architecture** | **2** | **0** | **0** | **2** | **2** |
| Ability Enhancement Compulsory Courses (AECC) | | | | | | | |
| **5** | **CEN982A501** | **Communicative English -V** | **1** | **0** | **0** | **1** | **1** |
| Ability Enhancement Elective Courses (AEEC) | | | | | | | |
| | | | | | | | |
| Department Specific Elective Course (DSE) | | | | | | | |
| **6** | **ARC132D547** | **DSE II (Architectural Conservation & Documentation)** | **1** | **0** | **2** | **3** | **5** |
| Generic Elective | | | | | | | |
| **7** | **ARC132G505** | **Theory of Structures V-y of Structures V** | **3** | **0** | **0** | **3** | **3** |
| **TOTAL** | | | | | | **28** | **30** |

| 6th semester B.Arch. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Subject Code** | **Names of subjects** | **L** | **T** | **P/S** | **C** | **TCP** |
| Core Subjects ***(Please Add rows, as required)*** | | | | | | | |
| **1** | **ARC132C611** | **Architectural Design VI** | **1** | **0** | **7**(S) | **8** | **8** |
| **2** | **ARC132C612** | **Building Construction and Material -VI** | **1** | **0** | **4**(S) | **5** | **5** |
| **3** | **ARC132C613** | **Working Drawing** | **1** | **1** | **2** | **4** | **6** |
| **4** | **ARC132C616** | **Building Services IV** | **2** | **0** | **0** | **2** | **2** |
| Ability Enhancement Compulsory Courses (AECC) | | | | | | | |
| **6** | **CEN982A601** | **Communicative English -VI** | **1** | **0** | **0** | **1** | **1** |
| Ability Enhancement Elective Courses (AEEC) | | | | | | | |
| | | | | | | | |
| Department Specific Elective Course (DSE) | | | | | | | |
| **7** | **ARC132D617** | **Green Buildings/ Vaastu in Architecture/ Art Appreciation** | **1** | **0** | **2** | **3** | **5** |
| Generic Elective | | | | | | | |
| **8** | **ARC132G604** | **Theory of structures VI (GE – 1)** | **3** | **0** | **0** | **3** | **3** |
| **TOTAL** | | | | | | **26** | **30** |

| 7th semester B.Arch. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Subject Code** | **Names of subjects** | **L** | **T** | **P/S** | **C** | **TCP** |
| Core Subjects | | | | | | | |
| **1** | **ARC132C711** | **Architectural Design VII** | **1** | **0** | **8**(S) | **9** | **9** |
| **2** | **ARC132C702** | **Town Planning** | **3** | **0** | **0** | **3** | **3** |
| **3** | **ARC132C713** | **Urban Design** | **1** | **0** | **1** | **2** | **3** |
| **4** | **ARC132C704** | **Advanced Structures** | **3** | **0** | **0** | **3** | **3** |
| **5** | **ARC132C715** | **Research Methodology** | **2** | **0** | **0** | **2** | **2** |
| Ability Enhancement Compulsory Courses (AECC) | | | | | | | |
| | **NIL** | | | | | | |
| Ability Enhancement Elective Courses (AEEC) | | | | | | | |
| | **NIL** | | | | | | |
| Department Specific Elective Course (DSE) | | | | | | | |
| **6** | **ARC132D716** | **Interior Design** | **1** | **0** | **2** | **3** | **5** |
| **7** | **ARC132D717** | **Traffic Awareness** | **1** | **0** | **2** | **3** | **5** |
| **8** | **ARC132D718** | **Gender Sensitive Design Approach in Architecture** | **1** | **0** | **2** | **3** | **5** |
| **9** | **ARC132D719** | **Universal Design** | **1** | **0** | **2** | **3** | **5** |
| **10** | | | **1** | **0** | **2** | **3** | **5** |
| Generic Elective | | | | | | | |
| **11** | **ARC132G719** | **Advanced Construction & Services** | **1** | **0** | 3(S) | **4** | **5** |
| **TOTAL** | | | | | | **26** | **30** |

| 8th semester B.Arch. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Subject Code** | **Names of subjects** | **L** | **T** | **P/S** | **C** | **TCP** |
| Core Subjects | | | | | | | |
| **1** | **ARC132C811** | **Architectural Design VIII** | **1** | **0** | **9**(S) | **10** | **10** |
| **2** | **ARC132C812** | **Dissertation** | **1** | **0** | **3** | **4** | **7** |
| **4** | **ARC132C814** | **Professional Practice & Introduction to Constitutional Law** | **4** | **0** | **0** | **4** | **4** |
| **5** | **ARC132C805** | **Estimation & Costing** | **3** | **0** | **0** | **3** | **3** |
| **6** | **ARC132C806** | **Construction & Project Management** | **3** | **0** | **0** | **3** | **3** |
| Ability Enhancement Compulsory Courses (AECC) | | | | | | | |
| | **NIL** | | | | | | |
| Ability Enhancement Elective Courses (AEEC) | | | | | | | |
| | **NIL** | | | | | | |
| Generic Elective | | | | | | | |
| **7** | **ARC132G807** | **Contemporary Architecture** | **3** | **0** | **0** | **3** | **3** |
| **TOTAL** | | | | | | **27** | **30** |

| 9th semester B.Arch. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Subject Code** | **Names of subjects** | **L** | **T** | **P/S** | **C** | **TCP** |
| Core Subjects | | | | | | | |
| **1** | **ARC132C931** | **Professional Training** | **NA** | **NA** | **NA** | **26** | **30** |
| **TOTAL** | | | | | | **26** | **30** |

| 10thsemester B.Arch. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sl.No.** | **Subject Code** | **Names of subjects** | **L** | **T** | **P/S** | **C** | **TCP** |
| Core Subjects | | | | | | | |
| **1** | **ARC132C021** | **Architectural Thesis** | **0** | **0** | **18**(S) | **18** | **18** |
| **2** | **ARC132C002** | **Disaster Mitigation & Management** | **1** | **0** | **1** | **2** | **3** |
| **3** | **ARC132C003** | Advance Objectives 1 - Urban Design/Landscape Architecture/Conservation Architecture/Interior Design. | **0** | **0** | **3(S)** | **3** | **3** |
| **4** | **ARC132C004** | Advance Objectives 2 – MEP (Mechanical Electrical & Plumbing Services) | **0** | **0** | **3(S)** | **3** | **3** |
| **TOTAL** | | | | | | **26** | **27** |

**Scheme of Evaluation of all Architectural subjects shall be as per the norms of The Council of Architecture.**

| | |
|---|---|
| Theory Papers (T):<br>• Continuous Evaluation: Total 50%<br>**(Assignment, Class Test, Viva, Seminar, Portfolio: Any Three)**<br>Mid-term examination: **10%**<br>Attendance: 5%<br>• End Term Examination: 50% | Practical Papers (P):<br>• Continuous Evaluation: 100%<br>**(Skill Test, Jury/ viva, Portfolio, Assignment: Any Three)**<br>Attendance: 5**%** |
| Combined Theory & Practical Papers (TP):**(To be conducted by the concerned School)**<br>• **Total Assessment -100%**<br>❖ Continuous Evaluation: 50% Including,<br>1. (Assignment, Jury, Portfolio, and Viva: Any Three)<br>2. Mid-term examination: 10%<br>3. Attendance: 5%<br>❖ End Semester Theory Examination: 50 % | |
| Studio Papers (S): with External examiner<br>• Continuous Evaluation: 50%<br>**(Skill Test, Jury/ viva, Portfolio, Assignment: Any Three)**<br>Attendance: 5**%**<br>• End term examination: **50 %** | |

| **SYLLABUS (I SEMESTER)** |
|---|

| **Paper I/Subject Name: Architectural Design I** | | **Subject Code: ARC132C111** |
|---|---|---|
| **L-T-P/S-C –1-0-4-5** | **Credit Units: 05** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Course Objective:**

- To develop an understanding of an existing space used on a regular basis through sketching, measured drawings and activity analysis.
- To develop design sense of spaces.

**Prerequisites: NIL**

Detailed Syllabus:

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Study and mapping :** Study, map and analyse of a particular space used by the student regularly in terms of scale, anthropometrics, material and activity etc.eg own room, working area, classroom etc. | 20 |
| II. | **Analysis of space requirement:** Analyse the mapped space in terms of its purpose, use and requirement. Exercises relating to personal experiences to behavioural needs and translating them into documented information and redesigning that space. | 20 |
| III. | **Concept Development :** Development of a strategic design idea for the documented room to solve or accentuate a space for better usability and aesthetics | 20 |
| IV | **Design solution and representation:** Finalization of design and make presentation drawing for execution. Develop sense of material used and construction techniques. | 20 |
| | TOTAL | 80 |

**Remarks:**

Design of security cabin, Entrance gate, Memorial, Bus stop etc.

**Text Book:**

1. *Time saver standards for building types*,De Chiara, Joseph and Crosbie, Michael J.;2nd Ed.; 2011; Tata McGraw Hill; New Delhi.

**Reference Books:**

1. Neufert, Peter; *Neufert's architects' data;* 4th Ed.; 2012; John Wiley; New Delhi

2. Ramsay and Sleeper; *Architectural graphic standard;* 11th Ed.; 2008; John Wiley; New York.

**Course Outcomes: The students will**

- Be able to critically analyze a space with a design eye and come up with strategic design solutions
- Develop a sense of aesthetics & understand the importance of presentation drawings.
- Develop a sense on Study and Mapping, Analysis of space requirement, Concept Development and Design Solution & Representation.

**SYLLABUS (I SEMESTER)**

| | | |
|---|---|---|
| **Paper II/Subject Name: Graphics I** | | **Subject Code: ARC 132C112** |
| **L-T-P/S-C –1-0-3-4** | **Credit Units: 04** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Course Objective:**

- To familiarize students with drawing materials and equipment and also with freehand drawing of lines, curves, objects, human figures and vegetation, lettering and fonts.
- To orient students to the principles of plane geometry, scale etc.

**Prerequisites: NIL**

Detailed Syllabus:

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Architectural Graphic Fundamentals–A**<br>Lines, lettering and dimensioning, reduction and enlargement of drawings on different scales, representation of materials and architectural elements through architectural graphic symbols | 16 |
| II. | **Architectural Graphic Fundamentals –B**<br>Introduction to architectural plans, elevations and sections. | 16 |
| III. | **Orthographic Projections:**<br>Principles and projection methods of orthographic projection of straight lines, planes, solids. Development of surfaces, sections of solids and intersections of solids. | 16 |
| IV | **Design Tools:**<br>Develop proficiency in presentation skills such as power point presentation, graphs etc. | 16 |
| TOTAL | | 64 |

**Text Book:**

1. *Engineering drawing*, Bhatt, N.D and Panchal, V. M;1st Ed.; 2008; Charotar Publishing House; Gujrat.

**Reference Books:**

1. Ching, F.D.K; *Architectural graphics;* 6th Ed.; 2015; John Wiley; New York.
2. Smith, Matt; Microsoft office 2010: Ultimate tips and tricks;(e book).

**Course Outcomes: The students will**

- Develop techniques of architectural representation.
- Comprehend an object or space and represent it graphically.
- Understand the importance of presentation drawings.
- Develop a sense on various Architectural Graphic Fundamentals, Orthographic Projections and Design Tools.

| **SYLLABUS (I SEMESTER)** |
|---|

| **Paper III/Subject Name: Building Construction and Material I** | | **Subject Code: ARC 132C114** |
|---|---|---|
| **L-T-P/S-C –1-0-4-5** | **Credit Units: 05** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Course Objective:**

- To introduce students to the technicalities of building construction and material.
- To acquaint with various methods of construction.

**Prerequisites: NIL**

Detailed Syllabus:

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Introduction to basic Building Materials:**<br>Sand, Aggregate, Concrete, Cement, Lime, Stone<br>• Sand: Availability, properties.<br>• Aggregate: Sources and types.<br>• Concrete Blocks: Types, sizes, qualities and manufacturing process in brief.<br>• Stones: Types, properties quarrying and uses of stone for aesthetic & structural purpose.<br>• Lime: varieties, properties and uses in building.<br>• Lime Mortar: Preparation and application | 20 |
| II | **Part A: Bricks and Brick Masonry:**<br>Types of brick masonry and bonds (Header, Stretcher, English Bond, Flemish Bond, Rat Trap Bond etc.)<br>**Part B: Brick Construction Techniques**<br>Foundations, Buttresses, Lintels and Coping | 20 |
| III | **Part A: Stone Masonry:**<br>Types of masonry.<br>**Part B: Stone Construction Techniques**<br>Foundations, Lintels and Coping | 20 |
| IV | **Part A: Brick and Stone arches**<br>• Construction of Brick and Stone Arches<br>**Part B: Substitute of Brick and Stone:** | 20 |

| | | |
|---|---|---|
| | • AAC Blocks<br>• Fly Ash Bricks<br>• Mud Blocks (Hollow and solid stabilized mud blocks)<br>• Glass Blocks<br>• Hollow Concrete Blocks<br>• FRP (Fibre Reinforced Plastic) | |
| TOTAL | | 80 |

**Text Book:**


1. *Building construction*;Mackay, W.B.;*Building construction*; 1st Ed.; 2005; Donheed; London.
2. *Building Construction*, Kumar S; 20th Ed.;2010;Standard Publishers.


**Reference Books:**


1. Chudley, R; *Construction technology*; 2nd Ed.; 1987; ELBS; Harlow
2. Barry, R; *Construction of building*; 4th Ed.; 1999; East West Press; New Delhi


**Course Outcomes: The students will**

- Be introduced to construction material and their various construction techniques
- Be oriented to various texture, colour of materials along with their strength and durability
- Be oriented towards Brick Construction, Stone Construction, and types of Foundations.

**SYLLABUS (I SEMESTER)**

| | | |
|---|---|---|
| **Paper IV/Subject Name: Architecture and Culture** | | **Subject Code: ARC132C105** |
| **L-T-P/S-C: 2-0-0-2 (T/P/TP):T** | **Credit Units: 02** | **Scheme of Evaluation:** |

**Course Objective:**

- To familiarize students to the basic introduction of Culture, Society and Early River Valley civilizations.-5
- Critical appreciation of works and synoptic study of architectural characteristic features of various phases and periods.

**Prerequisites: NIL**

Detailed Syllabus:

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Pre-Historic World: Paleolithic and Neolithic - Primitive man-Shelters, Settlements, Religious and Burial systems :**<br>Oval hut, Nice, Dolmen tomb, Gallery grave, Passage grave, Houses at Catal Huyuk, Stone Henge, Menhirs etc. | 08 |
| II. | **River Valley Cultures and Early Civilizations: Mesopotamia, Egypt, Indus Valley, Yellow River.**<br>Pyramid of Cheops, Great Ziggurats, Mastabas, Layout of Mohenjo Daro, Harappa, Lothal and Dholavira, Great Bath, Granaries etc. | 08 |
| III. | **Classical Buddhism:**<br>a) Mauryan and early Buddhist Cultures (Design norms, standards, prescription and style), Philosophies, Viharas , Great Stupa of Sanchi, etc.,<br>b) Hinayana & Mahayana Phase. | 08 |
| IV | **Pre-Classical:**<br>Mycenean, Persian & Etruscan Civilizations. | 08 |
| TOTAL | | 32 |

**Text Book:**

1. *History of architecture in India*, Christopher,Tadgell; 2nd Ed.; 2002; Phaidon; London
2. *The Great Ages of World Architecture*, Hiraskar G. K; 20th Ed.; 2018; Dhanpat Rai & Co

**Reference Books:**

1. Percy, Brown; Indian architecture, Buddhist and Hindu period; 1st Ed.; 2014; CBS; New Delhi
2. Grover, Satish; Architecture of India: Buddhist and Hindu; 2nd Ed.; 2010; CBS; New Delhi

**Course Outcomes: The students will**

- Be introduced to the World history systems of knowledge.
- Be introduced to history of culture, understanding human cultural development, products and sociology.
- Will develop a sense of Prehistoric World, River Valley Cultures and Early Civilizations, Classical Buddhism and Pre – Classical.

**SYLLABUS (I SEMESTER)**

| | | |
|---|---|---|
| **Paper V: Workshop** | | **Subject Code: ARC132C117** |
| **L-T-P/S-C –0-0-2-2** | **Credit Units: 02** | **Scheme of Evaluation: (T/P/TP/S):P** |

**Course Objective:**

- To develop skills in understanding various tools, processes and materials.

**Prerequisites: NIL**

Detailed Syllabus:

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Carpentry Installation:**<br>• Introduction to the carpentry tools, processes, joints and wood working machines<br>• Preparation of various carpentry joints, fixing of plywood, blackboards, commercial boards etc. and their application in furniture.<br>• Handling materials like wood, marble, steel, MS, plywood, POP, Aluminium etc.<br>• Understanding nailing, screwing, riveting and their various conditions and types of applications.<br>Hands on experience to come up with a product or installation | 16 |
| II. | **Foundry Installation:**<br>• Introduction, type of patterns, pattern making, preparation of moulds and moulding equipment details.<br>• Hands on experience to come up with a product or installation, | 16 |
| III. | **Fabrication Installation:**<br>• Introduction to welding equipment, processes and its applications.<br>• Painting and polishing; Classification of paints, varnishes ingredients of paints, painting methods-brush, spray, hot spray etc.<br>• Hands on experience to come up with a product or installation. | 16 |
| IV | **Masonry Installation:**<br>• Introduction to basic masonry tools. Understanding various building materials and their tools used for cutting, joining and extension.<br>• Hands on experience to come up with a product or installation. | 16 |

| | |
|---|---|
| TOTAL | 64 |

**Text Book:**

NA

**Reference Books:**

NA

**Course Outcomes: The students will**

- Learn hands on experience of working with materials.

**SYLLABUS (I SEMESTER)**

| | | |
|---|---|---|
| **Paper VIII/Subject Name: Basic Design and Visual Arts** | | **Subject Code: ARC132M113** |
| **L-T-P/S-C: 1-0-2-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Course Objective:**

- To develop skills in manual presentation techniques, use of various media of presentation, Principles of 2-D & 3-D compositions and Principles of Design.
- To help students to understand the visual & aesthetic qualities of Art and its relation to Architectural Design situation.
- To develop freehand drawing and rendering skills in different medium and using it as tool of expressing ideas visually.

**Prerequisites: NIL**

Detailed Syllabus:

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Design Elements :**<br>• Lines: properties and nature of lines along with usage<br>• SHAPE AND FORMS: organic/ geometric shapes and understanding their role w.r.t space (positive/negative). | 12 |
| II. | **Texture and colour, Visual scale and weight:**<br>• Textures: tactile texture, visual texture and how they are implied<br>• Colour: HUE-SATURATION, VALUE, INTENSITY nature of Colour, implications, Colour wheel, colour scheme.<br>Sense of scale, depth with representation techniques | 12 |
| III. | **Design principles:**<br>• Balance (symmetrical/asymmetrical)<br>• Contrast (anomaly, emphasis, subordination)<br>• Rhythm/ repetition<br>• Proportion/scale<br>• Harmony and unity.<br>• Variety<br>• Radiation | 24 |

| | | |
|---|---|---|
| IV | **Freehand Drawing:**<br>• Use of various drawing and sketching tools like pencils, ink pens, charcoal pencils, etc.<br>• Free hand drawings of household furniture, street furniture, human beings, cars, trees, etc. | 18 |
| V | **Painting:**<br>• Use of painting tools and materials like brushes, paper, water colour, poster colour, etc. | 18 |
| VI | **Sculpture:**<br>• Sculpture in different medium, clay, plaster of paris, wood. Wire and any other medium.. | 12 |
| | TOTAL | 96 |

**Remarks:**

- Design of security cabin, Entrance gate, Memorial, Bus stop etc.

**Text Book:**

1. *Time saver standards for building types*,De Chiara, Joseph and Crosbie, Michael J.;2nd Ed.; 2011; Tata McGraw Hill; New Delhi.

**Reference Books:**

1. Neufert, Peter; *Neufert's architects' data;* 4th Ed.; 2012; John Wiley; New Delhi
2. Ramsay and Sleeper; *Architectural graphic standard;* 11th Ed.; 2008; John Wiley; New York.

**Course Outcomes: The students will**

- Be able to critically analyze a space with a design eye and come up with strategic design solutions
- Develop a sense of aesthetics & understand the importance of presentation drawings.
- Develop a sense of Design Elements, Texture and Colour; Visual Scale and Weight, Design Principles, Freehand Drawings, Paintings and Sculpture.

**SYLLABUS (I SEMESTER)**

| | | |
|---|---|---|
| **Paper IX/Subject Name: Theory of structures I and mathematical tools** | | **Subject Code: ARC132M106** |
| **L-T-P/S-C: 3-0-0-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):T** |

**Objective:**

- To give an introduction to the basic principles governing structural systems.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Introduction to the subject and theory of structure:**<br>• Technical names and function of various structural components from foundation to roof<br>• Fundamentals and mechanics<br>• S.I. system and units<br>• Understanding structure why things don't fall down<br>Basic Math<br>• Re-visiting basic mathematical tool in terms of area and volume calculation, fundamentals of calculus etc. | 12 |
| II | **Structural systems:**<br>• Ways to create inner space<br>• Understanding loads of various types | 12 |
| III | **Understanding the forces and Moments:**<br>• Definition, cause, effect, units<br>• Types of forces,<br>• Conditions of equilibrium<br>• Beam reactions | 12 |

| | | |
|---|---|---|
| IV | **Centroid and Moment of Inertia:**<br>• Definition, determination of centroid for simple lamina, moment of inertia and radius of gyration of simple cross section of beams – triangular, circular and rectangular. | 12 |
| Total | | 48 |

**Text Books:**

1. *Sanjay;Strength of materials*, Bansal, R K and Bansal*;* 4th Ed.; 2009; Laxmi Publications, New Delhi.

**Reference Books:**

1. Ramamrutham S.; *Strength of materials*; 16th Ed.; 2009; Dhanpat Rai; New Delhi

**Course Outcomes: The students will**

- Develop a sense of structural implications and working around it to suit their design needs.
- Able to critically analyze on Introduction to the subject and theory of structure, Structural systems, Understanding the forces and Moments, Centroid and Moment of Inertia.

**SYLLABUS (II SEMESTER)**

| | | |
|---|---|---|
| **Paper I/Subject Name: Architectural Design II** | | **Subject Code: ARC132C211** |
| **L-T-P/S-C –1-0-7-8** | **Credit Units: 08** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Course Objective:**

To translate knowledge of abstract design principles through enhancement of thought process into a workable design.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Collection of user's data:**<br>Determining a design problem that could revolve around basic design principles | 16 |
| II. | **Activity & Area analysis:**<br>Activity & Area analysis of the design problem | 32 |
| III. | **Movement and circulation analysis:**<br>Movement and circulation analysis of the design problem | 32 |
| IV | **Design solution and representation:**<br>Finalization of design and make presentation drawing for execution. Develop sense of material used and construction techniques. | 48 |
| | **TOTAL** | 128 |

**Remarks:**

- Design of small residence, doctor's clinic, small cottage, cafeteria etc

**Text Book:**

1. *Time saver standards for building types*,De Chiara, Joseph and Crosbie, Michael J.;2nd Ed.; 2011; Tata McGraw Hill; New Delhi.
2. Neufert, Peter; *Neufert's architects' data;* 4th Ed.; 2012; John Wiley; New Delhi

**Reference Books:**

1. Ramsay and Sleeper; *Architectural graphic standard;* 11th Ed.; 2008; John Wiley; New York.
2. Pandya, Yatin; *Elements of space making*; 1st Ed.; 2014; Mapin Publishing; Ahmedabad.
3. Richardson, Phyllis; *XS: Big ideas, small buildings*; 1st Ed.; 2001; Thames & Hudson; London

**Course Outcomes: The students will**

- Be able to critically analyze a space with a design eye and come up with strategic design solutions.
- Develop a sense of aesthetics.
- Understand the importance of presentation drawings.
- Understand the Collection of user's data, Activity and Area Analysis, Movement and Circulation analysis, Design solution and representation.

**SYLLABUS (II SEMESTER)**

| | | |
|---|---|---|
| **Paper II/Subject Name: Graphics II** | | **Subject Code: ARC 132C212** |
| **L-T-P/S-C –1-0-4-5** | **Credit Units: 05** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Course Objective:**

- To develop techniques of sciography, perspective drawing, surface development, etc
- To comprehend perspectives of built forms, exercises in parallel, angular and bird's eye views, shades and shadows cast by simple forms on plain surfaces.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Sciography:**<br>Sciography of Simple Geometric Forms Leading to sciography of architectural forms. | 13 |
| II. | **Perspective Drawing:**<br>Definition of perspective technique (picture plane, stationary point etc.) and their role in drawing perspectives, one point, two point and three point perspectives of geometrical shapes leading to perspectives of built forms, exercises in parallel, angular and bird's eye views, shades and shadows cast by simple forms on plain surfaces. | 22 |
| III. | **Surface Development:**<br>Development of surfaces of solids, isometric, axonometric of solids.Plotting of sciography on perspective drawings. | 13 |

| | | |
|---|---|---|
| IV | **Presentation Illustrator and Photoshop:**<br>Graphical presentation and rendering in pen and ink of architectural drawings and materials. | 32 |
| **TOTAL** | | 80 |

**Text Book:**

1. *Engineering drawing*, Bhatt, N.D and Panchal, V. M;1st Ed.; 2008; Charotar Publishing House; Gujrat.

**Reference Books:**

1. Ching, F.D.K; *Architectural graphics;* 6th Ed.; 2015; John Wiley; New York
2. Carpo, Mario and Lemerle, Frederique; *Perspective, projections and design: Technologies of architectural representation*; 2nd Ed.; 2013; Taylor & Francis; Hoboken**.**

**Course Outcomes: The students will**

- Understand basic techniques of sciography of simple geometric forms.
- Develop sense in isometric and axonometric of solids.
- Understand Sciography, Perspective Drawing, Surface Development, Presentation Illustrator and Photoshop.

**SYLLABUS (II SEMESTER)**

| | | |
|---|---|---|
| **Paper III/Subject Name: Building Construction and Material II** | | **Subject Code: ARC132C213** |
| **L-T-P/S-C –1-0-3-4** | **Credit Units: 04** | **Scheme of Evaluation: (T/P/TP):S** |

**Course Objective:**

- To introduce students to the technicalities of building construction and material.
- To acquaint with various methods of construction.

**Prerequisites: NIL**

Detailed Syllabus:

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Timber and Commercial Wood**<br>• Quality of timber used in building, defects, seasoning and preservation of timber, types Natural, hard and softwood, uses of timber for aesthetic & structural purposes<br>• Uses of commercial wood in building i.e., plywood, block boards, particleboards, veneers and laminates and other types. | 16 |
| II | **Doors:**<br>• Types of wooden Doors, i.e., ledged, braced, battened, panelled, flush and glazed doors, study of joinery details. | 16 |
| III | **Windows:**<br>• Types of wooden glazed windows, Fixed, side and top hung pivoted, louvered, ventilators and fanlights, study of joinery details. | 16 |
| IV | **Roof:**<br>• Timber and steel trussed roof, various parts, their purposes and method of construction. Use of AC sheet, GI sheets and aluminium sheets for roofing. | 16 |
| **TOTAL** | | 64 |

**Text Book:**

1. *Building construction*;Mackay, W.B. ;*Buildingconstruction*; 1st Ed.; 2005; Donheed; London.
2. *Building Construction*, Kumar S; 20th Ed.;2010;Standard Publishers.

**Reference Books: :**

1. Chudley, R; *Construction technology*; 2nd Ed.; 1987; ELBS; Harlow
2. Barry, R; *Construction of building*; 4th Ed.; 1999; East West Press; New Delhi

**Course Outcomes: The students will**

- Be introduced to construction material and their various construction techniques
- Be oriented to various textures, colour of materials along with their strength and durability.
- Be able to develop sense on various types of Doors, Windows and Roof.

**SYLLABUS (II SEMESTER)**

| | | |
|---|---|---|
| **Paper IV/Subject Name: History of Architecture-I** | | **Subject Code: ARC 132C204** |
| **L-T-P/S-C –2-0-0-2** | **Credit Units: 02** | **Scheme of Evaluation: (T/P/TP/S):T** |

**Course Objective:**

- To familiarize student to the development of culture, society and understand the world view of early civilizations
- Critical appreciation of works and synoptic study of architectural characteristic features from the following phases and periods

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **History of Indian Art & Architecture:** A brief about history of history of Indian Art & Architecture and its influence on Culture and Society. | 8 |
| II. | **Classical Greece and Rome:** Study of principles of design, proportion, composition, visual effects. Eg. Doric, Ionic, Corinthian, Tuscan & Composite orders, Optical Corrections, Parthenon, Theatre at Epidaurus, Pantheon, Colosseum, Thermae of Caracalla, Pont due gard, Nimes, Basilica of Trajan, Arch of Septimius Severus, Column of Trajan. | 8 |
| III. | **Ecclesiastical:** Early Christian, Byzantine, Medieval and Gothic Vedic Culture, Kingship in India, Hellenistic influences. | 8 |
| IV | **Vedic Culture:** a) Settlement Patterns during Vedic Civilization. b) Vaastu Shastra and its Principles, Layout Planning (Residence) using Vaastu Principles. | 8 |
| | **TOTAL** | 32 |

**Text Book:**

1. *History of architecture in India*,Christopher, Tadgell; 2nd Ed.; 2002; Phaidon; London.
2. *Indian architecture, Buddhist and Hindu period*,Percy Brown; 1st Ed.; 2014; CBS; New Delhi**.**

**Reference Books:**

1. Grover, Satish; *Architecture of India: Buddhist and Hindu*; 2nd Ed.; 2010; CBS; New Delhi

**Course Outcomes: The students will**

- Understand about Indian Art and Architecture and its influence on Culture and Society.
- Be oriented towards various Architectural characteristics, features of various Civilizations.
- Understand about History of Indian Art & Architecture, Classical Greece and Rome, Ecclesiastical, Vedic Culture.

| **SYLLABUS (II SEMESTER)** |
|---|

| **Paper VII/Subject Name: Theory of structures-II** | | **Subject Code: ARC132M205** |
|---|---|---|
| **L-T-P/S-C: 3-0-0-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):T** |

**Objective:**

- To give an introduction to the basic principles governing structural systems

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Simple Stresses and Strains:** Concept of Deformable Bodies. Types of stresses (compressive, tensile, shear) and strain (axial, shear, volumetric) Simple problems. Modulus of Elasticity, typical stress strain behaviour of steel and concrete. | 12 |
| II | **Elastic constants:** Elastic constants, Rigidity Modulus, Poisson's Ratio. Bulk Modulus and Shear Modulus .Relations. Modulus of Elasticity and Modulus of Rigidity | 12 |
| III | **Shear and Bending Moments in beams:** B.M & S.F diagrams for simply supported and cantilever beams. | 12 |
| IV | **Analysis of Trusses:** Application of Trusses, Composition of forces in a plane, Method of joints, Method of sections | 12 |
| **TOTAL** | | 48 |

**Text Books:**

1. *Sanjay;Strength of materials,* Bansal, R K and Bansal*;* 4th Ed.; 2009; Laxmi Publications, New Delhi.

**Reference Books:**

1. Ramamrutham S.; *Strength of materials*; 16th Ed.; 2009; DhanpatRai; New Delhi

**Course Outcomes: The students will learn**

- Structural implications and working around it to suit their various Design needs.

| **SYLLABUS (II SEMESTER)** |
|---|

| **Paper VIII/Subject Name: Surveying & Levelling** | | **Subject Code: ARC132M206** |
|---|---|---|
| **L-T-P/S-C –2-0-2-3 (T/P/TP/S):T** | **Credit Units: 03** | **Scheme of Evaluation:** |

**Course Objective:**

To develop concepts of various types of land surveying and prepare and interpret maps and drawing.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Introduction:** Principles & Classification of survey, Basic measurements, Principles and methods of surveying | 16 |
| II. | **Plane Surveying:** Chain survey, Compass survey, Plane table surveying | 16 |
| III. | **Theodolite &Levelling:** Theodolite survey, Types of levelling, sources of errors, Computations & Permanent adjustment of levels, Problems on RL. | 16 |
| IV | **Contouring and Application:** Characteristics of contours, direct and indirect methods of contouring, interpolation, uses of contours, setting out works such as centre lines of a building, grade for sewer, centre line of a bridge. Area and Volume calculation. | 16 |
| **TOTAL** | | 64 |

**Text Book:**

1. Surveying Vol I" by PC Punmia.

**Reference Books:**

1. Kanetkar TP and Kulkarni SV; Surveying and Levelling (Part-I)"
2. N.N. Basak; Surveying and Levelling

**Course Outcomes: The students will**

- Be able to develop the knowledge and skills related to surveying and leveling principles and practice.
- Get to learn about Basic Introduction , Plane Surveying, Theodolite & Leveling, Contouring and Application.

| **SYLLABUS (IISEMESTER)** |
|---|

| **Paper IX: Model Making** | | **Subject Code: ARC132M217** |
|---|---|---|
| **L-T-P/S-C –0-0-3-1** | **Credit Units: 01** | **Scheme of Evaluation: (T/P/TP/S):P** |

**Course Objective:**

- To develop model making skills and visualization.

**Prerequisites: NIL**

**Detailed Syllabus:**

| **Modules** | **Topics (if applicable) & Course Contents** | Periods |
|---|---|---|
| I. | **Single material model:** Paper scaled model | 12 |
| II. | **Monochrome model:** Scaled model | 12 |
| III. | **Composite material model:** Scaled model | 12 |
| IV | **Site model with landscaping and site features and contours:** Scaled model | 12 |
| | **TOTAL** | 48 |

**Text Book:**

NA

**Reference Books:**

NA

**Course Outcomes: The students will**

- Identify basic processes and material properties relevant to the discipline of model making.
- Develop a sense of Single material model, Monochrome model, Composite material model and Site Model with landscaping and site features and contours.

**SYLLABUS (III SEMESTER)**

| | | |
|---|---|---|
| **Paper I /Subject Name: Architectural Design III** | | **Subject Code: ARC132C311** |
| **L-T-P/S-C –1-0-7-8 S** | **Credit Units: 08** | **Scheme of Evaluation: (T/P/TP/S):** |

**Course Objective:**

- To expose students to vernacular architecture in terms of local construction technique, building material, architectural language of a particular region.
- To understand the impact of socio-cultural, climate, topography etc. of the region in architecture of a place.
- To make attempts in designing religious precincts, community centres, vocational training institute, primary schools etc.

**Prerequisites:** NIL

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Study and mapping:** Statistical analysis of the region to determine various user groups to establish a relationship between human feelings and the built form. | 32 |
| II. | **Study and documentation of local style of architecture and material used and derive concepts:** Use of locally available resources and its implication on the economy of the built environment. | 32 |
| III. | **Concept Development and planning/zoning:** To develop clusters and community formations through space planning. Discussion and development of design | 32 |
| IV | **Design solution and representation:** Finalization of design and make presentation drawing for execution. Presentation of works of design through portfolio or panels | 32 |
| **TOTAL** | | 128 |

**Remarks:** Design of School, Primary Health Centre, Post Office, Bank Branch, Guest House, Restaurant or any other area that can be designed which includes site planning in detail.

**Text Book:**

1. *Time saver standards for building types;* De Chiara, Joseph and Crosbie, Michael J.; *Time saver standards for building types;* 2nd Ed.; 2011; Tata McGraw Hill; New Delhi.

**Reference Books:**


1. Christopher, Alexander; *The Timeless Way of Building*; 1st Ed.; 1979; Library of Congress Cataloguing in Publication Data; London.
2. Bhatia, Gautam; *Lauri Baker: Life, Works and Writings*; 1st Ed.; 1994, Penguin Books India Limited; New Delhi.


**Course Outcomes: The students will**

- Be able to critically analyse local architecture and developed its modern adaptation.
- Develop a sense of aesthetics.
- Understand the importance of presentation drawings.
- Develop a sense of Study and mapping, Study and documentation of local style of architecture and material used and derive concepts, Concept Development and planning/zoning, Design solution and representation.

**SYLLABUS (III SEMESTER)**

| | | |
|---|---|---|
| **Paper II/Subject Name: Building Construction and Material III** | | **Subject Code:ARC132C312** |
| **L-T-P/S-C: 1-0-3-4** | **Credit Units: 04** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Course Objective:**

- To introduce students to the technicalities of building construction and material
- To acquaint with various methods of construction

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| IA | **FOUNDATIONS:**<br>Types of foundations; isolated, combined, Raft, Base slab, Grillage, Introduction of Pile foundations.<br>Principles and methods of construction of RCC & steel foundations and columns.<br>**Formwork:**<br>Design & planning of form work in timber, steel.<br>Propping, centering, camber, cleaning, surface treatment | 15 |
| IB | **Material: Concrete:**<br>Concrete Ingredients, grades of concrete, admixture, properties of concrete, production of concrete, mix proportioning, mixing, transporting, placing, compaction, curing of concrete and ready mix concrete, sampling and testing of concrete, Construction joints, expansion joints, finish in concrete, chemical admixture. Uses of concrete for aesthetic & structural purpose. | 1 |
| IIA | **MASONRY:**<br>Construction & design of Masonry: Foundations with masonry.<br>Composite Masonry, load bearing wall tiles, glass block masonry. | |
| IIB | **Material: Special Concrete:**<br>Concreting under water, special concretes like light weight and high density concrete. Construction joints, expansion joints, finish in concrete, chemical admixture. Uses of concrete for aesthetic & structural purpose | 15 |
| IIIA | **STAIRS:**<br>Classification of stairs, Location and materials<br>Technical terms. | 1 |
| IIIB | **Material: Steel**<br>Properties and architectural uses of mild steel and stainless steel for aesthetic & structural purpose | 15 |
| IVA | **Introduction to Bamboo**<br>Types of Bamboo with joinery details | 1 |
| IVB | **Material: Introduction to Bamboo**<br>Properties and architectural aesthetic and structural uses and purposes, advantages, disadvantages | 15 |
| **TOTAL** | | 64 |

**Text Book:**

1. *Building construction*;Mackay, W.B. ;*Buildingconstrution*; 1st Ed.; 2005; Donheed; London.

**Reference Books:**

1. Chudley, R; *Construction technology*; 2nd Ed.; 1987; ELBS; Harlow.
2. Barry, R; *Construction of building*; 4th Ed.; 1999; East West Press; New Delhi.
3. Kumar, Sushil; *Building Construction*; 19th Ed.; 2001; Standard Publishers Distributors; Delhi.
4. Arora, Bindra; *Building Materials*;

**Course Outcomes: The students will**

- Be introduced to construction material and their various construction techniques.
- Be oriented to various textures, workability of materials along with their strength and durability.
- Have a profound overview about Foundations, Stairs, Masonry and Formwork.

| L-T-P/S-C –1-0-2-2 | Credit Units: 02 | Scheme of Evaluation: (T/P/TP/S):T |
|---|---|---|

**Course Objective:**

- To study the role of climate change in architectural design, the planning and construction of buildings with respect to climatic conditions and also varied materials impacting the human comfort level.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Introduction to the impacts of climate change:**<br>Introduction to extreme events and gradual changes of the climate;<br>To study human heat balance and comfort. To familiarize students with the design and settings for buildings for daylight and factors that influence temperature. Human comfort (body & thermal), thermal comfort factors and indices. Principles of thermal design, structural and ventilation controls and their application in building. Illumination and day lighting.Use of shading angles for lighting and radiation techniques and their application in buildings.To inform about the air pattern around buildings and the effect of wind on design of buildings and developing a site.Effect of climatic elements of thermal comfort environment. | 12 |
| II. | **Elements of Climate:**<br>Elements of climate, measurement and representations of climate data. Classification of tropical climates, major climate zones of India. Effects of landscape elements on site/micro climate. | 12 |
| III. | **Thermal Comfort:**<br>Body's heat exchange with surrounding environment. Thermal comfort indices viz., Effective temperature, bio-climatic chart etc., Kata thermometer and globe thermometer. Effects of landscape elements on site/micro climate. | 12 |
| IV | **Design Principles:**<br>Design of buildings and developing a site. To expose the students to the various design strategies for building in different types of climatic zones in India. Exposure to different design strategies across the globe. | 12 |
| **TOTAL** | | 48 |

**Text Book:**

1. *Manual of Tropical Housing and Building*,Koenigsberger, O.H.*;* 1st Ed.; 2009; Orient BlackSwan; Hyderabad.
2. *Climate design -Part I*, Orient Longman, Madras.

**Reference Books:**

1. Manakbhavan.,*Bureau of Indian Standards IS 3792 (1987), Hand book on Functional requirements of buildings other than industrial buildings, (Part I – IV),*.
2. Evans, Martin; *Housing Climate and Comfort;* 1st Ed.; 1980; Architectural Press, London.
3. Givoni, B*; Man, Climate and Architecture*; 1st Ed.; 1969; Applied Science Publishers Ltd., London.
4. Givoni, B; *Passive and Low Energy Cooling of building;* 1st Ed.; 1994; Van Nortrand Reinhold; New York.
5. Gallo, C, Sala, M &Sayigh, A.M.M; *Architecture, Comfort and Energy;* 1st Ed.; 1988; Elsivier Science Ltd; New York.

**Course Outcomes: The students will**

- Have a profound overview about climate vulnerability, the impacts of advancing climate change,
- Get to enhance their knowledge of the practical field with sensitiveness towards the environment.
- Have a profound overview of Introduction to the impacts of climate change, Elements of Climate, Thermal Comfort, Design Principals.

| Paper IV/Subject Name: History of Architecture II | | Subject Code:ARC132C305 |
|---|---|---|
| L-T-P/S-C: 2-0-0-2 (T/P/TP/S):T | Credit Units: 02 | Scheme of Evaluation: |

**Course Objective:**

- To provide an understanding of the evolution of Hindu Architecture in India in its various stylistic masses, characterized by technology, ornamentation and planning practices.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Evolution of Hindu temple:**<br>Evolution of Hindu temple –both Indo Aryan and Dravidian- Early temples at Udaigiri.Tigawa and Sanchi –Experiments at Aihole (Durga temple and Ladkhan Temple), Deogarh, Bhitargaon and Badami.<br>Beginning of Dravidian architecture – Pallavas, rathas at Mamallapuram, Shore temple, Kailsanatha and Vaikuntaperunal temple at Kancheepuram. | 8 |
| II. | **The Chola and Pandya:**<br>The Cholas – Brihadeshwara temple at Thanjavur and Gangaikonda Cholapuram<br>The Pandyan contribution- gopurams<br>The Hoysala temples at Belur, Halebid and Somnathpur.<br>Eg.Channakesava Temple, Belur, Hoysalesvara temple, HalebidKesava temple, Somnathpur. | 8 |
| III. | **Indo Aryan:**<br>Indo Aryan Mode- the beginning in Orissa- the Lingaraja at Bhubaneshwar.<br>Hindu architecture at Raiputana( Temple of Surya, Osia, Marwar) and Gujrat ( Temple of Surya, Modhera).The Khajuraho group- KhanariyaMahadev, Jain tample- Chaurmukh temple at Ranpur. | 8 |
| IV | **Later Dravidian Period:**<br>Later Dravidian period- the vijayanagar and Madurai Dynasties – Noted temples at Hampi(Vitthala temple and HazaraRamam Temple). Madurai (Meenakshi temple) and Srinagar. | 8 |
| **TOTAL** | | 32 |

**Text Book:**

1. Indian Architecture. Buddhist and Hindu Period" by Brown Percy

**Reference Books:**

1. Grover Satish. "Architecture of India- Buddhist and Hindu.

**Course Outcomes: The students will**

- Understand Hindu Temple as cradle of knowledge, art, architecture and culture.
- Be able to explore the origins and evolution of Hindu temple traditions and regional styles in India.
- Understand the Evolution of Hindu Temple Architecture, The Chola and Pandya, Indo Aryan, Later Dravidian Period**.**

| Paper V/Subject Name: Building Services I | | Subject Code: ARC132C317 |
|---|---|---|
| L-T-P/SC: 1-0-4-3 (T/P/TP/S):TP | Credit Units: 03 | Scheme of Evaluation: |

**Course Objective:** To develop concepts of water management, sanitation and disposal to develop the designs with better services.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Water Supply**:<br>Introduction to water supply, Assessment of water requirements, Sources of supply, collection& method of supply. Catchment areas, reservoirs, recharge of ground water (methods) and their location. Roof top rain water harvesting. Recovery of used water. Physical, Chemical and biological examination of water, Water treatment. | 20 |
| II. | **Water Management:**<br>Water pipes– materials (GI, PVC, CPVC/ UPVC pipes, introduction to Copper plumbing, Pipe Accessories, Storage tanks, Pumps, Pipes – laying and jointing. Supply for a neighbourhood and town. Rain water Harvesting, Recharging, Recycling and reuse, application in planning, water supply distribution systems (Urban& rural). Sheet work on water supply, overhead water tank and calculations. | 20 |
| III. | **Sanitation : Sanitary pipes, fittings and fixtures, layout and design**<br>Principles of sanitation, Study of Indian Standards and plumbing by-laws (NBC)<br>Introduction to various sanitary pipes, joints, fittings and fixtures, their functions, placements and construction details.<br>Study of internal and external drainage of various buildings. Single stack system, one pipe and two pipe systems, testing of house drains, Gradient used in laying drains and sewers, Self-cleaning and non-scoring velocities of drain pipes. | 20 |
| IV. | **Sanitation: Waste water treatment and disposal methods**<br>Study of traps, inspection chambers, Manholes, Septic tanks, Soak pits and Public sewage line. Study of disposal systems for domestic effluents from fitting to sewer line. Water waste- sewage disposal, primary treatment, secondary treatment and tertiary treatment. Modern types of sewage treatment plant<br>**Solid waste, collections, treatment and disposal**<br>Prevalent SWM practices and deficiencies, Storage of waste at source, collection, segregation and transportation of waste. Disposal of solid wastes: Sanitary Land filling, Composting, Incineration, Pulverisation. Pyrolysis-advantages and disadvantages. Biogas systems and modern renewable energy systems. Sheet work on septic tank, soak pit, inspection chamber and calculations. | 20 |
| | **TOTAL** | 80 |

**Text Book:**

3. *Sanitary Engineering – (Vol I and II);* Deshpande, R. S.; 1 st Ed; Unique Book Cooperation
4. *Water Supply and Sanitary Engineering*; Birdii, G.S; 1st Ed.; 1980; Standard Publishers Distributors

**Reference Books:**

1. Shah, Charanjit S; *Water Supply and Sanitary Engineering;*
2. Rangwala, S.C; *Water Supply and Sanitary Engineering;* 1st Ed.; 2005; Charotar Publishing House;
3. Fair, G.M, Geyer, J.C. and Okin, D; *Water and Waste water engineering Volume II*; 1st Ed.; 1968; John Wiley & Sons; New York.
4. CPHEEO; *Manual on sewerage and sewerage treatment;* 1st Ed.; 1980; Ministry of works and housing; New Delhi.
5. *Relevant IS Codes of India*
6. *Renewable energy, basics and technology, supplement volume on integrated energy systems*

**Course Outcomes: The students will**

- Learn the importance, significance and applications of different methods of water supply and sanitation as an important part of construction and architecture.
- Have a profound overview of Water Supply, Water Management, Waster Water Treatment and Disposal Methods, Solid Waste, Collections, Treatment and Disposals.

**SYLLABUS (III SEMESTER)**

| **Paper VIII/Subject Name: Computer Application I** | | **Subject Code:ARC132S318** |
|---|---|---|
| **L-T-P/S-C: 0-0-4-2** | **Credit Units: 02** | **Scheme of Evaluation: (T/P/TP/S):P** |

**Objective:**

The objectives of AEEC/SEC/-1* are:

- To familiarize students with drawing aids and equipment along with learning to computerise design drawings.
- To orient students to the digital tools.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Interface:** Introduction to the interface, Digital drawings tools, drawing lines and shapes, modifying lines and shapes, drawing with accuracy and speed tools and commands. Page setup. | 16 |
| II | **Drawing and Modifying:** Drawing and Modifying objects, properties, Units, dimensions, lines and pen weight. Blocks, array. | 16 |
| III | **Introduction to Commands:** Basic drawing commands, editing commands, scaling, setting dimensioning variables etc. | 16 |
| IV | **Presentation and plotting:** Presentation, hatching and rendering, texts, Layers, planes , views and viewports Import/export, layout , xref, print setup and plotting(with a specific project submission) | 16 |
| | **Total** | 64 |

**Text Books:**


1. *Up and Running with AutoCAD 2015: 2D & 3D Drawing and Modelling*,Gindis, E;*1st Ed.; 2014;* Elsevier; London.


**Reference Books:**


1. Seidler, D. R.; *Digital Drawing for Designers: A Visual Guide to AutoCAD 2012;* 1st Ed.; 2007; Fairchild Publications; London.
2. Smith, B. L.; *3ds Max 2008 Architectural Visualization Beginner to Intermediate;* 1st ed.; 2007; 3DATS; China.
3. Moss, Elise; *Autodesk AutoCAD Architecture 2016 Fundamentals;* 1st Ed.; 2011; SDC Publications; London.
4. Omura, George & Benton, Brian C; *Mastering AutoCAD 2016 and AutoCAD LT 2016;* 1st Ed.; 2017; John Wiley & Sons; London.


**Course Outcomes: The students will learn**

- Develop techniques of computerize architectural representation
- Comprehend an object or space and represent it graphically and digitally
- Understand the importance of design tools - (AutoCAD).
- Develop sense of Interface, Drawings and Modifying, Introduction to Commands, Presentation and Plotting.

**SYLLABUS (III SEMESTER)**

| | | |
|---|---|---|
| **Paper X /Subject Name: Theory of structures-III** | | **Subject Code: ARC132M306** |
| **L-T-P/S-C: 2-0-0-2** | **Credit Units: 02** | **Scheme of Evaluation: (T/P/TP/S):T** |

**Objective:**

- To introduce structural implications in buildings with respect to different stresses, columns and beams.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Bending Stress and Shear Stress:**<br>Pure Bending Theory, Derivation & application of bending stresses in beams : Rectangular, circular, I & T beam section;<br>Shear stresses & its distribution. | 8 |
| II | **Direct and Bending stress &Torsion:**<br>Application of direct & bending stresses.<br>Torsion of solid & hollow circular shafts of similar material; derivation & application. | 8 |
| III | **Columns and Struts:**<br>Columns & struts; Euler's theory of hinged ends, application of Rankine's theory. | 8 |
| IV | **Stability of Structures:**<br>Concept of Strength and Stiffness of Structures and Structural Members.<br>Stability of Buildings, Dams and Retaining walls; Stress derivation and application. | 8 |
| **TOTAL** | | **32** |

**Text Books:**

5. Analysis of structures I and II, Ramamrutham

**Reference Books:**

1. Vazirani; *Analysis of structures; Analysis, Design and Details of Structure, 14th Ed; 2015;* Khanna Publishers.

**Course Outcomes: The students will learn**

- The above mentioned theories to be applied to the ongoing architectural design project
- To prepare a structural layout with columns and beams designed for the building**.**
- To develop sense on Bending Stress and Shear Stress, Direct and Bending stress &Torsion, Columns and Struts, Stability of Structures.

**SYLLABUS (IV SEMESTER)**

| **Paper I /Subject Name: Architectural Design IV** | | **Subject Code:ARC132C411** |
|---|---|---|
| **L-T-P/S-C: 1-0-7-8** | **Credit Units: 08** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Objective:**

- To orient students towards contemporary architecture with special emphasis on sustainability.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Sustainable development and case study:** A detailed study of sustainability with case studies. Site to be identified and mapped in terms of LEED or IGBC | 32 |
| II | **Concept development and site planning:** Concept development of the project and detailed site planning considering sustainability criteria and site planning considering local planning and development norms and building byelaws | 32 |
| III | **Detailed planning:** Detailed building planning with services and construction techniques considered | 32 |
| IV | **Representation drawings:** Finalization of design and make presentation drawing for execution. Presentation of works of design through portfolio or panels | 32 |
| **TOTAL** | | 128 |

**Remarks:**

Design of Vocational training centre, resort, school etc.

**Text Books:**


2. *Time saver standards for building types*,De Chiara, Joseph and Crosbie, Michael J*;* 2nd Ed.; 2011; Tata McGraw Hill; New Delhi.


**Reference Books:**


3. Bhatia, Gautam; *Lauri Baker: Life, Works and Writings*; 1st Ed.; 1994, Penguin Books India Limited; New Delhi


Course Outcomes:

**The students will learn**

- To design large scale building projects with sustainable design options.
- To develop ideas on Sustainable development and case study, Concept development and site planning, Detailed planning, Representation drawings.

**Remarks**

- The design problem is to be selected in such a way that it lets the student explore several themes on contemporary architecture. The design should also encourage use of both locally available material with new innovation technique and new building material in a sustainable manner. Projects such as eco-resort, civic buildings, institution etc. could be taken up.

**SYLLABUS (IV SEMESTER)**

| | | |
|---|---|---|
| **Paper II/Subject Name: Building Construction and Material IV** | | **Subject Code: ARC132C412** |
| **L-T-P/S-C: 1-0-3-4** | **Credit Units: 04** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Course Objective:**

- To introduce students to the technicalities of building construction and material
- To acquaint with various methods of construction

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| IA | **RCC ROOFS:** Study of principles and methods of construction of RCC one way, two way slabs, ribbed slab, filler slab, flat slab, sloping RCC roof, vaults and domes, including form-work techniques and reinforcement details with understanding the functions of RCC beams. | 26 |
| IB | **MATERIAL: Paints:** Paints, varnishes and distempers, emulsions, cement base paints. Constituents of oil paints, characteristics of good paints, types of paints and process of painting different surfaces. | 2 |
| IIA | **RCC RETAINING WALL;** Designing and stability of RCC retaining and breast wall. | 8 |
| IIB | **MATERIAL: Polishes:** Types of varnish, methods of applying varnish and fresh polish and melamine finish. Grouts and anchors, repairs and protective coatings, bonding agents | 2 |
| IIIA | **ALERNATIVES TO RCC:** **Precast and Prefab components** Masonry blocks, hollow blocks, jallis, shelving units, hollow clay blocks roofing techniques (filler slab), Expansion joints – Necessity, location and detailing Ferro cement elements, Bamboo Joineries & Construction details, polishes, finishes | 16 |
| IIIB | **MATERIAL: Water proofing:** sealants and water proofing and weather proofing compounds, weather proofing compounds, | 1 |
| IVA | **ALERNATIVES TO RCC:** **Bamboo** Bamboo Joineries & Construction details, polishes, finishes, Bamboo as a structural material for columns | 8 |
| IVB | **MATERIAL: flooring types & finishes :** Flooring types, Paving and interlocking tiles, adhesives for fixing floor finishes, and joint filers | 1 |
| | **TOTAL** | 64 |

**Text Book:**


1. *Building construction*;Mackay, W.B. ;*Buildingconstruction*; 1st Ed.; 2005; Donheed; London.
2. *Building Construction*; Kumar, Sushil; 19th Ed.; 2001; Standard Publishers Distributors; Delhi.


**Reference Books: :**


1. Chudley, R; *Construction technology*; 2nd Ed.; 1987; ELBS; Harlow.
2. Barry, R; *Construction of building*; 4th Ed.; 1999; East West Press; New Delhi.


**Course Outcomes: The students will**

- Be introduced to construction material and their various construction techniques.
- Be oriented to various textures, workability of materials along with their strength and durability.
- Develop their sense on RCC Roofs, RCC Retaining walls, Alternatives to RCC, Precast Components.

| **SYLLABUS (IV SEMESTER)** |
|---|

| **Paper III /Subject Name: History of Architecture III** | **Subject Code: ARC132C404** |
|---|---|
| **L-T-P/S-C: 2-0-0-2** **Credit Units: 02** | **Scheme of Evaluation: (T/P/TP/S):T** |

**Course Objective:**

- To provide an understanding of the evolution of Islamic and Colonial Architecture in India in their various stylistic modes characterized by technology, ornamentation and planning practices.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Imperial Style:**<br>Slave, Khilji, Tughlaq, Sayyid& Lodi dynasties.<br>Eg.Quwaat-Ul-Islam Mosque, Qutb-Minar, Enlargement of Quwaat-Ul-Islam Mosque by Iltutmish, Tomb of Iltutmish, Enlargement of Qutub complex by Ala-Ud-din Khilji,<br>Alai Darwaza, Tomb of Ghaias-Ud-in Tughlaq, Khirki Masjid, Delhi, Tomb of Feroz Shah Tughlaq, Shish Gumbad& Tomb of Mubarak Shah Sayyid. | 8 |
| II. | **Provincial Style:**<br>Ahmedabad, Jaunpur, Bengal and Bijapur<br>Eg.Atala masjid Jaunpur, Jami Masjid, Jaunpur, Jami Masjid, Biapur, Ibrahim Rauza, Bijapur.<br>GolGumbaz, Bijapur, Adin Masjid, Pandua, Eklakhi tomb, Pandua, DakhilDarwaza, Gaur, Jami Masjid Ahmedabad | 8 |
| III. | **Mughal Period:**<br>Monumental buildings in the regime of Humayun, Akbar, Jehangir, Shahjahan&Aurangazed.<br>Eg.Humayan's tomb, FatehpurSikri (layout, Jami Masjid, BulandDarawaza Tomb of SalimChistiDiwaneKhas) Akbar's Mausoleum TajMahal. | 8 |
| IV | **Arrival of British:**<br>Early colonial period,monumental buildings executed in the regime of East India Company up to middle of 19th century.<br>Eg.St. Paul's Cathedral, Calcutta & Bombay Town Hall.<br>Later colonial period – Contribution of Edwin Lutyens and Herbert Baker to the layout and architecture of New Delhi. | 8 |
| | **TOTAL** | 32 |

**Text Book:**

4. "History of Architecture in India" by Tadgel Christopher.

**Reference Books:**

5. Brown, Percy "Indian Architecture – Islamic period" .

**Course Outcomes: The students will**

- Understand the Evolution of Islamic & Colonial Architecture of India.
- Have a profound overview on the contents of Imperial Style, Provincial Style, Mughal Period, and Arrival of British.

**SYLLABUS (IV SEMESTER)**

| **PaperV /Subject Name: Computer Application II** | | **Subject Code: ARC132S417** |
|---|---|---|
| **L-T-P/S-C: 0-0-4-2** | **Credit Units: 02** | **Scheme of Evaluation: (T/P/TP/S):P** |

**Objective:**

- To familiarize students with drawing aids and equipment along with learning to computerise design drawings.
- To orient students to the digital tools.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **AutoCAD Revision and Advance:** Introduction to the interface, Digital drawings tools, drawing lines and shapes, modifying lines and shapes, drawing with accuracy and speed tools and commands. Page setup. Drawing and Modifying objects, properties, Units, dimensions, lines and pen weight. Blocks, array. Presentation, hatching and rendering, texts, Layers, planes , views and viewports Import/export, layout , xref, print setup and plotting(with a specific project submission) | 16 |
| II | **Introduction to photoshop (advance):** Photoshop Digital Rendering Techniques | 16 |
| III | **Introduction to SketchUp/Revit;** Basic tools, Visualisation, shortcuts of SketchUp | 16 |
| IV | **Problem Solving with detailed modelling** Creating Plans, Elevation, Section and 3d models using AutoCAD, Photoshop, SketchUp / Revit | 16 |
| **Total** | | 64 |

**Text Books:**


1. *Up and Running with AutoCAD 2015: 2D & 3D Drawing and Modelling*,Gindis, E;*1st Ed.; 2014;* Elsevier; London.
2. *Digital Drawing for Designers: A Visual Guide to AutoCAD 2012;* Seidler, D. R.; 1st Ed.; 2007; Fairchild Publications; London.


**Reference Books:**


1. Smith, B. L.; *3ds Max 2008 Architectural Visualization Beginner to Intermediate;* 1st ed.; 2007; 3DATS; China.
2. Moss, Elise; *Autodesk AutoCAD Architecture 2016 Fundamentals;* 1st Ed.; 2011; SDC Publications; London.
3. Omura, George & Benton, Brian C; *Mastering AutoCAD 2016 and AutoCAD LT 2016;* 1st Ed.; 2017; John Wiley & Sons; London.


**Course Outcomes: The students will learn**

- To develop techniques of computerize architectural representation
- To comprehend an object or space and represent it graphically and digitally
- To understand the importance of design tools – AutoCAD, Photoshop, Sketchup, Revit.
- To develop sense on AutoCAD Revision and Advance, Introduction to photoshop (advance), Introduction to SketchUp/Revit, Problem Solving with detailed Modelling.

**SYLLABUS (IV SEMESTER)**

| | | |
|---|---|---|
| **Paper VI /Subject Name: DSE1 (Landscape Architecture)** | | **Subject Code: ARC132D413** |
| **L-T-P/S-C: 2-0-1-4** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):TP** |

**Objective:**

- To introduce students to the discipline of landscape architecture and its relevance to Architecture.
- To gain an insight into the changing relationship of human with nature.
- This course shall have a direct application in the design studio of the same semester as well as subsequent semesters for site planning and landscape design of the respective design assignments.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Introduction to Landscape & Landscape Architecture**<br>• Landscape – its meaning, Experience of a landscape, Aesthetics & Imagery of a landscape, Relationships of humans and nature; how the Scales and Conception of landscapes evolve over time, Sense of place in a Landscape.<br>• Landscape Architecture – definition, related terminologies and Scope. | 16 |
| II | **Elements of Landscape Architecture & their application in Design**<br>• Natural elements of landscape architecture *(landforms, water, vegetation),* Natural systems.<br>• Man-made elements, modifications in natural systems with man-made elements, co-existence of natural and man-made elements.<br>• Principles of Design incorporating these landscape elements.<br>• Documentation – *Field identification of common Indian trees, plants, shrubs etc.* | 16 |
| III | **Historical Overview of Site Planning and Landscape Architecture**<br>• Study of Historical Landscape Gardens – *Chinese & Japanese, Persian & Mughal, English, Italian, French and Renaissance gardens.*<br>• Study of 19th & 20th Century noted Landscape Arch. Projects *(Garden of Versailles, Stowe, Central Park, Copacabana Promenade, Sunder Nursery etc.)* by renowned Landscape Architects – *Lancelot Brown, André Le Nôtre, Frederick Law Olmstead, Geoffrey Jellicoe, Gertrude Jekyll, Roberto Burle Marx, Martha Schwartz, Dan Kiley, Mohammad Shaheer, Kishore Pradhan, Prabhakar Bhagawat, Lawrence Halprin, Michael Van Valkenburg etc.* | 16 |
| IV | **Site Analysis & Site Planning**<br>• Site Analysis – definition, its need and stages/ layers, Site Inventory – *Topography, Vegetation, Soil, Hydrology, Climate etc.*<br>• Principles of Site Planning, Design Issues in planning process, Siting of buildings, integrating the built and open spaces etc.<br>• Comprehensive Site development, materials, street, site furniture etc.<br>• Design Studio on Site Plan with Landscape Design (Neighbourhood Scale) *OR* **Studio component of the Semester may be integrated with Architectural Design of the current semester.** | 16 |
| | **Total** | 64 |

**Text Books:**


1. *Landscape Architecture:* Simmonds J.O.; 5 edition (1 March 2013), McGraw-Hill Education.
2. *The Experience of Landscape*: Appleton (1996), Wiley.
3. *Introduction to Landscape Architecture:* Laurie Michael, 2nd Revised edition (1 February 1986), Elsevier Science Ltd.
4. *Landscape Architecture in India – A Reader:* Mohammad Shaheer (1 January 2013), LA, Journal of Landscape Architecture.
5. *Form and Fabric in Landscape Architecture – A Visual Introduction:* Catherine Dee (2001), Spon Press.
6. *Site Planning:* Kevin Lynch, Gary Hack (1962), MIT Press.


**Reference Books:**


1. Krishen Pradip*; Jungle Trees of Central India*; Penguin Random House India Pvt. Ltd, 2013.
2. Krishen Pradip*; Trees of Delhi*; Penguin Books India Pvt Ltd, 2006.
3. Grant W. Reid*; Landscape Graphics*; Whitney Library of Design, Watson Guptill Publications, New York, 2002.

4. Charles W Harris and Nicholas T. Dine; *Time Saver Standards for Landscape Architecture*; 2nd Edition, Mcgraw – Hill, International Edition, Arch. Series, 1988.

**Course Outcomes:**

The students will learn –

1. The natural and man-made components that generate the decisions in the planning of any site.
2. To develop a skill of integrated design of open and built spaces.

| **SYLLABUS (IV SEMESTER)** |
|---|

| **Paper VII/Subject Name: Theory of structures-IV** | | **Subject Code: ARC132M405** |
|---|---|---|
| **L-T-P/S-C: 3-0-0-3 (T/P/TP/S):T** | **Credit Units: 03** | **Scheme of Evaluation:** |

**Objective:**

- To introduce students to Beams, portal frames, concrete workability.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Beam Deflection:**<br>Application of Deflection of simply Supported and cantilever beams by double integration<br>Method. Application of Analysis of fixed beams with u. d. 1. &. Concentrated loads. Moment Distribution for Continuous beams Without settlement & portal frames (Single storey)without sway. Application of Three hinged circular arch. Study of IS 875- Part-I & Part- II | 9 |
| II | **Cement and Aggregates:**<br>Types & grades of Cements, testing of cements Introduction to IS 456-2000.<br>Aggregates; Coarse & fine, characteristics & effect on its strength; particle shape& texture, size & grading; Moisture contents in aggregates, bulking of sand. Requirement of water for concrete; | 9 |
| III | **Concrete:**<br>Batching & mixing of concrete, workability- slump of concrete w/c ratio, voids & permeability. Conveyance of Concrete, placing & compacting, curing, compressive strength of concrete, testing of concrete. Relation of durability & cover of concrete.(repeated in building construction) | 9 |
| IV | **Introduction to RCC Design:**<br>Introduction to Limit State Design, Introduction to IS 456:2000.<br>Brief understanding of Working Stress Method, Ultimate Load Method<br>Concepts of Characteristic Load, Characteristic Strength, Factors of Safety, Load Combinations, Stress-Strain relationships of materials for design consideration etc. | 9 |
| **TOTAL** | | **36** |

**Text Books:**

1. *Analysis of structures I and II,* Ramamrutham

**Reference Books:**

1. Ramamrutham; *Reinforced Concrete Design of structures;*
2. Subramanian; *Structural analysis.*

**Course Outcomes: The students will learn**

- The importance of reinforced framed structures.
- To develop their ideas of Beam Deflection, Cement and Aggregates, Concrete and Introduction to RCC Design.

| **SYLLABUS (IV SEMESTER)** |
|---|

| **Paper VIII /Subject Name: Building Services II** | | **Subject Code: ARC132M416** |
|---|---|---|
| **L-T-P/S-C: 2-0-1-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):TP** |

**Course Objective:**

To develop concepts of design, installation, operation and monitoring of the electrical services in buildings.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Light:**<br>Principles of light – Electromagnetic radiation, waves, nature of vision, measurement of lighting. Principles of illumination: definitions, Visual tasks, Factors affecting visual tasks Units of light, definitions of flux, solid angle, luminous intensity –utilization factor – depreciation factor- MSCP – MHCP, brightness, glare. Electric light sources: brief description, characteristics and application of different types of lamps, methods of mounting and lighting control Luminaries classification/ - Lumen method for design – Room reflectance/ Glare-manufacturer's data on luminaries/luminaries cost | 16 |
| II. | **Lighting in buildings:**<br>Light and its sources, lighting criteria, the visual field , day light prediction methods Artificial lighting , lighting levels for various activities , Calculation for lighting levels. | 16 |
| III. | **Electrical system and fittings:**<br>Laws of electrical circuits: Ohms and Kirchhoff's Laws,<br>Basics of electricity – Single/Three phase supply.<br>Earthing for safety – types of earthing – ISI specifications,<br>Electrical wiring systems in domestic and commercial buildings.<br>Conduits, Types of wiring Diagram for connection.<br>Bus way, Bus Bars, lighting track and conduits (Aluminium metallic, non metallic) arrangements.<br>Power handling, equipment, switch board, distribution board, mains, fuse, meter, circuit breaker etc. panel boards. Lighting conductors : Electronic and Communication systems, Electrical Installations in Buildings. | 16 |
| IV | **Electrical layout in buildings:**<br>Main and distribution boards –<br>transformers – switch gears – substations – space requirement and Layout of the same in<br>building types. Planning and layout of installations within a building complex. Different meters and protection units. Different type of loads and their individual protections. Selection of cable/wire sizes; potential sources of fire hazards and precautions. Emergency supply-standby (generators, invertors) & UPS. A specific design problem on this aspect. | 16 |
| **TOTAL** | | 64 |

**Text Book:**

6. Ambrose, E.P.; *Electric Heating;* 1st Ed,; 1968; John Wiley& Sons; New York.
7. Philips, Derek; *Lighting in Architectural Design;* 1st Ed.; 1964; McGraw Hill; New York.
8. Hopkenson, R.G. & Kay, J.D.; *The lighting of Buildings;* 1st Ed.; 1969; Faber & Faber; London

**Reference Books:**

1. Elevators, Escalators , Moving Walkways – Manufactures catalogues
2. *National Building Code.*
3. *Electrical systems.*
4. Handbook of building Engineers in metric systems; 1968; New Delhi
5. *National Building Code.*

**Course Outcomes: The students will**

- The importance, significance and applications of different methods of illumination and electrical wiring and fittings as an important part of construction and architecture.
- Be able to develop their sense on Light, Lighting in Buildings, Electrical system and fittings and Electrical Layout in Buildings.

| **SYLLABUS (VSEMESTER)** |
|---|

| **Paper I /Subject Name: Architectural Design V** | | **Subject Code: ARC132C511** |
|---|---|---|
| **L-T-P/S-C: 1-0-7-8** | **Credit Units: 08** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Objective:**

- To understand the need for creating architecture as an envelope to system dependent program.
- To identify and understand the role of services in the design of buildings; significance of material and construction techniques; climatic factors.
- To Introduce students to development regulations (building byelaws and rules); circulation networks (people, vehicular access), site planning etc.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Literature review and case studies:** Learning from detailed study and analysis of building systems and envelopes; character of group housing through literature review and visiting buildings in varied settings. | 32 |
| II | **Concept development and site planning:** Concept development of the project and detailed site planning considering sustainability criteria and site planning considering local planning and development norms and building byelaws. | 32 |
| III | **Detailed planning:** Detailed building planning with services and construction techniques considered. The Design Studio will give prominence to bridging the gap between innovations in materials and techniques of construction. | 32 |
| IV | **Representation drawings:** Finalization of design and make presentation drawing for execution which includes Site plan, floor plans, elevation, sections, details,3D Perspectives and models.. Presentation of works of design through portfolio or panels. | 32 |
| **TOTAL** | | 128 |

**Remarks:**

Design of Group housing project (HIG, MIG, LIG including multistoried apartments), etc

**Text Books:**


9. *Time saver standards for building types*,De Chiara, Joseph and Crosbie, Michael J*;* 2nd Ed.; 2011; Tata McGraw Hill; New Delhi.


**Reference Books:**


1. Herg Cross Rudolph *Neuferts Architects Data*, Lockwood and Sons
10. National Building code (Latest version


**The students will learn:**

- To explore Sustainable design options in designing Group Housing projects.
- To explore several themes on contemporary architecture.
- To use both locally available material with new innovation technique and new building material in a sustainable manner in their respective design projects.
- To develop their sense on Literature review and case studies, Concept development and site planning, Detailed planning, Representation drawings.

| SYLLABUS (V SEMESTER) |
|---|

| Paper II /Subject Name: Building Construction and Material V | | Subject Code: ARC132C512 |
|---|---|---|
| L-T-P/S-C: 1-0-3-4 | Credit Units: 04 | Scheme of Evaluation: (T/P/TP/S):S |

**Objective:**

- To introduce students to the technicalities of building construction and material.
- To acquaint with various methods of construction

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| IA | **PILE FOUNDATION:**<br>Types of Pile foundations; Cast-in situ Piles, Precast Piles, Sheet, Friction Piles, Types of Pile caps showing detailed Reinforcement fixing & method of driving Piles. | 15 |
| IB | **Material: ANTI-TERMITE:**<br>Anti-termites Ingredients, Properties of Anti-termites, mixing proportioning and its properties. | 1 |
| IIA | **RCC BEAMS:**<br>Understanding functions of beams and its importance, Types of beams- Simply supported, Cantilever & Hunched beam showing with reinforcement detail & formwork techniques. | 15 |
| IIB | **Material: GLASS**<br>Manufacturing process of Glass, Various classification of Glasses- Clear glass, Tinted Glass, Frosted Glass, Fibre Glass & Glass blocks, Installation / fixing details | 1 |
| IIIA | **ALUMINIUM DOORS & WINDOWS:**<br>Aluminium doors with normal hinge fixing, with floor spring, Frameless door, Aluminium Casement Window, Aluminium Sliding window (two & three tracks with understanding of Anodised & Powder coated section). | 15 |
| IIIB | **Material: GLASS FINISHES:**<br>Understanding the technique of glass finishes- Polishing & Bevelling.<br>Coloured Glass- Itching of Glass, its types and process of Itching & other finishes-Frosted film & fixing process. | 1 |
| IVA | **PARTITIONS& PANELLING:**<br>Understanding the types of Partitions- Solid Partitions, Glazed Partition & Low height Partition showing fixing details with aluminium section.<br>Panelling with different materials- Ply, Gypsum, Bison Panel & Acoustical element fixing with aluminium sections. | 15 |
| IVB | **Material: GLASS FIXING:**<br>Knowledge of fixing techniques of glass- Patch fitting with various types of Patch fittings , Different types of Brackets & d-clips, Spider fittings of various legs and joint filler of glasses with silicon. | 1 |
| **TOTAL** | | 64 |

**Text Books:**


11. Building construction; Mackay, W.B.; 1st Ed.; 2005; Donheed; London.
12. Building Construction; Kumar, Sushil; 19th Ed.; 2001; Standard Publishers Distributors; Delh


**Reference Books:**


13. Chudley, R; Construction technology; 2nd Ed.; 1987; ELBS; Harlow.
14. Barry, R; Construction of building; 4th Ed.; 1999; East West Press; New Delhi.
15. Kumar, Sushil; Building Construction; 19th Ed.; 2001; Standard Publishers Distributors; Delhi.
16. Arora, Bindra; Building Materials;


**Course Outcomes:**

The students will

- Be introduced to construction material and their various construction techniques.
- Be oriented to various textures, workability of materials along with their strength and durability.
- Develop their sense on Pile foundation, RCC Beams, Aluminum doors and windows, Partitions and Paneling.

**SYLLABUS (V SEMESTER)**

| | | |
|---|---|---|
| **Paper III /Subject Name: History of Architecture IV Code:ARC132C503** | | **Subject** |
| **L-T-P/S-C: 2-0-0-2** | **Credit Units: 02** | **Scheme of Evaluation: (T/P/TP/S):T** |

**Course Objective:**

- To provide an understanding of Western Architecture during Renaissance, Baroque, Neo Classical and Modern Periods.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Renaissance Period:**<br>**Background and influences on Renaissance Architecture, Characteristics of Renaissance Architecture in general.**<br>St. Andrea, Mantua , Palazzo Rucellai by Leon alberti, Palazzo Rucellai by Leon alberti, Villa Rotunda (Capra) by Palladio, St. Peter's Rome by Michelangelo and others, St. Paul's London by Sir Christopher Wren.<br>**General characteristics of Baroque.**<br>St.Peter's Plazza by Berinini. | 8 |
| II. | **Transitional Period:**<br>A brief account of the situation before the changeover to Modern architecture in Europe, Palladian revival in Britain, Greek Revival and Gothic Revival.<br>e.g. Chiswick House, London (Palladian Style - William Kent), Mereworth castle, Kent, England (Palladian Style - Colen Campbell) etc. | 6 |
| III. | **Impact of Industrial Revolution in Europe:**<br>The Social, economic and political changes effected, New requirements of the society, New materials and technology developments. | 8 |
| IV | **a) Modern era:**<br>The Chicago School - works of Louis Sullivan & Early Industrial buildings, Contributions of Bauhaus, De Stiji movement, Italian Futurism, Art Nouveau movement, Prudential/Guaranty Building., Buffalo, NY (Louis Sullivan and Danmar Adler)<br>**b) Works of Great Masters:**<br>Le Corbuster, FL Wright, Ludwig Mies Van Der Rohe, Walter Gropius, Oscar Niemeryer<br>**e.g.** Villa Savoye, France, Falling Waters, Pennsylvania, Seagram Building, Park Avenue, New York, Fagus Factory, Germany, Alvorada Palace, Brazil. | 10 |
| | **TOTAL** | 32 |

**Text Book:**

17. History of Architecture in India" by Tadgel Christopher.

**Reference Books:**

18. "Modern Architecture – A Critical History" by Frampton Kenneth
19. "A history of Architecture" by Fletcher, Bannister

**Course Outcomes: The students will**

- Understand the Evolution of modern architecture in Europe.

- Have a profound knowledge of Renaissance Period, Transitional Period, Impact of Industrial Revolution in Europe, Modern era and Works of Great Masters.

| **SYLLABUS (V SEMESTER)** |
|---|

| **Paper IV/Subject Name: Building Services III** | | **Subject Code: ARC132C514** |
|---|---|---|
| **L-T-P/S-C: 2-0-1-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):TP** |

**Course Objective:**

To develop an understanding of the advanced building services such as Air conditioning and lifts and their application in the design proposals of buildings of slight complex nature such as multistoried.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Artificial/Mechanical Ventilation**:<br>Need for mechanical ventilation in buildings. Rate of ventilation for different occupancies. Methods and equipment employed for mechanical ventilation in buildings. | 16 |
| II. | **Air conditioning systems**:<br>Definition, advantages and disadvantages, brief introduction to psychometric process, air-cycle and refrigeration cycle. Summer and winter air-conditioning, calculation of air conditioning load, Zoning: purpose and advantages. Air-distribution systems: Ducts and duct systems. air-outlets Air-conditioning methods and equipment: window units, split units and central Air-conditioning system. Location of air-conditioning equipment in buildings. Architectural requirement of various equipment. | 16 |
| III | **Elevator (Lifts) and escalators**:<br>Brief history-types of Elevators like traction, Hydraulic etc., Double-decker, Sky lobby, lift lobby, lift interiors etc. Definition and components.<br>Elevator in a building: environmental considerations i.e. location in building, serving floors, grouping, size, shape of passenger car, door arrangement etc.<br>Service requirements: Quality of service, quantity of service, time, passenger handling capacity, space and physical requirements, machine room spaces and its typical layout.<br>Escalators- Definition, Application, Location and arrangement in building. Space requirement, Escalators V/S Elevators, Conveyor belt- movement of passengers and goods. | 16 |
| IV | **Firefighting and fire safety:**<br>Causes of fire, reasons for loss of life due to fire, development of fire, fire load, fire hazards, grading of structural elements due to fire as per NBC.<br>Classification of building types as per NBC<br>Brief description of characteristics of combustible and non-combustible materials in case of fire.<br>Concepts in passive fire protection and control- including design of escape routes, pressurization and compartmentation. etc.<br>Active fire control using portable extinguishers. Basic concepts in fixed firefighting installations.<br>Automatic fire detection and alarm systems.<br>Rules for fire protection and firefighting requirements for High - rise building in India.<br>Study of various firefighting equipment's used in building industry- Fire extinguisher, Smoke detector, fire Hydrant, Hose Reel, Water sprinklers, fire tanks,.etc | 16 |
| | **TOTAL** | 64 |

**Text Book:**


1. Ambrose, E.P.; *Electric Heating;* 1st Ed,; 1968; John Wiley& Sons; New York.
2. Philips, Derek; *Lighting in Architectural Design;* 1st Ed.; 1964; McGraw Hill; New York.
3. Hopkenson, R.G. & Kay, J.D.; *The lighting of Buildings;* 1st Ed.; 1969; Faber & Faber; London.


**Reference Books:**


1. Elevators, Escalators , Moving Walkways – Manufactures catalogues
2. *National Building Code.*
3. *Electrical systems.*
4. Handbook of building Engineers in metric systems; 1968; New Delhi

5. *National Building Code.*
6. 'Principles of Refrigeration' by Roy J Dosat.
7. "Air Conditioning and Refrigeration Data Hand Book' by Manohar Prasad.
8. "Refrigeration and Air-Conditioning by Don Kundwar.

**Course Outcomes: The students will:**

- Learn the importance, significance and applications of different methods of air conditioning and escalator and lift and develop proper understanding of firefighting fighting systems and measures as an important part of construction and architecture.
- Have profound knowledge of Artificial/Mechanical Ventilation, Air conditioning systems, Elevator (Lifts) and escalators, Fire fighting and fire safety.

**SYLLABUS (V SEMESTER)**

| **Paper V/Subject Name: Theory of Art and Architecture** | | **Subject Code: ARC132C508** |
|---|---|---|
| **L-T-P/S-C: 2-0-0-2** | **Credit Units: 02** | **Scheme of Evaluation: (T/P/TP):T** |

**Objective:**

- To study the role of culture and art on architecture in Indian context
- Study of visual art principle, monumental and human scale
- Study of Impact of religious philosophy on the physical form

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **(a) Basic Principles of Architectural Composition;**<br>**(b) Different Types of Spatial Organization:**<br>(a) Proportion, Scale, Symmetry, Hierarchy, Rhythm, Contrast, Harmony<br>(b) Linear, Centralized, Radial, Clustered and Grid | **8** |
| II | **Theory in Antiquity and Renaissance; 18$^{th}$ Century; 19$^{th}$ Century:**<br>Vitruvius, Alberti;<br>Laugier, Boullee, Ledoux;<br>Violet Le Duc, John Ruskin, Gottefried Semper | **8** |
| III | **(a) Modern Movement; (b) Post Modern Theory**<br>**(c) Contribution to New Architectural Thinking**:<br>(a) Ideas of Adolf Loos and EeroSarinen;<br>(b) Robert Venturi and Charles Jencks (Library Study)<br>(c) Christopher Alexander | **8** |
| IV | **Positive and Normative Theory:**<br>Privacy Theory, Design Process, Proxemics Theory, Anthropometry, Ergonomics | **8** |
| **Total** | | 32 |

**Text Books:**

1. *"Form Space and Order" by Francis D.K Chin.*
2. *"A Catalogue of Modern Books on Architecture, Theoretical, Practical, and Ornamental" by J. Taylor.*

**Reference Books:**

1. *Taschen;Theory of Architecture*
2. *Jon Lang;Positive and Normative Theory*

**Course Outcomes: The students will**

- See the evolution of architecture in India through its various style of Architecture.
- Learn the Cultural and Religious implications on Architecture.
- Develop their sense on Basic Principles of Architectural Composition, Different Types of Spatial Organization, Theory in Antiquity and Renaissance; 18$^{th}$ Century; 19$^{th}$ Century, Modern Movement, Post Modern Theory, Contribution to New Architectural Thinking, Positive and Normative Theory.

**SYLLABUS (V SEMESTER)**

**Paper VI /Subject Name: DSE II (Architectural Conservation & Documentation) Subject Code:ARC132D547**

**L-T-P/S-C: 1-0-4-3 Credit Units: 03 Scheme of Evaluation: (T/P/TP/S): TP**

**Course Objective:**

- To introduce students to the discipline of Architectural Conservation and to develop basic skills required in documenting a Heritage structure/site.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Introduction to Architectural Conservation:**<br>• Understanding Heritage and Documentation as a tool for recording heritage;<br>• General Definitions<br>• Brief History of Conservation<br>• Types of Heritage<br>• Tangible and intangible heritage; Traditional Knowledge system<br>• Natural and Designed Landscape, Cultural Landscape, Sacred Landscape;<br>• Conservation organizations in India and Abroad<br>• UNESCO World Heritage Sites<br>• Archaeological Survey of India (ASI)<br>• State Archaeology<br>• INTACH<br>Other related organisations | 15 |
| II. | **General Practices:**<br>• General practices, Theories and philosophies<br>• Charters (Athens Charter, Venice Charter, Nara Document, Florence Charter, etc.)<br>• Criteria and Methodology of Listing and Grading of Heritage Buildings according to ASI<br>• Model Building Bye-laws in India<br>• Ancient Monuments and Archaeological Sites and Remains Act (AMASR Act) – 2010<br>• Factors deteriorating Heritage Buildings/sites<br>• Conservation Technique | 15 |
| III. | **Introduction to Conservation studio project: Research and Site Visits:**<br>Introduction to Conservation studio project: Research and Site Visits<br>• Selection of Structure/site for Documentation<br>• Literature study | 25 |
| IV | **Documentation and Compilation:**<br>• Detailed Documentation<br>• Significance of the structure/site<br>• Analysis and Identified issues<br>• Proposal | 25 |
| | **TOTAL** | 80 |

**Text Book**:

1. *Conservation of Historic Buildings:* Feilden, Bernard M.; 3rd edition (2003), Architectural Press.

**Reference Books:**

1. A History of Architectural Conservation: Jokilehto, Jukka; 2nd edition.

**Course Outcomes: The students will learn to**

- Develop the skills required in documenting a heritage site
- Understand the importance of Architectural Conservation.
- Develop their sense on Introduction to Architectural Conservation, General Practices, Introduction to Conservation studio project: Research and Site Visits, Documentation and Compilation.

| **SYLLABUS (V SEMESTER)** |
|---|

| **Paper VII /Subject Name: Theory of structures-V(GE-1)** | | **Subject Code:ARC132G505** |
|---|---|---|
| **L-T-P/S-C: 3-0-0-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):T** |

**Objective:**

- To study Structural Behaviour of RCC Structural Systems and earthquake resistant systems.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Design Philosophies and Methods Slab Design:**<br>• Introduction to Limit State Design; Use of IS 456:2000<br>• Design of One-Way RCC slabs<br>• Design of Two-Way slabs using IS code method | 12 |
| II | **Beam Design:**<br>• Moment of Resistance of Beam<br>• Design of Singly Reinforced and Doubly Reinforced Beam<br>• Design and Detailing of RCC beams having Rectangular, T and L shaped sections | 12 |
| III | **Column and Footing Design:**<br>• Design of RCC columns: Axially and Eccentrically Loaded<br>• Design and Detailing of RCC columns having Rectangular, Circular and L shaped sections<br>• Design and Detailing of Rectangular Isolated Footing | 12 |
| IV | **Special Topics:**<br>• Design and Detailing of Staircase: Dog-legged and Open Well<br>• Design and Detailing of Circular water tanks on ground with fixed base using I.S – 3370<br>• Study of Seismic effect in design and detailing of RCC members<br>• Use of IS 1893:2016 and IS 13920:2016 for Design and Detailing of RCC members | 12 |
| **TOTAL** | | 48 |

**Text Books:**

1. Subramanian N. (2013), "Design of Reinforced Concrete Structures", Oxford University Press.
2. Varghese P.C. (2008), "Limit State Design of Reinforced Concrete", PHI Learning Limited, 2nd Ed**.**

**Reference Books:**

1. IS 456:2000, "Plain and Reinforced Concrete – Code of Practice", Bureau of Indian Standards
2. IS 1893(part 1): 2016, "Criteria for Earthquake Resistant Design of Structures: Part 1 General Provisions and Buildings", Bureau of Indian Standards
3. IS 13920:2016, "Ductile Design and Detailing of Reinforced Concrete Structures Subjected to Seismic Forces – Code of Practice", Bureau of Indian Standards

**Course Outcomes: The students will learn**

- To understand both the material behaviour of individual elements as well as the complete structure.

- The design principles and the use of design codes correctly.
- To use the requirements for structural safety measures against earthquake.
- To develop their sense on Design Philosophies and Methods Slab Design, Beam Design, Column and Footing Design, Special Topics.

**SYLLABUS (V SEMESTER)**

| **Paper VIII/Subject Name: GE- II (Open) - Fundamentals of Vaastu** | | **Subject Code: ARC132G516** |
|---|---|---|
| **L-T-P/S-C-3-0-0-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):P** |

**Course Objective:**

- To familiarize students with various Vaastu Principles and its application in the field of Architecture.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Introduction to Vaastu Shastra**<br>• Overview of Vaastu Shastra, Vaastu Purusha Mandala, Cosmic Directions, Design Concepts, Experiences of Space and Form, Cardinal and Ordinal Directions, Vaastu and its relation to Human Beings. | 8 |
| II | **Philosophies, Practices, and Principles of Vaastu**<br>• Understanding various Philosophies, Practices and Principles of Vaastu and its importance in Practical Aspects , Discussions and Analysis of Vaastu Principles, Positive and Negative Effects, etc. | 10 |
| III | **Application of Vaastu Principles**<br>• Vaastu for Residential Buildings, Apartments, Commercial Buildings, etc., Understanding importance of colour, lighting, material aspects and its effects, Deviation of Degrees, Direction of Roads, Location of Bedrooms, Kitchen, Puja Room, Living Room, Toilets etc., Closed corners, Raised Spaces etc. | 14 |
| IV | **Case Studies**<br>• Study and analysis of various Case Studies using Vaastu principles.. | 16 |
| TOTAL | | **48** |

**Text Books:**


1. Harry N. Abrams (1 October 2007), ISBN-13: 978-1584796398,. *Space Matters: Use the Wisdom of Vastu to Create a Healthy Home. 11 Top Designers Show You How.*
2. Sokolova, O. (2017). *Your Happy House: Illustrated Vastu Shastra for Everyone.*
3. Ananth, S. (1998). *The Penguin Guide Book to Vaastu.* Penguin Group.
4. Bansal, A. K. (2002). *Vastu: How to Create a Harmonious Home Through Ancient Indian Design.*


**Reference Books:**


1. Dass, S. S. (2013 ). *The Miracles of Vaastu Shastra* .
2. Pandit, S. (2004). Golden *Rules Of Vastu Shastra - Remedies And Solutions* . Ubs Publishers' Distributors (P) Ltd.
3. Manjul Publishing House Pvt. Ltd. (1 March 2002),, *Vaastu Niwas,* ISBN-13: 978-81867751


**Course Outcomes:** The students will learn:

- The difference between Vaastu and Feng Sui.
- Various Vaastu related problems and their remedies.
- The importance of buildings like temples, fort, market, big buildings, towns, colonies Ashrams, clubs, etc. planned in accordance to Vaastu principles.

**SYLLABUS (V SEMESTER)**

| | | |
|---|---|---|
| **Paper VIII /Subject Name: GE: II (Open) - City & The Arts** | | **Subject Code: ARC132G516** |
| **L-T-P/S-C – 3-0-0-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/S/TP):P** |

**Course Objective:**

- To develop a sense of art and design involved in the making of notable public spaces. Gain a designer's or artist's perspective on viewing such public arts that represents a City's identity.

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Introduction to the course :**<br>Introduction to Public Art and perception of Aesthetics in case of a City. Design principles & theories – axis, symmetry, hierarchy, datum, rhythm, repetition, and transformation, massing etc. and Architectural appreciation. | 8 |
| II | **Visually identifying the City:**<br>• Understanding a City's identifying features/ aspects in terms of Art.<br>• Apprehension of core values and ideas of the Artists or the Public.<br>• Analysing famous examples of City art/ Public art. | 10 |
| III | **Understanding City's morphology through Art :**<br>• Ways of interaction of public/ users with the forms of art.<br>• Landscapes as Public Art forms portraying City character.<br>• Built-forms and Facades as identifying art features of a City.<br>• Pattern & Geometry in City planning as identifying art features of a City.<br>• Water bodies (Natural & Man-made) as Public Art forms portraying City character. | 14 |
| IV | **Group project on Public Art representing a City/ Place :**<br>• Understanding the idea behind Public Spaces & concepts of Placemaking through Public Art.<br>• Data collection through field studies, photo documentations, interviews etc.<br>• Analysis of the selected City on the basis of all the parameters covered in the previous modules.<br>• Formulation of outcomes, final proposal for the City and discussions/ reviews. | 16 |
| **TOTAL** | | **48** |

**Remarks:** Every City is represented in its visual, performing and literary arts. The city is either a constant backdrop or the central character in all valid artistic productions which deal with urban situations. A city's socio-cultural and morphological transformations remain documented in its literature, paintings, plays and films and in spite of inevitable changes in its urban fabric over time, certain images remain embedded in the public memory of place, which are associated with the very identity of the city. In this elective, learning from diverse arts pertaining to cities, would reveal cities in their various aspects and equip a designer to take up critical design initiatives with a perception of the presence of the past and the future and the presence of the particular, the locus.

**Text Books: NA**

**Reference Books: NA**

**Course Outcomes:** The students will learn:

- A city's socio-cultural and morphological transformations that remain documented in its literature, paintings, plays and films and in spite of inevitable changes in its urban fabric over time, certain images remain embedded in the public memory of place, which are associated with the very identity of the city.

**SYLLABUS (V SEMESTER)**

Paper VIII: **GE-2 (OPEN) Subject Name: Fundamentals of Climate Responsive Architecture**

**Subject Code: ARC132G516**

**L-T-P/S-C –3-0-0-3** **Credit Units: 03** **Scheme of Evaluation: (T/P/TP/S) :P**

**Course Objective:**

- To study the role of climate change in architectural design, the planning and construction of buildings with respect to climatic conditions and also varied materials impacting the human comfort level.

**Prerequisites: NIL**

**Detailed Syllabus:**

| **Modules** | **Topics (if applicable) & Course Contents** | Periods |
|---|---|---|
| I | **Introduction to the impacts of climate change:**<br>Introduction to extreme events and gradual changes of the climate;<br>To study human heat balance and comfort. To familiarize students with the design and settings for buildings for daylight and factors that influence temperature. Human comfort (body & thermal), thermal comfort factors and indices. Principles of thermal design, structural and ventilation controls and their application in building. Illumination and day lighting. Use of shading angles for lighting and radiation techniques and their application in buildings. To inform about the air pattern around buildings and the effect of wind on design of buildings and developing a site. Effect of climatic elements of thermal comfort environment. | 12 |
| II. | **Elements of Climate:**<br>Elements of climate, measurement and representations of climate data. Classification of tropical climates, major climate zones of India. Effects of landscape elements on site/micro climate. | 12 |
| III. | **Climate and Climate Change:** Components, Phenomena, radioactive forces, Energy budget and transport, atmospheric circulation, ocean circulation, land-surface process, carbon cycle.<br>**Sustainable Development**: SDGs, GAR, SFDRR, Hyogo Framework. | 12 |
| IV | **Design Principles:**<br>Design of buildings and developing a site. To expose the students to the various design strategies for building in different types of climatic zones in India. Exposure to different design strategies across the globe. | 12 |
| **TOTAL** | | 48 |

**Text Book:**


3. *Manual of Tropical Housing and Building*,Koenigsberger, O.H.*;* 1st Ed.; 2009; Orient BlackSwan; Hyderabad.
4. *Climate design -Part I,* Orient Longman, Madras.


**Reference Books:**


6. Manakbhavan.,*Bureau of Indian Standards IS 3792 (1987), Hand book on Functional requirements of buildings other than industrial buildings, (Part I – IV),*.
7. Evans, Martin; *Housing Climate and Comfort;* 1st Ed.; 1980; Architectural Press, London.
8. Givoni, B*; Man, Climate and Architecture*; 1st Ed.; 1969; Applied Science Publishers Ltd., London.
9. Givoni, B; *Passive and Low Energy Cooling of building;* 1st Ed.; 1994; Van Nortrand Reinhold; New York.

10. Gallo, C, Sala, M &Sayigh, A.M.M; *Architecture, Comfort and Energy;* 1st Ed.; 1988; Elsivier Science Ltd; New York.

**Course Outcomes: The students will**

- Have a profound overview about climate vulnerability, the impacts of advancing climate change,
- Get to enhance their knowledge of the practical field with sensitiveness towards the environment.
- Have a profound overview of Introduction to the impacts of climate change, Elements of Climate, Thermal Comfort, Design Principals.

**SYLLABUS (VI SEMESTER)**

| | | |
|---|---|---|
| **Paper I /Subject Name: Architectural Design VI** | | **Subject Code: ARC132C611** |
| **L-T-P/S-C: 1-0-7-8** | **Credit Units: 08** | **Scheme of Evaluation: (T/P/TP/S): S** |

**Objective:** To enable the students to integrate design with services, function, vertical planning , structural design component, significance of material, construction techniques, specialised building services in the framework of architectural design , Development Regulations (building byelaws and rules); circulation networks (people, vehicular access), site planning, advanced construction technology and newer building materials and site context.

**Prerequisites:** NIL

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Literature review and case studies:** Learning from detailed study and analysis of building systems and envelopes; character of Multi-storeyed Building through literature review, site visits. | 32 |
| II | **Concept development and site planning:** Concept development of the project and detailed site planning. The studio enables understanding the complex mechanisms of designing services intensive buildings in tight urban context, having multiple levels (above and/or underground). Use of core plan, service floor, vertical stacking and vertical planning to maximise the use of concept. | 32 |
| III | **Detailed planning**: Detailed building planning with services and construction techniques considered. The special emphases are on utilitarian parameters, space optimisation, conformance with regulatory requirements, integration of structural systems and building services (HVAC, fire, electrical, communication, plumbing etc.) in architectural layout and construction technology. | 32 |
| IV | **Representation drawings**: Finalization of design and make presentation drawing for execution which includes Site plan, floor plans, elevation, sections, details,3D Perspectives and models.. Presentation of works of design through portfolio or panels. | 32 |
| | **TOTAL** | 128 |

**Remarks:** Designing of Mixed-use Tower (High Rise). The studio encourages the students to explore modern automation and intelligent systems for building management and energy conservation. They will learn about site planning and landscaping in tight spatial context.

**Text Books:**

1. *High-rise Manual: Typology and Design, Construction and Technology* ,Kloft, E. and Johann, E. (2003)., 1st Ed. Basel : BirkhauserVerlag AG.
2. *Typology+: Innovative Residential Architecture* , Markus, K., Rollbacher, R., Herrmann, E., Wietzorrek, U. and Ebner, P. (2009. Basel: BirkhauserVerlag AG.

**Reference Books:**

1. Baiche, B. and Walliman, N. (2012*). Neufert Architects Data*, 4th Ed. Oxford : Wiley-Blackwell.
2. Chiara, J. D. and Michael, J. C. 2001. *Time Savers Standards for Building Types*. Singapore : McGraw Hill Professional.

3. Gauzin-Muller, D. (2002). Sustainable *Architecture and Urbanism: Concepts, Technologies, Examples*. 1 st Ed. Basel :BirkhauserVerlag AG.
4. Huxtable, A-L. (1984). *Tall Buildings Artistically Reconsidered*.

**The students will learn**

- To enable the understanding of architectural design as integrating spatial and technical
- Understanding of different types of architectural and technical drawings.
- To enable development of an architectural design project into schematic drawings.
- To create architectural drawings for construction and as a base for structures and through integrating concerns of structure, construction and services.
- To develop sense on Literature Review and Case Studies, Concept Development and Site Planning, Detailed Planning and Representation Drawing.

**SYLLABUS (VI SEMESTER)**

| | | |
|---|---|---|
| **Paper II /Subject Name: Building Construction and Material VI** | | **Subject Code: ARC132C612** |
| **L-T-P/S-C: 1-0-3-4** | **Credit Units: 04** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Objective:**

- To introduce students to the technicalities of building construction and material.
- To acquaint with various methods of construction

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| IA | **SPECIALISED DOOR OPENINGS & GATES**: Types of specialised doors- Collapsible Gate, Rolling Shutter, Steel doors for garage & Sliding gates & understanding the concept of Sensor door. | 15 |
| IB | **Material: PVC & FRP:** Study the importance of PVC & FRP Materials with respect to conventional materials, manufacturing process and its advantages in building industry. | 1 |
| IIA | **EXTERNAL CLADDING:** Understanding the functions of external cladding and its importance, Types of cladding- Aluminium Composite cladding showing its fixing details. | 15 |
| IIB | **Material: SOUND & THERMAL INSULATION:** Types and classification of sound and thermal insulation, properties and specifications. | 1 |
| IIIA | **FRONT GLAZING:** Front Glazing with glass fixing with different techniques- Aluminium sections, Patch and spider fittings. | 15 |
| IIIB | **Material: ADVANCED BUILDING COMPONENTS FOR SOUND & THERMAL INSULATIONS:** Types and classification of Advanced building components- UPVC Doors & windows, Understanding section profiles, its advantages & specifications. | 1 |
| IVA | **EXTERNAL GLAZING:** External glazing of various types- Curtain Glazing & Structural Glazing showing with advanced fixing details. | 15 |
| IVB | **Material: FIRE INSULATION:** Types and classification of Fire insulation materials and its properties. | 1 |
| **TOTAL** | | 64 |

**Text Books:**

1. *Building construction*; Mackay, W.B.; 1st Ed.; 2005; Donheed; London.

**Reference Books:**

1. Chudley, R; *Construction technology*; 2nd Ed.; 1987; ELBS; Harlow.
2. Barry, R; *Construction of building*; 4th Ed.; 1999; East West Press; New Delhi.
3. Kumar, Sushil; *Building Construction*; 19th Ed.; 2001; Standard Publishers Distributors; Delhi.
4. Arora, Bindra; *Building Materials***;**

**The students will**

- Be introduced to construction material and their various construction techniques.
- Be oriented to various texture, workability of materials along with their strength and durability.
- Develop their sense on Specialised Doors and Opening Gates, External Cladding, Front Glazing and External Glazing.

**SYLLABUS (VI SEMESTER)**

| | | |
|---|---|---|
| **Paper III /Subject Name: Working Drawing** | | **Subject Code: ARC132C613** |
| **L-T-P/S-C: 1-0-4-2** | **Credit Units: 02** | **Scheme of Evaluation: (T/P/TP/S):P** |

**Course Objective:** To enable the students to learn the techniques of working drawing which are required to take permission from authorities as well as to do construction on site.

**Prerequisites:** NIL

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Introduction:** Architectural Drafting – Lettering, Dimensioning line, Drafting conventions Title blocks, Office standards, representation of different materials in section. Use of Graphic symbols in drawings. | 6 |
| II | **Drawing Sheets- I:** Drafting and preparing sheets of foundation plan, parking plan, floor plans, elevations, sections, roof plans with roof top water drainage layout. | 26 |
| III | **Drawing Sheets- II:** Drafting and preparing sheets of kitchen, toilet, staircase, lift, doors, and windows. | 22 |
| IV | **Drawing Sheets-III:** Drafting and preparing of sheets of site development, electrical drawings, gate with boundary wall, sanitation and water supply with calculations and detailed plans of services. | 10 |
| **TOTAL** | | 64 |

**Remarks:** The above drawings need to be prepared for one design project like Residence, Apartments, Factory building, Swimming pool etc. handled in an earlier Architectural design studio. Use of CAD techniques in working drawing may be encouraged.

**Text Books:** NOT REQUIRED

**Reference Books:** NOT REQUIRED

**The students will learn:**

- To prepare various drawings that are required to get permission from building authorities as well as it can also be implemented by the workers on site.
- To develop their ideas on Introduction (Architectural Drafting), Drawing Sheets -1(Foundation Plan), Drawing Sheets – II (Interior elevations and Site plan) and Drawing Sheets –III (Preparing of sheets and file).

| **SYLLABUS (VI SEMESTER)** |
|---|

| **Paper IV /Subject Name: Building Services IV** | | **Subject Code: ARC132C616** |
|---|---|---|
| **L-T-P/S-C: 1-0-4-2** | **Credit Units: 02** | **Scheme of Evaluation: (T/P/TP/S):TP** |

**Objective:**

To develop the knowledge and skills required for understanding acoustics in building and its integration with architectural design.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Introduction to the study of acoustics:**<br>• Nature of sound<br>• Basic terminologies - frequency, pitch, tone, sound pressure, sound intensity and decibel scale, loudness, threshold of audibility and pain, masking, sound and distance inverse square law. | 9 |
| II | **Behaviour of sound in enclosed spaces**:<br>• Reflection of sound, nature of reflection from plane, convex and concave surfaces, sound diffraction.<br>• Absorption of sound, sound absorption coefficient, reverberation, reverberation time calculation.<br>• Use of Sabine's and Eyring' formula, sound absorbents, porous materials, panel or membrane absorbers and cavity or Helmboltz resonators, role of functional absorbers.<br>• Absorption coefficients of indigenous acoustical materials, use of IS code 2526-1963, method of setting out of raked seating.<br>• Market surveys to understand the trends in different acoustic materials and techniques available. | 9 |
| III | **Acoustical design:**<br>• Acoustical design requirements for halls used for speech, drama and music.<br>• General purpose halls used for both speech and music, cinema theatres, open air theatres. Study of auditorium designed and acoustically treated.<br>• Case studies (online and offline) on acoustically designed spaces. | 9 |
| IV | **Introduction to environmental and industrial noise and noise control:**<br>• Noise and its classification, outdoor and indoor noise, airborne noise and structure borne, impact noise, community and industrial noise.<br>• Transmission of noise and transmission loss.<br>• Maximum acceptable noise levels.<br>• Means of noise control and sound insulations. Constructional measures of noise control and sound insulation. Use of sound measuring instrument.<br>• Sources of industrial noise - impact, friction, reciprocation, air turbulence and other noise.<br>• Methods of reduction by enclosures and barriers, source of outdoor noise- air traffic, rail traffic, road traffic and seashore and inland Traffic planning and design against outdoor noise for air traffic, road traffic and rail traffic.<br>• Incorporating noise control measures and other acoustic considerations in real-life situations in planning of school, residences , hospital etc. | 9 |
| **TOTAL** | | 36 |

**Text Books:**

1. Architectural Acoustics, David Egan; India Edition;2008/2009; J. Ross Publishing, Florida / Cengage Learning India Private Limited; New Delhi
2. Acoustic Design for the Home Studio, Mitch Gallagher; 1st Ed; 2006; Thomson Course Technology Professional Technical Reference

**Reference Books:**

1. Doelle, Leslie L; Environmental Acoustics; 1st Ed; 1972; McGraw-Hill Companies; New York
2. Knudsen, Vern O., Harris, Cyril M.; Acoustical Designing in Architecture; 1980; American Institute of Physics for the Acoustical Society of America; New York
3. Parkin, Peter Hubert, Humphreys, Henry Robert; Acoustics: Noise and Building; 1st Ed; 1969; Faber and Faber; London

**The students will learn:**

- To relate Acoustics with Architecture
- To frame Acoustical design requirements for different enclosed spaces e.g. halls, theatres, classrooms etc.
- To develop their sense on Introduction to the study of acoustics, Behaviour of sound in enclosed spaces, Acoustical design, Introduction to environmental and industrial noise and noise control.

**SYLLABUS (VI SEMESTER)**

| | | |
|---|---|---|
| **Paper VII /Subject Name: Green Buildings (DSE – 3)** | | **Subject Code: ARC132D617** |
| **L-T-P/S-C: 1-0-2-3 (T/P/TP):TP** | **Credit Units: 03** | **Scheme of Evaluation:** |

**Objective:**

- To study the green concepts and techniques in the industry to address the sustainability issues

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Introduction to Green Buildings and Rating Systems:**<br>• Introduction to Green Buildings<br>• Need of Green Buildings<br>• Different organisations, industries in Green Buildings<br>• Green Building certifications by LEED, IGBC, GRIHA etc. | 20 |
| II | **Sustainable Architecture and Site Selection Planning:**<br>• Site Preservation; Prevention and Control of Soil Erosion<br>• Access to public transport; basic amenities<br>• Preservation of natural topography and vegetation; Heat Island reduction<br>• Universal Design; Facilities for construction workforce | 20 |
| III | **Water Conservation and Energy Efficiency:**<br>• Rainwater Harvesting; Efficient Plumbing Fixtures<br>• Management of Irrigation systems; Waste water treatment<br>• Minimum Energy performance; Enhanced Energy Efficiency<br>• On-site & Off-site Renewable energy; Energy Metering and Management | 20 |
| IV | **Building Materials and Indoor Environmental Quality:**<br>• Fresh Air Ventilation and Tobacco Smoke Control<br>• Segregation of Waste; Organic Waste Management<br>• Daylighting; Minimization of Indoor and Outdoor Pollutants; Low-emitting Materials<br>• Indoor Air Quality Testing and Management; Use of certified green products and equipment's | 20 |
| **TOTAL** | | **80** |

**Text Books:**

1. Krishan A., Baker N., Yannas S., Szokolay S.V. (2001), "Climate Responsive Architecture", Tata McGraw Hill Education Private Limited.
2. Kordjamshidi M. (2011), "House Rating Schemes from Energy to Comfort Base", Springer

**Reference Books:**

1. IGBC Green New Buildings Rating System (2016), Version 3.0, Indian Green Building Council

**The students will learn:**

- Green concepts and techniques to address the issues of water efficiency, energy efficiency, reduction in fossil fuel use etc.
- To enhance occupant health, productivity and well-being.
- To develop their sense on Introduction to Green Buildings and Rating Systems, Sustainable Architecture and Site Selection Planning, Water Conservation and Energy Efficiency, Building Materials and Indoor Environmental Quality.

**SYLLABUS (VI SEMESTER)**

| | | |
|---|---|---|
| **Paper VII/Subject Name: Fundamentals of Vaastu (DSE 3)** | | **Subject Code: ARC132D617** |
| **L-T-P/S-C-1-0-2-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):TP** |

**Course Objective:**

- To familiarize students with various Vaastu Principles and its application in the field of Architecture.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Introduction to Vaastu Shastra**<br>• Overview of Vaastu Shastra, Vaastu Purusha Mandala, Cosmic Directions, Design Concepts, Experiences of Space and Form, Cardinal and Ordinal Directions, Vaastu and its relation to Human Beings. | 10 |
| II | **Philosophies, Practices, and Principles of Vaastu**<br>• Understanding various Philosophies, Practices and Principles of Vaastu and its importance in Practical Aspects , Discussions and Analysis of Vaastu Principles, Positive and Negative Effects, etc. | 10 |
| III | **Application of Vaastu Principles**<br>• Vaastu for Residential Buildings, Apartments, Commercial Buildings, etc., Understanding importance of colour, lighting, material aspects and its effects, Deviation of Degrees, Direction of Roads, Location of Bedrooms, Kitchen, Puja Room, Living Room, Toilets etc., Closed corners, Raised Spaces etc. | 20 |
| IV | **Case Studies**<br>• Study and analysis of various Case Studies (Residence and Office) using Vaastu principles.<br>• Intervention and Design Proposals.<br>• Detailed Drawings. | 40 |
| TOTAL | | **80** |

**Text Books:**


1. Harry N. Abrams (1 October 2007), ISBN-13: 978-1584796398,. *Space Matters: Use the Wisdom of Vastu to Create a Healthy Home. 11 Top Designers Show You How.*
2. Sokolova, O. (2017). *Your Happy House: Illustrated Vastu Shastra for Everyone.*
3. Ananth, S. (1998). *The Penguin Guide Book to Vaastu.* Penguin Group.
4. Bansal, A. K. (2002). *Vastu: How to Create a Harmonious Home Through Ancient Indian Design.*


**Reference Books:**


1. Dass, S. S. (2013 ). *The Miracles of Vaastu Shastra* .
2. Pandit, S. (2004). Golden *Rules Of Vastu Shastra - Remedies And Solutions* . Ubs Publishers' Distributors (P) Ltd.
3. Manjul Publishing House Pvt. Ltd. (1 March 2002),, *Vaastu Niwas,* ISBN-13: 978-81867751


**Course Outcomes:** The students will learn:

- The difference between Vaastu and Feng Sui.

- Various Vaastu related problems and their remedies.
- The importance of buildings like temples, fort, market, big buildings, towns, colonies Ashrams, clubs, etc. planned in accordance to Vaastu principles.

| **SYLLABUS (VI SEMESTER)** |
|---|

| **Paper VIII /Subject Name: Theory of structures VI (GE – 1)** | | **Subject Code: ARC132G604** |
|---|---|---|
| **L-T-P/S-C: 3-0-0-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):T** |

**Objective:**

- To study structural behaviour of Steel structural systems and disaster resistant structural systems.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Design Philosophies and Methods Steel Connections:**<br>• Introduction to Steel: Properties and Sections<br>• Limit State Method of Design; Working Stress Method of Design<br>• Introduction to IS 800:2007, Design requirements<br>• Design of simple and eccentric connections: Bolt, Rivet and Welded connections | 12 |
| II | **Design of Truss Member and Beam Design:**<br>• Design of Tension members and Compression members in trusses<br>• Design of Laterally restrained Beams, Built Up Girders etc. | 12 |
| III | **Column and Footing Base Design:**<br>• Design of built-up-columns: (lacing and batten)<br>• Design of slab base<br>• Design of Simple column and footing connection details | 12 |
| IV | **Disaster Resistant Structural Systems:**<br>• Provision for fire protection for steel structures- relevant code provision<br>• Study of IS-875:2015, Part III – wind loads up to determination of wind pressure<br>• Working and structural consideration for disaster prone areas, coastal area structures, subterranean structures etc. | 12 |
| **TOTAL** | | 48 |

**Text Books:**


1. Subramanian N. (2011), "Design of Steel Structures", Oxford University Press.
2. IS 800:2007 (2007), "General Construction in Steel – Code of Conduct", Bureau of Indian Standards
3. IS 875:2015 (Part 3) (2015), "Design Loads (Other than Earthquake) for Buildings and Structures – Code of Practice: Part 3 Wind Loads", Bureau of Indian Standards


**Reference Books:**


1. Duggal S.K. (2009), "Design of Steel Structures", Tata McGraw Hill Education Private Limited, Fourteenth ed. Reprint.
2. Steel Table (2017), Birla Publication Pvt. Ltd.


**The students will learn:**

- To understand both the material behaviour of individual elements as well as the complete steel structure.
- The principles of design and the use of design codes correctly
- To understand the requirements for structural safety measures during disasters.
- To develop their sense on Design Philosophies and Methods Steel Connections, Design of Truss Member and Beam Design, Column and Footing Base Design, Disaster Resistant Structural Systems.

| **SYLLABUS (VI SEMESTER)** |
|---|

| **Paper IX /Subject Name: GE:II (Open) – Imagining Cities** | | **Subject Code: ARC132G616** |
|---|---|---|
| **L-T-P/S-C – 3-0-0-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/S/TP): P** |

**Course Objective:**

- To develop the sense of a City's Identity and the essence of how social and cultural constructs govern the formation and growth of a city

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Introduction to the course :**<br>Introduction to the Spatial and Social history of cityscapes starting from Industrial Revolution. History of Industrial Revolution and its effect on European and American Cities. History of evolution of cities in India from Medieval Cities till Modern Cities. Green field Developments and their concepts that formed cities like Radiant City , Garden City, etc | 12 |
| II | **Factors Effecting the formation of cities :**<br>• The Great Depression<br>• Migration and Gentrification<br>• Social and Cultural constructs of Westernization and Indian cities in the Post Colonial Era. | 12 |
| III | **Visual and Narrative imagination of cities :**<br>• Through the medium of Documentaries<br>• Through the medium of Movies<br>• Through the medium of Poetry | 12 |
| IV | **Group project:**<br>• Understanding the idea behind the formation of a city<br>• Creating documentations on city images.<br>• Analysis of the selected City on the basis of all the parameters covered in the previous modules.<br>• Formulation of outcomes, final proposal for the City and discussions/ reviews. | 12 |
| **TOTAL** | | **48** |

**Text Books: NA**

**Reference Books: NA**

**Course Outcomes:** The students will learn

- From diverse arts pertaining to cities, and equip a designer to take up critical design initiatives with a perception of the presence, past and the future.

**SYLLABUS (VI SEMESTER)**

**Paper : GE:II Open - Computer Aided Design in Architecture** **Subject Code:ARC132G616**

**L-T-P/S-C: 3-0-0-3** **Credit Units: 03** **Scheme of Evaluation: (T/P/TP/S):P**

**Objective:**

- To familiarize students with drawing aids and equipment along with learning to computerise design drawings.
- To orient students to the digital tools.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Interface:** Introduction to the interface, Digital drawings tools, drawing lines and shapes, modifying lines and shapes, drawing with accuracy and speed tools and commands. Page setup. | 12 |
| II | **Drawing and Modifying:** Drawing and Modifying objects, properties, Units, dimensions, lines and pen weight. Blocks, array. | 12 |
| III | **Introduction to Commands:** Basic drawing commands, editing commands, scaling, setting dimensioning variables etc. | 12 |
| IV | **Presentation and plotting:** Presentation, hatching and rendering, texts, Layers, planes , views and viewports Import/export, print setup and plotting(with a specific project submission) | 12 |
| | **Total** | 48 |

**Text Books:**


2. *Up and Running with AutoCAD 2015: 2D & 3D Drawing and Modelling*,Gindis, E;*1st Ed.; 2014;* Elsevier; London.


**Reference Books:**


5. Seidler, D. R.; *Digital Drawing for Designers: A Visual Guide to AutoCAD 2012;* 1st Ed.; 2007; Fairchild Publications; London.
6. Smith, B. L.; *3ds Max 2008 Architectural Visualization Beginner to Intermediate;* 1st ed.; 2007; 3DATS; China.
7. Moss, Elise; *Autodesk AutoCAD Architecture 2016 Fundamentals;* 1st Ed.; 2011; SDC Publications; London.
8. Omura, George & Benton, Brian C; *Mastering AutoCAD 2016 and AutoCAD LT 2016;* 1st Ed.; 2017; John Wiley & Sons; London.


**Course Outcomes: The students will learn**

- Develop techniques of computerize architectural representation
- Comprehend an object or space and represent it graphically and digitally

- Understand the importance of design tools - (AutoCAD).
- Develop sense of Interface, Drawings and Modifying, Introduction to Commands, Presentation and Plotting.

**SYLLABUS (VII SEMESTER)**

| **Paper I /Subject Name: Architectural Design VII** | | **Subject Code: ARC132C711** |
|---|---|---|
| **L-T-P/S-C: 1-0-8-9** | **Credit Units: 08** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Objective:**

- The studio emphasis shall be on site planning with creative and rational skills for problem solving on real site. The design problem should focus (but not limited to) on a multifunctional large span public buildings in an urban setting (preferably low to medium density). Emphasis of the problem would be on design parameters (generating unique sense of architectural vocabulary), graphical representation of design details and architectural expression in functional and construction elements, energy efficient approaches etc. The design proposal will be taken up with bye-laws, city master plan or any other restriction on large sites.

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Introduction – Literature review, Case studies & Site visit:**<br>Develop understanding through literature review (group or individual), case studies, evaluating real-life projects, through documentaries/ movies/ photos etc. Socio-cultural approach must be sensitised to deal with such design projects. Site visits for collection of context specific data, following mapping, analysis/ evaluation. | 32 |
| II | **Concept Development:**<br>Discussions on key-words, concept sketches initiated for idea generation. Flow diagram to explore relation of various spaces, bubble diagram for locating various zones on site, try and re-create to analyse spaces in all dimensions through block models, single line graphics and study models for choosing the right option. | 32 |
| III | **Design Development & Area Programming:**<br>Understand the role of existing site features & built environment to design spaces of learning and recreation through formal & informal means of interactions. Consider building bye-laws & other site restrictions. Get intended outcomes through architectural design integrated into the urban fabric. The planning worked out in two stages; site plan/ master plan and detailed designs of individual buildings. All interior and exterior built-spaces must be planned to provide ease of access to all (universal design). | 32 |
| IV | **Final Design Proposal**:<br>Final set of drawings (site/ master plan, site sections, floor plans, elevation, sections, details, 3D Perspectives) and detailed physical model explaining the approach and consideration of natural & urban setting to achieve the requirements (with various other restrictions), use of innovative materials, techniques and integration of services in site as well as building level. Presenting the works of design through portfolio or panels. | 32 |
| **TOTAL** | | 128 |

**Remarks:**

Design exercises could be **Performing Arts Centre/ Institute, Regional Cultural Complex, Sports Hub, Interpretation Centre, Auditorium & Exhibition Complex**.

**Text Books:**


1. Mildred F. Schmertz, AIA. (1973). *Campus Planning and Design.* McGraw-Hill Inc.,US.
2. Dober, P. (1996). *Campus Architecture: Building in the Groves of Academe*. McGraw-Hill Inc.,US.
3. Gauzin-Muller, D. (2002). *Sustainable Architecture and Urbanism: Concepts, Technologies, Examples*. 1st Ed. Basel: BirkhauserVerlag AG.
4. Bell, Simon. (1997). *Design for Outdoor Recreation*. Spon Press 11 New Fetter Lane, London.


**Reference Books:**


1. Baiche, B. and Walliman, N. (2012*). Neufert Architects Data*, 4th Ed. Oxford : Wiley-Blackwell.
2. Chiara, J. D. and Michael, J. C. 2001. *Time Savers Standards for Building Types*. Singapore : McGraw Hill Professional.
3. Harris W. Charles, Dines T. Nicholas (1998), *Time Savers Standards for Landscape Architecture: Design & Construction Data.* McGraw Hill Inc.


**Course Outcomes:** The students will learn

- To form correlation between design and other subjects studied in previous semesters and till present.
- To communicate ideas through sketches, drawings or models developed to meet various requirements.
- To demonstrate creative use of appropriate technology, structural system and materials.
- To develop sensitivity towards building bye-laws, sustainable technologies and energy efficiency.
- To create architectural drawings through integrating concerns of structure, construction and services.

**SYLLABUS (VII SEMESTER)**

| **Paper II/Subject Name: Town Planning** | | **Subject Code: ARC132C702** |
|---|---|---|
| **L-T-P/S-C –3-0-0-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):T** |

**Course Objective:**

- To understand the various elements, classifications and typology of Human Settlements and process of evolution of cities.
- To familiarize students with Planning concepts and process in Urban and Regional Planning.

.

**Prerequisites: NIL**

Detailed Syllabus:

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Introduction to Town Planning and Design of Cities**:<br>a) Definitions related to Planning: Urban, Rural, Town, City, Village, Urban Planning, Urban Agglomeration, Urban Sprawl, Rural-Urban Fringe, Central Business District (CBD), Policies, Acts, Schemes etc; Levels of planning, scope and components, types of planning, elements and scope, characters of a town, census definition of urban area; Goals and objectives of planning; Benefits of planning; Densities of town and constituents of town/city; Understanding the limitations of Planning; Arguments for and against planning; Role of Urban Local Bodies (ULBs) in town planning, Industrial Revolution and its impact on cities.<br>b) Human Settlements – Urban and Rural settlements; Evolution and growth of settlements; Characteristic features of urban and rural settlements. | 8 |
| II. | **Town Planning in Ancient and Medieval India**:<br>Cities of Indus Valley and Vedic Period, Cities of Mughal & British period; Town planning as per Vaastu Shastra. | 8 |
| III. | **Urban and Regional Planning Concepts:**<br>a) Evolution of Planning concepts: Garden City Movement, Three Magnet Diagram, Letchworth, Welwyn and Radburn garden city concept; Planning concepts by Le Corbusier: Chandigarh City Planning; Sir Patrick Geddes: Conurbation; Doxiadis: Ekistics.<br>b) Urbanization, Industrialization and Urban Growth, Growth pattern of towns/cities, Informal Growth and its impact on the city, Urban Growth Models including Concentric Zone Model; Sector Model and Multiple Nuclei Model, Types of surveys in planning.<br>c) Regional Planning - Need, Importance & Implementation; Difference between Urban and Regional Planning; Types of Regions, Hierarchy of Planning Regions etc. | 16 |
| IV | **Development Plans and Development Control Regulations:**<br>a) Land use planning and classification for Urban and Rural Settlements, Importance of Colour Codes; Concept of Local Area Development Plan, Zonal Plan, City Development Plan, Master plan, Regional Plan etc. its elements, preparation and implementation; URDPFI Guidelines, DCR, Zoning Regulations, Model Building Bye laws, National Building Codes etc.<br>b) Planning for Special Areas (hilly areas, coastal areas, border areas etc.): Guidelines, Regulations and Policy frameworks; Satellite City: Meaning, Characteristic & Examples; Smart City Planning. | 16 |
| | TOTAL | 48 |

**Text Book:**


1. *An Introduction to the Science of Human Settlements*, C.L.Doxiadis, 1968; Ekistics Hutchinson, London.
2. *Urban Planning: Theory and Practice*, Rao M.P., 2009; Cbs Publication.
3. *The Urban Pattern City Planning and Design*, Gallion A.B, 2005; CBS Publishers and Distributors.


**Reference Books:**


1. Lewis, M. (1968). *The City in History: Its Origins, Its Transformations, and Its Prospects.* Mariner Books.
2. Peter, H. (2014). *Cities of Tomorrow: An Intellectual History of Urban Planning and Design Since 1880* (Fourth ed.). Wiley-Blackwell.


**Course Outcomes:** The students will

- Be able to understand the major functions of a city, city formation and city serving functions.
- Be able to understand the land use classification and analysis for cities and rural settlements.
- Be able understand the characteristics and planning efforts of cities and towns.
-

**SYLLABUS (VII SEMESTER)**

| **Paper III /Subject Name: Urban Design** | | **Subject Code: ARC132C713** |
|---|---|---|
| **L-T-P/S-C: 1-0-1-2 TP** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):** |

**Objective:**

- To introduce Urban design as a professional discipline positioned at the interface between architecture, landscape architecture and urban planning.
- To sensitize the students about the concept of public realm, understanding of the city as a living three-dimensional entity and perception of spaces at multiple scales.
- To understand the historic evolution and fundamental concepts and theories of urban design.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Introduction and Fundamentals:**<br>• Brief review of the evolution of urban design as a discipline through history.<br>• Basic principles and theories of Urban Design/Concepts<br>• Concepts related to private, public and the interfaces.<br>• Vocabulary and the elements of Urban Design. Determinants of urban form and· Components of urban structure. | 16 |
| II | **The Morphological and Perceptual Dimension:**<br>• Morphological Dimension: Key Concepts - Land use, Built Structures,; The Public Space Network; Traditional Urban Space; Urban block Patterns and Road Networks.<br>• Perceptual Dimension: Human sensory perception of environment; Meaning and symbolism in urban form; Sense of Place and Placelessness; Place Identity; Key Attributes of Successful places; Invented places and Superficiality. | 16 |
| III | **The Social, Visual and Functional Dimension:**<br>• Social Dimension: Social construction of space; Safety and Security; The idea of being inclusive: Accessibility.<br>• Elements of Visual Dimension: Patterns and Aesthetic Order; Positive and Negative Space; Streets and Squares; Townscape and Urban Architecture; Hard and soft Landscaping; Street Furniture; Activity mapping<br>• Functional Dimension: Comfort, Relaxation, Passive & Active Engagement; Movement; Privacy | 16 |
| IV | **Urban Design and Sustainability:**<br>• Relationship of urban design with economic, environmental and social sustainability. Influence of politics and governance in public space design. Contested spaces.(Conceptual understanding).<br>• Concepts of formal and informal sector in public realm.<br>• Future of the city, community and participatory methods as a way forward | 16 |
| **TOTAL** | | 64 |

**Text Books:**


1. Larice, M. and Macdonald, E. Ed. (2013). "The Urban Design Reader". 2nd Edition. The Routledge Urban Reader Series, Abingdon, Oxon: Routledge.
2. Watson, D., Plattus, A. and Shibley, R. (2003). "*Time-Saver standards for urban design*". New York: McGraw Hill.
3. Spreiregen, Paul D. (1965). "*Urban design, the architecture of towns and cities".* Mcgraw-hill Inc, USA.


**Reference Books:**


1. Carmona, M., Heath, T., Oc, T. and Tiesdell, S. (2010). "*Public Places Urban Spaces*". Oxford: Architectural Press.
2. Marshall, S. (2009). "*Cities design and evolution*". New York: Routledge.
3. Lang, J. T. (2005). "*Urban Design: A Typology of Procedures and Products"*. Oxford: Elsevier/Architectural Press.
4. Moughtin, C., Cuesta, R., Sarris, C. and Signoretta, P. (2003). "*Urban Design - Methods and Techniques*". Oxford: Architectural Press.
5. Jacobs, Jane. (1992). "*The death and life of great American cities".* New York : Vintage Books.
6. Lynch, Kevin (1960). "*The Image of the City*". Cambridge MA: MIT Press.
7. Alexander, Christopher (1977). "*A Pattern Language*". Oxford University Press.
8. Lynch, Kevin (1981). "*The Good City Form*". Cambridge MA: MIT Press.


**Course Outcomes: The students will learn**

- To interpret relationship between the building and the city.
- To synthesize complex urban issues and resolve the interface between the building and urban space.

**SYLLABUS (VII SEMESTER)**

| **Paper IV/Subject Name: Advanced Structures** | | **Subject Code: ARC132C704** |
|---|---|---|
| **L-T-P/S-C: 2-0-0-2** | **Credit Units: 02** | **Scheme of Evaluation: (T/P/TP/S):T** |

**Course Objective:**

- To give an introduction to pre-stressed concrete, special structural forms.
- To provide awareness and introduction to earthquake prevention measures in buildings.

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | Basic concepts of pre-stressed concrete-pre-stressing systems, materials, behaviour of pre-stressed concrete beams and losses in pre-stress. | 8 |
| II | Introduction to special structural forms and basic structural concepts about shells, folded plates, domes, spaces frames, tensile structure and pneumatic structure. | 8 |
| III | Building Safety from natural Hazards: an introduction<br>• Earthquake<br>• Cyclone effects: High wind, storm surge, cyclone safety aspects in buildings.<br>• Floods<br>• Landslides<br>• Elementary Seismology<br>• Earthquake occurrence in the world, plate tectonics, faults, and earthquake<br>• Hazards maps of India and the states.<br>• Causes of earthquake, seismic waves, magnitude, intensity, epicentre and energy<br>• release, characteristics of strong earthquake ground motions<br>• Seismological instruments: Seismograph, Accelerograph , Seismoscope/Multi- SAR | 8 |
| IV | Site planning, Building Form and Architectural Design Concepts for Earthquake resistance, Historical experience, Site selection, Site development.<br>Building Forms- Horizontal and vertical Accentricites , mass and stiffness distribution, soft storey etc.<br>Seismic effects related to building configuration<br>Plan and vertical irregularities, redundancy and setbacks. | 8 |
| **TOTAL** | | 32 |

**Text Books:**

1. "*Pre-stressed Concepts*" by N Krishna Raju.
2. *"Earthquake –resistant design of structure*"by S.K. Duggal

**Reference Books:**

1. DL Schodek " *Structure"*
2. Alexander Zamen "*Form and structure in Architecture"*

**Course Outcomes: The students will learn**

Note: The teacher is expected to expound the structural concepts introduced in non-mathematical terms with examples and application in architectural design. (No problem to be solved for this.)

**SYLLABUS (VII SEMESTER)**

| | | |
|---|---|---|
| **Paper V /Subject Name: Research Methodology** | | **Subject Code: ARC132C715** |
| **L-T-P/S-C: 1-0-0-1 P** | **Credit Units: 01** | **Scheme of Evaluation: (T/P/TP/S):** |

**Objective:**

- To introduce the students to the field of academic research and enable them to establish a strong theoretical foundation.
- To infuse logical reasoning to achieve clarity of thought and also to orient the students to structured research in a focussed manner. The process of study shall enable students to conduct in depth analysis and objective research on a topic of their interest. Students may be encouraged to select the topic which may eventually culminate in the Architectural Design Thesis.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **Introduction to Research in Architecture:**<br>• Meaning of research and Types of research: Exploratory research, Conclusive research, Empirical Research etc.<br>• Difference between design studio, dissertation and design thesis.<br>• Terminologies related to research: aim, objectives, scope, limitation etc.<br>• Formulating a research: difference between research question and hypothesis: antithesis. | 04 |
| II | **Tools and Methods:**<br>• Scientific methods of research with special emphasis on architectural research methods.<br>• Architectural enquiry, visual observations, questionnaire formats of enquiry, Literature Review and case studies.<br>• Primary and secondary data, sampling, Data analysis techniques, interpretation of data.<br>• Introduction to Architectural criticism. | 04 |
| III | **Presentation Techniques**:<br>• Formats for presentation of data, case studies and analysis.<br>• Formats for presentation of thesis design- media appropriate in the architectural profession such as two-dimensional drawing, physical models, and three-dimensional computer models. | 04 |
| IV | **Report Writing/ Paper Writing**:<br>• Techniques in report/paper writing.<br>• Synopsis and abstract formulation.<br>• Presentations of relevant contextual information, interpretation of the data collected and design; reporting the design development from concept to design solution, explaining the relation of the design to existing knowledge on the topic in the form of coherently written matter.<br>• Introduction to plagiarism: Referencing, sourcing, bibliography, annexure etc. | 04 |
| **TOTAL** | | 16 |

**Text Books:**


1. Groat, Linda N. and Wang, David, "Architectural Research Methods",2nd Edition. Publishers: John Wikey & Sons., Inc., Hoboken, New Jersey.
2. Booth, Wayne C., Colomb, Gregory G. and Williams, Joseph M. (2003), "*The Craft of Research*", Second Edition. Publishers: The University of Chicago Press, Chicago.


**Reference Books:**


1. Sommer, Robert & Sommer, Barbara (2002), "A Practical Guide to Behavioural Research: Tools and Techniques". New York: The Oxford University Press.
2. Creswell, John W. (2003), "*Research Design: Qualitative, Quantitative, and Mixed Method Approaches*". 2nd Edition. Thousand Oaks, CA: Sage Publications.
3. Borden, I. and Ray, K. R. (2006), "*The Dissertation: An Architecture Student's Handbook.* Second Edition. Oxford: Architectural Press.
4. Anderson, J. and Poole, M. (1998), "*Thesis and Assignment Writing*". Brisbane: John Wiley


**Course Outcomes: The students will learn**

- To have a comprehensive knowledge on the tools and methods of research and provide a way to frame the reports in a proper way.
- To present their research and contents in a professional way. They will also secure skills required to collect, assimilate and synthesize data relevant to handling a research topic and design thesis project independently.
- To be prepared with the inevitable component of research that precedes any design.

**SYLLABUS (VIII SEMESTER)**

| **Paper IV/Subject Name: Interior Design** | | **Subject Code: ARC132D716** |
|---|---|---|
| **L-T-P/S-C: 1-0-2-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S): S** |

**Objective:**

- To introduce the discipline of interior design, study its principles and their application in interior design projects.
- To foster creative ability and inculcate skills to understand and conceive architectural design.

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Introduction and History of Interior Architectural Design:**<br>Learning Definition of interior design, Interior architectural design process, design vocabulary in terms of principles and elements. Introduction to design of interior spaces w.r.t typologies, functions, themes and concepts.<br>Brief study of history through various periods, design movements etc. Study of vernacular design of India w.r.t interior design and decoration.<br>Introduction to design problem. | 8 |
| II | **Design Development Stage I:**<br>Introduction to elements of interiors-floors, ceilings, walls, staircase, openings, service elements etc. and methods of their treatment by materials and methods of construction.<br>Development of visual design idea through the exploration of layouts, **concepts and plans**.<br>Planning considerations: functions, orientation, circulation, grouping, light, ventilation, privacy, climatic and ergonomic factors, aesthetics & cost. | 12 |
| III | **Design Development Stage II**:<br>Study of Interior Lighting, Interior Landscape, other accessories for enhancement of interiors and their effects on space and design Values.<br>Design Finalization-**Detailed Plans, Sectional Elevations, Sketches**<br>Service (electrical, lighting, water supply, drainage, air conditioning)<br>Materials & finishes (wood, glass, plastic, metals, acoustical boards, floor covering, panelling materials, false ceiling material)<br>Furniture details | 18 |
| IV | **Presentation drawings**:<br>Presentation drawings, floor plans, sectional elevations, details, 3D Perspectives and models. | 10 |
| **TOTAL** | | 48 |

**Remarks:**

- Designing interior of a building - The studio encourages the students to explore the interdependence of a building and its spaces as both of them together form an entity. It provides them with a vision that both need to be treated holistically and to be allowed to merge into each other, distinct yet together and complete.

**Text Books:**


1. Neufert, Peter; *Neufert's architects' data;* 4th Ed.; 2012; John Wiley; New Delhi
2. Ramsay and Sleeper; *Architectural graphic standard;* 11th Ed.; 2008; John Wiley; New York
3. Ching, F.D.K, Interior design Illustrated. New York: V.N.R. Publications


**Reference Books:**


1. *Time saver standards for building types*,De Chiara, Joseph and Crosbie, Michael J.;2nd Ed.; 2011; Tata McGraw Hill; New Delhi.
2. Pandya, Yatin; *Elements of space making*; 1st Ed.; 2014; Mapin Publishing; Ahmedabad.
3. Ching, F.D.K, Interior design Illustrated. New York: V.N.R. Publications


**Course Outcome:**

- This will enable students to understand the importance of holistic approach towards designing interiors and will be exposed to various techniques and materials involved in it.

**SYLLABUS ( VII SEMESTER)**

| | | |
|---|---|---|
| **Paper VII/Subject Name: Traffic Awareness** | | **Subject Code: ARC132D717** |
| **L-T-P/S-C –1-0-2-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):TP** |

**SYLLABUS ( VII SEMESTER)**

| **Paper VIII/Subject Name: Gender Sensitive Design Approach in Architecture** | | **Subject Code: ARC132D718** |
|---|---|---|
| **L-T-P/S-C –1-0-2-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):TP** |

**Course Objective:**

- To impart awareness on Gender sensitivity in educational spaces. Understanding what is 'Feminism and Architecture'
- To develop an understanding of user experiences and interfaces in different spaces that make users of all identities feel seen, represented and welcome, while avoiding the binaries, stereotypes and exclusive language that are traditionally associated with gender.
- Introducing students to various inclusive design approaches on urban scale where all gender minorities of different ages and abilities can move around easily and safely, participate fully in the workforce and public life, live healthy, sociable and active lives, is a city that improves everyone's lives.

**Prerequisites: NIL**

Detailed Syllabus:

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Gender Concerns in Architecture and City Planning : Current Scenario**<br>It's a man's world- Patriarchy and how it has shaped the spaces we now use. History of gendered spaces. LGBTQA terminologies and Universal design approach. Eliminating the presumptions and misconceptions. Review of experiments in women friendly design. Understanding the economic layer of Gendered spaces and vulnerability associated with it. Social environment theory<br>Reading material/Journals/Expression through Concept drawings and writings. | 20 |
| II. | **Educational Set-up: Lack of awareness and flaws with current model of Teaching and learning approach in Architectural Design process**<br>Need to incorporated gender in Design education in India. 'We construct what we know' – How these constructions are deeply influences by our early experiences and the nature of our underlying relationship with the world. Approaches of Various Universities –India and Abroad in incorporating Gender sensitive design in Architecture. Gender inclusive design approach – A suggestive pattern. Holistic approach- Data design Policy design and Physical design. | 20 |
| III. | **Changes over time : Case studies from around the world and learnings**<br>Understanding the notion of Gender, space and Architecture by analysing different spaces - Workplaces, Marketplace, parks and streets. | 20 |
| IV | **Experimental design :**<br>Application of the knowledge on building scale/Neighbourhood scale. | 20 |
| | TOTAL | 80 |

**Remarks:**

Reimagining Public Toilets, streets, bus stops etc.

**Text Books:**

1. *Gender Studies in Architectur*e, *Space Power and Difference* Dorty Kuhlmann.;1st Ed.; 2013; Routledge
2. *Gender, Space and Architecture, An interdisciplinary Introduction,* Jane Rendell, Barbara Penner and Iain Borden

**Reference Books:**

1. Incorporating Gender Sensitivity in Architectural Design Education in India, Sudnya Mahimkar, Pillai College of Architecture,2013
2. Addressing Gender Concerns in India's Urban Renewal Mission, Khosla,Renu.UNDP 2009
3. A feminist approach to Architecture: Acknowledging Women's way of knowing, Frank Karen
4. Gender and Built Environment, Ellen Balka, 1996

**Course Outcomes: The students will**

- Be able to able to develop sensitivity and awareness towards the LGBTQA and related terminology
- Understand and critically analyze gendered spaces.
- Be able to understand and apply the gender sensitive approach towards designing spaces.

| Paper III/Subject Name: Universal Design | | Subject Code: ARC132D719 |
|---|---|---|
| L-T-P/S-C –1-0-3-4 | Credit Units: 04 | Scheme of Evaluation: (T/P/TP/S):P |

**SYLLABUS ( VII SEMESTER)**

**Course Objective:**

- To familiarize students with the idea of universality in design in order to have inclusive spaces and programs.
- To orient and encourage students to consider various stakeholders/users and their requirements in design.

**Prerequisites: NIL**

Detailed Syllabus:

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Introduction to Universal Design**<br>• Definition<br>• Significance<br>• History and Regulatory Acts in brief<br>• User participation | 16 |
| II. | **Aspects of Universal Design**<br>• Types<br>• Principles of Universal Design<br>• Specifications | 16 |
| III. | **Understanding in practice**<br>• Case examples of various instances/projects where universal design was not adopted and understanding the gap<br>• Case examples of various instances/projects where universal design was adopted and analysing its nature in terms of user acceptability. | 16 |
| IV | **Design Tools:**<br>• Develop a design incorporating universal design ideas.<br>• Projects like a street section, public toilet, café, bust stop, ticket counter can be taken up. | 16 |
| TOTAL | | 64 |

**Text Book:**


2. Preiser, Wolfgang F. E Universal Design Handbook, McGraw Hill Professional, 2001


**Reference Books:**


1. Goldsmith, Selwyn; Universal Design*;* Taylor & Francis, 2000.
2. Hamraie, Aimi; Building Access: Universal Design and the Politics of Disability, U of Minnesota Press,, 2017
3. Vavik Tom, Inclusive Buildings, Products & Services: **Challenges in Universal Design,** Tapir Academic Press,2009


**Course Outcomes: The students will**

- Develop understanding of inclusive design.
- Comprehend a space with user requirements.
- Develop design skills to incorporate principles of universal design to make the design wholesome.

**SYLLABUS (VII SEMESTER)**

| **Paper VII /Subject Name: Advanced Construction & Services** | | **Subject Code: ARC132G719** |
|---|---|---|
| **L-T-P/S-C: 1-0-2-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Objective:**

- To introduce students to the theory of constructional design principles and also complex physical criterions included.
- To introduce students to the technicalities of building construction and materials.
- To acquaint with knowledge in technological stages concerning the surface modifications

**Prerequisites: NIL**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Advanced Trusses:**<br>Steel trusses for various spans, ridged truss, saw tooth truss with lattice girders and fixing. | 15 |
| II | **Advanced Roofing:**<br>i) Pneumatic structure, pre-engineering metal building, metal cladding (profiled ms sheet cladding)<br>ii) Shell roof, folded plate, geodesic domes, space frame and tensile structure. | 15 |
| III | **Advanced Roof Fixing And Roofing Materials:**<br>Roof lighting and use of plastic, reinforced plastic, polycarbonates, asbestos, rubber and cement products, | 9 |
| IV | **Water Proofing:**<br>Water proofing elements, construction chemicals and additives, adhesives, plaster of paris, gypsum, polyester sealants. | 9 |
| **TOTAL** | | 48 |

**Text Books:**

1. *Construction of building; 1.Barry, R; 4th Ed.; 1999; East West Press; New Delhi.*

**Reference Books:**

1. *Chudley, R; Construction technology;* 2nd Ed.; 1987; ELBS; Harlow.
2. *Building construction; Mackay, W.B.;* 1st Ed.; 2005; Donheed; London.
3. *Barry, R; Construction of building;* 4th Ed.; 1999; East West Press; New Delhi.
4. *Kumar, Sushil; Building Construction;* 19th Ed.; 2001; Standard Publishers Distributors; Delhi.

**Course Outcomes:** The students will

- Be introduced to construction material and their various construction techniques.
- Acquire knowledge in workability of materials along with their strength and durability.
- Develop their sense on specialised physical-to-technical principles of design and realization of all types of roof structures, including cladding design.

**SYLLABUS (VIII SEMESTER)**

| | | |
|---|---|---|
| **Paper I /Subject Name: Architectural Design VIII** | | **Subject Code: ARC132C811** |
| **L-T-P/S-C: 1-0-9(s)-10** | **Credit Units: 10** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Objective:**

- The studio deals with the city level urban design/development to enable the students to relate to city level design.
- To introduce urban design as a professional discipline situated at the interface between architecture, landscape architecture and urban planning.
- To sensitise the students about the concept of public realm, understanding of the city as a three dimensional entity and perception of spaces at multiple scales; familiarize with the implementation processes through various statutory and non-statutory guidelines.

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Introduction, literature review and scope:**<br>Relationship between Architecture, Urban Design and Urban Planning; Brief review of the evolution of the urban design as a discipline, basic principles and theories. Broad understanding of urban forms and spaces at various spatial scales through examples from historic cities. | 32 |
| II | **Typologies and Procedures:**<br>Concepts of public and private realm; understanding different types and procedures of urban design interventions their scale relationships; constraints and challenges of urban design in democratic versus authoritarian settings. | 32 |
| III | **Elements of Urban Design and Urban Design and Sustainability**:<br>Understanding the city as a three dimensional element; Urban form as determined by interplay of masses, voids, order, scale, harmony, symmetry, colour and texture; Organization of spaces and their articulation in the form of squares, streets, vistas and focal points; Concept of public open space; Image of the city and its components such as edges, paths, landmarks, street features.<br>Sustainability concept; Relationship of urban design with economic, environmental and social sustainability; Urban renewal and urban sprawl; Concepts of Transit Oriented Development, Compact City, Healthy City and Walkable City. | 32 |
| IV | **Urban Design Implementation**:<br>Urban design and its control; Institutional arrangements for design and planning, their roles, powers and limitations; Types of planning instruments, structure plans, master plans and local area plans and zoning guidelines; Design communication and role of public participation. | 32 |
| **TOTAL** | | 128 |

**Remarks:**

- Design exercise could be any medium to large scale project in the public domain, situated within an existing (and preferably compact) urban fabric, such as: redevelopment of commercial areas, waterfront development, transit-hubs, market squares, densification along transit corridors, mixed use complexes.

**Text Books:**


1. *The Urban Design Reader*, Larice, M. and Macdonald, E. Ed. (2013). 2nd Ed. The Routledge Urban Reader Series, Abingdon, Oxon : Routledge.


**Reference Books:**


1. Carmona, M., Heath, T., Oc, T. and Tiesdell, S. (2010). *Public Places Urban Spaces.* Oxford : Architectural Press.
2. Marshall, S. (2009). *Cities Design And Evolution*. New York : Routledge.
3. Lang, J. T. (2005). *Urban Design: A Typology of Procedures and Products*. Oxford : Elsevier/Architectural Press.
4. Moughtin, C., Cuesta, R., Sarris, C. and Signoretta, P. (2003). *Urban Design - Methods and Techniques*. Oxford: Architectural Press.
5. Watson, D., Plattus, A. and Shibley, R. (2003). *Time-Saver standards for urban design*. New York : McGraw Hill.


**Course Outcomes:** The students with the successful completion of the course student should have capability to:

1. Design a large campus for a specific purpose for a large population of multiple groups of users.

2. Understand the complexities of large-scale architectural interventions in specific urban settings, having multiple stakeholders.
3. Produce a design process and a design solution to an urban design problem.

**SYLLABUS ( VIII SEMESTER )**

| | | |
|---|---|---|
| **Paper II/Subject Name: Dissertation** | | **Subject Code: ARC132C812** |
| **L-T-P/S-C –1-0-3-4** | **Credit Units: 4** | **Scheme of Evaluation: (T/P/TP/S): P** |

**Course Objective:**

- To understand the process of selection and developing of a thesis / dissertation project.
- To identify the topic which best suits the student for moving further to Thesis.

**Prerequisites: Research Methodology**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Introduction: (Continuation from writing up a research paper/report in Research Methodology)**<br>• Selection of most probable thesis topics the students want to work on with logical reasoning based on their knowledge, external information, personal experience etc.<br>• Justification: Implementing knowledge of research methodology. | 8 |
| II. | **Detailing:**<br>• Narrowing down to the final set of topics from module I based on thorough analysis.<br>• Formulating the goals: Detailing out the research gaps and the type of approach required to take the selected topics forward. | 8 |
| III. | **Contents:**<br>• Develop the synopsis: aim, objective, limitations, scope, hypothesis, desired outcome and possible precedent studies (including literature studies and case studies).<br>• Structuring the Methodology. | 8 |
| IV | **Final Report:**<br>• Prepare the reports for the research that precedes the design process for the set of topics chosen in Module II.<br>• Prepare the strategy and execution plan for the design process. | 8 |
| **TOTAL** | | **32** |

**Remarks:**

- This will increase the student's knowledge on research for a topic of interest.
- Each student will be allotted a guide by the end of the semester depending on their finalized topic to carry forward their thesis.

**Text Book:** Depending on the students desired topics for the thesis.

**Reference Books:**


1. Neufert, Peter; *Neufert's architects' data;* 4th Ed.; 2012; John Wiley; New Delhi
2. Ramsay and Sleeper; *Architectural graphic standard;* 11th Ed.; 2008; John Wiley; New York.


**Course Outcomes: The students will**

1. Have clarity about the process of thesis.
2. Have more time to focus and execute on design related consideration while doing the main thesis.

**SYLLABUS (VIII SEMESTER)**

| | | |
|---|---|---|
| **Paper II/Subject Name: Professional Practice & Introduction to Constitutional Law** | | **Subject Code: ARC132C814** |
| **L-T-P/S-C: 4-0-0-4** | **Credit Units: 04** | **Scheme of Evaluation: (T/P/TP/S): T** |

**Objective:**

- To equip students about procedures of tendering, valuation, easement, arbitration etc.
- To expose and equip them with professional practices and related laws.

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Introduction to Architectural Profession:**<br>Importance of Architecture Profession.<br>Difference between Profession, Trade and Business.<br>Architect's Act 1972.<br>Role of Council of Architects and Indian Institute of Architects, functions, constitutions, rules and regulations.<br>Code of professional conduct and Ethics and Social Responsibility. | 12 |
| II | **Practising Architecture and Office Structure:**<br>Small Practice, Medium Practice and Large Practice.<br>Architect's role in office and site management.<br>Role of Contractors, Clients, Architects and Sub Consultants.<br>Terms and conditions of engagements, Schedule of Services.<br>Certificates related to buildings.<br>Architectural Competitions. | 10 |
| III | **Tenders and Contracts:**<br>Terms associated with tendering.<br>Steps before tendering.<br>Notice inviting tenders, Procedure of opening and selection of tenders, Qualification Criteria, Bid selection, Cancellation of tenders.<br>Types of Contracts and Contract documents.<br>Knowledge about various conditions of Contract.<br>Earnest Money, Security Deposit, Retention Money, Mobilization Fund, Bank Guarantee, Variation and Extras, Defects after Completion, Liquidate Damage, Termination of Contracts etc. | 14 |
| IV | **Arbitration, Valuation and Easement:**<br>Need and scope of arbitration, Indian Arbitration Act, Arbitrator, Umpire, Appointment, Conduct Powers, Duties, Sole/Joint Arbitrators, Procedure Award, Impeachment.<br>Techniques/Elements of Valuation, Factors affecting valuation, compensation, rewards etc.<br>Easements, Rights, types and features, Dilapidation, Insurance, Consumer Protection Act.<br>Byelaws, Provisions of National Building Codes.<br>**Constitutional Laws.** | 12 |
| **TOTAL** | | 48 |

**Remarks:**

- This subject covers important topics that will incorporate knowledge and confidence in students and make them competitive.

**Text Books:**


1. K.G Krishnamurthy and S.V. Ravindra; *Professional Practice;*2014; PHI publication Pvt Ltd., New Delhi
2. Apte, V. S. (2008). *Architectural Practice and Procedure*. Pune : Padmaja Bhide.
3. COA ; *Architects (Professional conduct) Regulations, Architectural Competition guidelines* ; (1989) Council of Architecture Publications.
4. COA; *Handbook of Professional Documents;* (2005) Council of Architecture.


**Reference Books:**


1. Namavati, R. ; *Professional practice*; (1984) Mumbai : Lakhani Book Depot

2. Rangwala, S. C. *Valuation of Real Properties*. Charotar Publications.

**Course Outcome:** The Students will

- The students will be well equipped with required information and knowledge which will help them to confidently stand and work once they are practically exposed to professional fields.

**SYLLABUS ( VIII SEMESTER )**

| **Paper V/Subject Name: Estimation & Costing** | | **Subject Code: ARC132C805** |
|---|---|---|
| **L-T-P/S-C –3-0-0-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S): T** |

**Course Objective:** To develop the necessary skills for estimation and writing specifications for various types of buildings and development work.

**Prerequisites:** NIL

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Introduction:** Importance of estimation, types of estimates, mode of measurement etc. Study of local SR rates, market rates, measurement book (MB), RA bill. Interim and final certificate. | 8 |
| II. | **Approximate Estimation:** Load bearing and RCC framed structure cost by using PWD rates to find approximate estimate. Definition, Purpose, Types of approx. estimate and the various factors affecting each type. | 8 |
| III. | **Rate Analysis and Specifications:**<br>(a) Detailed rate analysis of building items as per current schedule of rates (CSR) of local PWD. Percentage of various materials used in buildings items like cement, steel, rubble, metal, sand brick tiles etc.<br>(b) Specification and its types. Abstract and detailed specification for various materials and items of work used in building**.** | 8 |
| IV | **Detailed Estimation:** Load bearing and RCC framed structure cost using measurement book, abstract sheet, PWD rates to find detailed estimation. . Definition, Types of detailed estimate.<br>**Estimation problem solving:** To find out estimates (problem sum). | 8 |
| **TOTAL** | | 32 |

**Remarks:** This will increase the students' knowledge on finding cost of construction of any architectural projects.

**Text Books:**

1. *Estimating and Costing*, Dutta S K; 26th Revised edition; UBSPD Publisher.
2. *Estimating*; Rangwala. SC; Charotar Publication.

**Reference Books:**

1. Neufert, Peter; *Neufert's architects' data;* 4th Ed.; 2012; John Wiley; New Delhi
2. Ramsay and Sleeper; *Architectural graphic standard;* 11th Ed.; 2008; John Wiley; New York**.**

**Course Outcomes:** The students will learn how to calculate the cost and quantities of any projects in detail and the related process. This will be helpful for them in handling project cost during execution of architectural work.

| SYLLABUS (VIII SEMESTER) |
|---|

| Paper VI/Subject Name: Construction & Project Management | | Subject Code: ARC132C806 |
|---|---|---|
| L-T-P/S-C –3-0-0-3 | Credit Units: 03 | Scheme of Evaluation: (T/P/TP/S):T |

**Course Objective:**

- To provide an insight into management of Building Construction projects involving management of money, manpower and machinery
  .

**Prerequisites: NIL**

Detailed Syllabus:

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Fundamentals of Project Management:** Need of Project management; Role of Stakeholders in construction projects; Organization, types of organization; Study of organizational structures suitable for building and construction projects; Qualities of an ideal construction organization; Ethics in construction industry | 8 |
| II. | **Project Planning and Controlling:** Construction planning, scheduling and controlling phases; Use of management techniques- Bar Chart, Mile stone Chart; Networking using PERT and CPM; Project Cost Analysis; Risk Analysis | 8 |
| III. | **Construction Equipment:** Role of equipment machinery in construction industry; Brief description of Earth moving; Transporting; Spreading; Compacting; Concreting; Pumping etc.; Various issues involved in owning, operating and maintaining of construction equipment; economic life of equipment | 8 |
| IV | **Contract Management And Tendering Process:** Contractual Approach; Contract types and documents; Pre-Contract stage; Post Contract Stage; Contract Management; Tender document, e-Tendering, FIDIC etc. | 8 |
| **TOTAL** | | 32 |

**Text Books:**


1. "*Construction Management and Machinery*", Gupta B.L., Gupta A., (2010), Standard Publishers Distributors
2. "*Construction Management and Equipment*", Soni S.K., (2015), S. K. Kataria & Sons


**Reference Books:**


1. Gahlot P.S., Dhir B.M. (2008), "*Construction Planning and Management*", New Age International (P) Limited


**Course Outcomes:** The students will

- Understand the concepts of building construction and project planning.
- Learn the current constructional practices prevalent in India, incorporating latest Indian Standard Recommendations.

**SYLLABUS (VIII SEMESTER)**

**Paper VII /Subject Name: Contemporary Architecture** **Subject Code:ARC132G807**

**L-T-P/S-C: 3-0-0-3** **Credit Units: 03** **Scheme of Evaluation: (T/P/TP/S):T**

**Objective:**

To provide an understanding and appreciation of Contemporary Architecture through the various Art and Architectural movement, theory, works of master architects according to the timeline, globally and in India.

**Detailed Syllabus:**

| Modules | Course content | Periods |
|---|---|---|
| I | **World architecture and design history:**<br>● Pre-modern journey of art and architecture - Introduction and timeline<br>● Reconstruction - Italy, France (unite d'habitation), Great Britain, Germany<br>● The American Masters - Walter Gropius, Eric Mendelsohn, Ludwig Mies Van der Rohe, Frank Lloyd Wright<br>● The European Masters - Le Corbusier, Alvar Aalto | **12** |
| II | **Industrial revolution and rise in modernism:**<br>● Modern Movement - the beginning - Introduction to technology, materials, Art style, Social context (Post-Renaissance art and technology), evolution of new school school of thoughts post industrial revolution (for machine movement and against the machine movement)<br>● Art deco, Bauhaus, Internationalism<br>● Evolution and timeline of different phases of modern Art and architecture - De Siltj, Chicago school, Prairie school Expressionism, Brutalism, Metabolism<br>● Skyscrapers in the United States - Alcoa headquarters, Lever House, John Hancock tower<br>● Utopias and grand structures - Richard Buckminster Fuller, Arata Isozaki, Kisho Kurokawa, Moshie Safdie, Archigram | **12** |
| III | **Post-modernism and Architectural theories**<br>● History and introduction -Hi technology, Neo modern, Critical regionalism, Memphis Milano<br>● Deconstructivism, Pop art<br>● Globalisation -Charles Moore, Philip Johnson, Richard Rogers, Norman Foster, Renzo piano, Jean Nouvel, Santiago Calatrava, Traditional and new rationalism, Richard Meier, Zaha Hadid, Frank O Gehry, Daniel Libeskind, The minimalist Japan, Peter Zumthor | **12** |
| IV | **Post independence architecture in India :**<br>● Le Corbusier, Louis I Kahn, Charles Correa, Laurie Baker, Raj Rewal<br>**21st century architecture in India :**<br>● Geoffrey Bawa, Gautam Bhatia, Charles Benninger, Sanjay Puri, Brinda Somaya<br>● Architectural Criticism- Definition, Source, types of Criticismaccording to Wayne Attoe. | **12** |
| **TOTAL** | | **48** |

**Text Books:**


1.Contemporary Architects, Ann Lee Morgan, 2nd Ed, St James Press, London

2.Creating Architectural Theory, Jon T Lang, Van Nostrand Reinhold Company, 1987

3. Story of Contemporary Architecture, Paolo Favole, Prestel Publishing, 2011


**Reference Books:**


1. Geoffrey Broadbent, Design in architecture, John Wiley &Sons, 1973

2.Sarbjit Bahga and Surinder Bahga, Modern Architecture in India, Galgotia Pub. Co, 1993

**The students will learn:**

- To provide a streamlined understanding of the timeline of Contemporary Architecture and insight into the ideas of influential theorists from antiquity to the present time.
- To understand and appreciate Contemporary trends in Indian and Western Architecture in terms of ideas and direction through the works of outstanding architects.

**SYLLABUS (IX SEMESTER)**

| **Paper I/Subject Name: Professional Training** | | **Subject Code: ARC132C931** |
|---|---|---|
| **L-T-P/S-C: NA** | **Credit Units: 26** | **Scheme of Evaluation: (T/P/TP/S): S** |

**Objective:**

- To provide exposure to the various dimensions of architectural practice.
- To make students aware with the realm of interior design discipline ranging from generation of idea, preparation of drawings to the final execution of design on site.

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I | **Nature of Works expected to be done during training:**<br>Exposure of the trainee to difference aspects of professional practice such as preparation of sketch<br>designs, presentation drawings, working drawings and details, estimates, bill of quantities & Specifications. Discussions with clients, various consultants, inspection and management | **Internship of minimum 16 weeks.** |
| II | **Content of the Training Report:**<br>After completion of practical training, the trainee is required to submit the following in a hard copy:<br>• Training report should contain office profile, listing of current project being undertaken, project<br>wise details of work undertaken by the student, trainee's own assessment and experience about office,<br>working, projects etc.<br>• All projects listed in the report should compulsorily correspond with the list of projects mentioned<br>in the monthly log book.<br>• Copies of drawing shall be attached as annex to support the content of the report. The drawing prints<br>shall be obtained with the permission of the office and stamped/ sealed by the Head of the firm or<br>Supervisor. | |
| III | **Critical Analysis of a remarkable project done by the Design Firm:**<br>Detailed study and analysis of any noted or renowned project that has been designed/ executed by the company/ firm, she / he is working for internship. This shall be presented through drawing, photographs, write ups etc. | |
| IV | **Detailed study of Firm's design details and construction techniques:**<br>Detailed study of the type of integrated techniques/ materials used and incorporated as a design Statement in the projects. Samples of such details and works to be documented through drawings and on-site pictures. | |
| **TOTAL** | | 48 |

**Remarks:**

- Hands – on work and professional training in an Architect's Firm/ Office. According to the Guidelines of the
- Council of Architecture, the Architect should be a certified Licence holder.
- Students are also expected to complete site visits, attend client meetings, coordinate with different teams of the firm like contractors, site engineers etc.

**Course Outcome:**

- The students will learn the codes of conduct necessary and enhance skills and techniques of managing small and large scale residential and commercial interior projects.
- The students will understand the importance of professional ethics and responsibility towards clients, fellow professionals, contractors, suppliers, other consultants and the society.

**SYLLABUS (X SEMESTER )**

| **Paper I/Subject Name: Architectural Thesis** | | **Subject Code: ARC132C021** |
|---|---|---|
| **L-T-P/S-C –0-0-18-18** | **Credit Units: 18** | **Scheme of Evaluation: (T/P/TP/S):S** |

**Course Objective:**

- The project can be of any scale and size ( in terms of built areas) as long as the required rigor and depth is demonstrated and the national level norms are matched with. It is expected that all genres of projects (study or design) would end with a design solution and should be guided by a critical inquiry. It is expected that this project will be run as a studio with individual guidance under a project coordinator and assisted by several guides.

**Prerequisites: Research methodology and Pre-thesis**

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Introduction:** Finalization of topic and submission of Case Study report on the finalized topic and discussion on requirement and site analysis. | 62 |
| II. | **Conceptualization:** Development of concept, taking forward the concept into the design. Ideation and formation of spaces and designing them. Site development and block model for better understanding. | 72 |
| III. | **Mid Review:** Working on site plan, site section, detailed plan, section, elevation, 3D model (physical and computerized), and report. | 72 |
| IV | **Final Submission:** 1. Report as per format (minimum 2 / 3 copies), 2. Drawing Sheets, 3. Detailed / Block Model, 4. CD (Containing- Research Paper/report from Research Methodology, Synopsis from Pre Thesis, PDF of report and drawings, Photos of Model). | 82 |
| **TOTAL** | | **288** |

**Remarks:**

1. The case study for the required topic has to be done by the students at individual level before the start of the semester.
2. The requirements pertaining to being a universal design is compulsory.
3. At the time of the Viva examination, the student shall produce the portfolio containing the evolution of his/her design from the beginning to the final output. All the drawings and reports shall be certified by the Head of the Department as bonafide work carried out by the student during the semester.

**Text Book:** Depending on the students desired topics for the thesis.

**Reference Books:**


1. Neufert, Peter; *Neufert's architects' data;* 4th Ed.; 2012; John Wiley; New Delhi
2. Ramsay and Sleeper; *Architectural graphic standard;* 11th Ed.; 2008; John Wiley; New York.


**Course Outcomes: The students will have**

- Final Thesis that will showcase their detailed work.

| | | |
|---|---|---|
| **Paper II/Subject Name: Disaster Mitigation & Management ARC132C002** | | **Subject Code:** |
| **L-T-P/S-C –1-0-1-2 TP** | **Credit Units: 02** | **Scheme of Evaluation: (T/P/TP/S):** |

**Course Objective:**

- To understand the basics of disasters.
- To identify and examine the essential and fundamental elements of disaster prevention, response and recovery.

**Prerequisites:** NIL

**Detailed Syllabus:**

| Modules | Topics (if applicable) & Course Contents | Periods |
|---|---|---|
| I. | **Introduction:** Disaster, Risk, Vulnerability, Hazard, Exposure, Coping Capacity, Damage. **Hazards:** earthquakes, floods, cyclones, and landslides, Biohazard, Avoidable Death, Relation to natural hazard. | 22 |
| II. | **Terminology:** Disaster Cycle, Disaster Management, Disaster Mitigation, Disaster Risk Reduction. **Introduction to Disaster Management**: Understand disaster hazards and how they pose disaster threats. Disaster Management Principles and Practices, Economic and Financial Aspect of Disaster Management, Strategic Disaster Management, Information Technology in Disaster Management. | 25 |
| III. | **Disaster Mitigation:** Warning and evacuation do's and don'ts about disaster, damage survey for designing aid package and detailed survey for reconstruction and repair. **Disaster Management Act:** Disaster management policy; duties of professionals, disaster response policy. | 15 |
| IV | **Sustainable Development**: Post Disaster Reconstruction and recovery for sustainable development, issues and policies. SDGs, GAR, SFDRR, GPDRR, APMCDRR, Hyogo Framework. **Case Studies on Climate Change Action:** Climate Change induced disaster. | 18 |
| **TOTAL** | | 80 |

**Remarks:** The students will be able to relate how proper architecture and planning knowledge can help in reducing risk and disasters.

**Text Book:**

1. *Natural Hazard and Disasters*, Hyndman D. and Hyndman D., Brooks/Cole (2006)
2. *Natural Hazards*, Bryant E., Cambridge University Press (2005)
3. *Disaster Management: A Disaster Manager's Handbook*, Carter, W.N., Manila, ADB. (2006)
4. *Mitigation of Natural hazards and Disasters: International perspective*. Haque, C. Emdad, Springer, Dordrecht. (2005)

**Reference Books:**

1. Neufert, Peter; *Neufert's architects' data;* 4th Ed.; 2012; John Wiley; New Delhi
2. Ramsay and Sleeper; *Architectural graphic standard;* 11th Ed.; 2008; John Wiley; New York.

**Course Outcomes:** The students will

1. Develop a sense of responsibility to design buildings with more precautions so as to avoid risk.
2. Gain knowledge towards the assessment of various hazards, disasters and their mitigation.
3. Gain knowledge on climate change and sustainable development.

5. K.G Krishnamurthy and S.V. Ravindra; *Professional Practice;*2014; PHI publication Pvt Ltd., New Delhi
6. Apte, V. S. (2008). *Architectural Practice and Procedure*. Pune : Padmaja Bhide.
7. COA ; *Architects (Professional conduct) Regulations, Architectural Competition guidelines* ; (1989) Council of Architecture Publications.
8. COA; *Handbook of Professional Documents;* (2005) Council of Architecture.

**Reference Books:**

3. Namavati, R. ; *Professional practice*; (1984) Mumbai : Lakhani Book Depot
4. Rangwala, S. C. *Valuation of Real Properties*. Charotar Publications.

**Course Outcome:** The Students will

- The students will be well equipped with required information and knowledge which will help them to confidently stand and work once they are practically exposed to professional fields.

| | | |
|---|---|---|
| **Paper VI/Subject Name: Advanced Objectives 1-Urban Design/Landscape Architecture/ Conservation Architecture/ Interior Design** | | **Subject Code: ARC132C003** |
| **L-T-P/S-C –0-0-3-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S): TP** |

| | | |
|---|---|---|
| **Paper VI/Subject Name: Advanced Objectives 2-MEP(Mechanical Electrical and Plumbing Services)** | | **Subject Code: ARC132C004** |
| **L-T-P/S-C –0-0-3-3** | **Credit Units: 03** | **Scheme of Evaluation: (T/P/TP/S): TP** |