

**DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY,
MURTHAL**

**SCHEME OF STUDIES & EXAMINATION FOR
BACHELOR OF ARCHITECTURE
(FIVE YEAR FULL TIME)**

(Choice Based Credit scheme w.e.f. 2018-19)

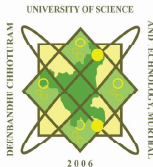
Program Outcomes (POs):

After completion of the program graduates will be able to

- PO 1:** Graduates of this Programme will be equipped with requisite knowledge of a range of subjects encompassing sciences, humanities, social sciences and technology to be able to effectively meet their professional goals.
- PO 2:** Graduates of this Programme will possess the ability to design and build following critical observation, assimilation and analysis of pre-design data.
- PO 3:** Graduates of this Programme will be trained to perceive the built environment as more than the sum of its parts and therefore make a design intervention that responds to environmental, social, cultural, and economic contexts.
- PO 4:** Graduates of this Programme will be trained to work both as individuals in their own right, but also as part of a larger team environment.
- PO 5:** Graduates of this Programme will be equipped to critically observe, assimilate and analyse the given situation before recommending the appropriate architectural intervention for a given situation.
- PO 6:** Graduates of this Programme will be professionally responsible individuals with a strong ethical grounding and sensitivity towards environmental, social, cultural and economic sustainability.
- PO 7:** Graduates of this Programme will be effective communicators using a range of mediums from verbal and written skills to graphic and drawing communication tools to present their ideas.
- PO 8:** Graduates of this Programme will be able to appreciate the many contextual layers from the local to the global that are determinants of the built environment.
- PO 9:** Graduates of this Programme will be made aware of the importance of self-education and engaging in life-long learning.
- PO 10:** Graduates of this Programme will be well rounded individuals fully aware of contemporary issues in general and how they affect the profession of architecture in particular.
- PO 11:** Graduates of this Programme will be equipped to handle all relevant contemporary architecture software notably AutoCAD; Revit; Ecotect; M-Color; besides knowledge of other softwares like MS Office and Adobe Photoshop.

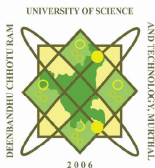
| S. no. | Graduate Attributes | Program Outcomes (POs) | | | | | | | | | | |
|--------|--|------------------------|------|------|------|------|------|------|------|------|-------|-------|
| | | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 |
| 1 | Engineering Knowledge (Architecture) | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | | ✓ | |
| 2 | Problem Analysis | | ✓ | ✓ | | ✓ | | | ✓ | | | ✓ |
| 3 | Design/Development of Solutions | | ✓ | ✓ | | ✓ | | | ✓ | | | ✓ |
| 4 | Conduct Investigations of Complex Problems | ✓ | ✓ | ✓ | | ✓ | | | ✓ | | ✓ | ✓ |
| 5 | Modern Tool Usage | | ✓ | ✓ | | ✓ | | | ✓ | | | ✓ |
| 6 | The Engineer & Society (Architect) | | | | ✓ | | ✓ | | | | ✓ | |
| 7 | Environment and Sustainability | | | | ✓ | | ✓ | | | | ✓ | |
| 8 | Ethics | | | | ✓ | | ✓ | | | | ✓ | |
| 9 | Individual & Team Work | | | | ✓ | | ✓ | | | ✓ | ✓ | |
| 10 | Communication | | | | | | | ✓ | ✓ | | | ✓ |
| 11 | Project Management & Finance | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | | ✓ | |
| 12 | Lifelong Learning | | | | | | | | | ✓ | ✓ | |

1st Year Syllabus was approved in 13th Meeting of Academic Council held on 18.06.2018 and 2nd Year Syllabus was approved in 14th Meeting of Academic Council held on 11.06.2019. Applicable to all students admitted in 2018 and onwards.

|  | | | DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT | | | | | | | | |
|---|------------|----------|---|-------------------|--------|---------------------|------------|-----------|-------------|--------|------------------|
| | | | SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | |
| | | | Choice Based Credit Scheme w.e.f.2018-19 | | | | | | | | |
| BACHELOR OF ARCHITECTURE I SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.No. | Course No. | Category | Course Title | Teaching Schedule | | Marks of Class work | Exam Marks | | Total marks | Credit | Duration of Exam |
| | | | | L | Studio | | Theory | Portfolio | | | |
| 1 | AR 101 C | PC | Architectural Design I | 0 | 6 | 100 | | 100 | 200 | 6 | 3 |
| 2 | AR 103 C | PC | Architectural Drawing I | 0 | 4 | 50 | 50 | - | 100 | 4 | 3 |
| 3 | AR 105 C | PC | Graphics I | 0 | 4 | 50 | 50 | - | 100 | 4 | 3 |
| 4 | AR 107 C | PC | History of Architecture I | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 5 | AR 109 C | PC | Principles of Architecture I | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 6 | AR 111 C | PC | Workshop I | 0 | 4 | 100 | - | - | 100 | 4 | - |
| 7 | AR 113 C | BS & AE | Building Construction I | 0 | 4 | 50 | 50 | - | 100 | 4 | 3 |
| 8 | AR 115 C | BS & AE | Building Materials | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 9 | AR117 C | BS & AE | Theory of Structures | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| Total | | | | 8 | 22 | 500 | 400 | 100 | 1000 | 30 | |

Note:

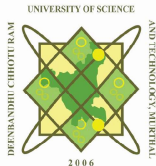
- The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronics gadgets including Cellular phones are not allowed in the examination.
- Theory exam shall be conducted for the studio subjects of Architectural Drawing-I (AR103C) and Building Construction I (AR113C) in the drawing hall having the provisions of drawing boards.
- Following stationary shall be required for the conduct of above mentioned exams for each candidate:
 - Cartridge sheet – 4 nos.
- Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-I (AR101 C) by an external and internal examiner.
- PC: Programme core, BS & AE: Building Science and Applied Engineering, SEC: Skill Enhancement Courses

|  | | | DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT | | | | | | | | |
|---|------------|----------|---|----------------------|------------------|-------------------------------|------------|-----------------------------|--------------------|------------|--------------------------------|
| | | | SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | |
| | | | Choice Based Credit Scheme w.e.f.2018-19 | | | | | | | | |
| BACHELOR OF ARCHITECTURE II SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.N o. | Course No. | Category | Course Title | Teaching Schedule | | Mark s of Class work | Exam Marks | | Total mark s | Credi t | Dura tion of Exa m |
| | | | | L | Stu dio/ P | | Theo ry | Portfo lio/Pra ctical | | | |
| 1 | AR 102 C | PC | Architectural Design II | 0 | 6 | 100 | - | 100 | 200 | 6 | 3 |
| 2 | AR 104 C | PC | Architectural Drawing II | 0 | 4 | 50 | 50 | - | 100 | 4 | 3 |
| 3 | AR 106 C | PC | Graphics II | 0 | 4 | 50 | 50 | - | 100 | 4 | - |
| 4 | AR 108 C | PC | Principles of Architecture II | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 5 | AR 110 C | BS & AE | Building Construction II | 0 | 6 | 100 | 100 | - | 200 | 6 | 3 |
| 6 | AR 112 C | BS & AE | Climate responsive architecture II | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 7 | AR 114 C | BS & AE | Structural Design II | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 8 | AR 116C | | Educational Tour II | - | | 100 | - | - | 100 | 2 | - |
| 9 | HUM101C | SEC | English language skills | 2 | 0 | 25 | 75 | - | 100 | 2 | 3 |
| 10 | HUM103C | SEC | English language lab | - | 2 | 25 | - | 75 | 100 | 1 | 3 |
| Total | | | | 8 | 20 | 600 | 425 | 175 | 1200 | 31 | |

Note:

1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory exam shall be conducted for the studio subjects of Architectural Drawing-I (AR104C) and Building Construction II (AR110C) in the drawing hall having the provisions of drawing boards.
4. Following stationary shall be required for the conduct of above mentioned exams for each candidate:
 - a. Cartridge sheet – 4 nos.
5. Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-II (AR102 C) by an external and internal examiner.
6. PC: Programme Core, BS & AE: Building Science and Applied Engineering, SEC: Skill Enhancement Courses

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|  | | | DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT | | | | | | | | |
|---|------------|-----------|---|----------------------|------------|-------------------------------|------------|---------------|--------------------|------------|--------------------------------|
| | | | SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | |
| | | | Choice Based Credit Scheme w.e.f.2019-20 (for the students admitted in 2018) | | | | | | | | |
| BACHELOR OF ARCHITECTURE III SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.N o. | Course No. | Category | Course Title | Teaching Schedule | | Mark s of Class work | Exam Marks | | Total mark s | Credi t | Dura tion of Exa m |
| | | | | L | Stu dio | | Theo ry | Portfo lio | | | |
| 1 | AR –201 C | PC | Architectural Design III | 0 | 6 | 100 | - | 100 | 200 | 6 | 3 |
| 2 | AR – 203 C | PC | Architectural Drawing III | 0 | 4 | 50 | 50 | - | 100 | 4 | 3 |
| 3 | AR – 205 C | PC | Graphics III | 0 | 4 | 50 | 50 | - | 100 | 4 | - |
| 4 | AR – 207 C | PC | History of Architecture III | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 5 | AR – 209 C | PC | Workshop III | 0 | 4 | 100 | - | - | 100 | 4 | - |
| 6 | AR – 211 C | BS & AE | Building Construction III | 0 | 4 | 50 | 50 | | 100 | 4 | 3 |
| 7 | AR – 213 C | BS & AE | Advanced Building Materials III | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 8 | AR – 215 C | BS & AE | Building Services III | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 9 | AR – 217 C | BS & AE | Structural Design III | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 10 | | Mandatory | Environmental Sciences* | 3 | - | 25 | 75 | | 100 | - | 3 |
| Total | | | | 11 | 22 | 575 | 425 | 100 | 1100 | 30 | |

* Course No. will be decided at University level

Note:

1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory exam shall be conducted for the studio subjects of Architectural Drawing-III (AR203-C) and Building Construction III (AR211-C) in the drawing hall having the provisions of drawing boards.
4. Following stationary shall be required for the conduct of above mentioned exams for each candidate:
 - a. Cartridge sheet – 4 nos.
5. Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-III (AR201 C) by an external and internal examiner.

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT

SCHEME OF STUDIES & EXAMINATIONS

Choice Based Credit Scheme w.e.f.2019-20 (for the students admitted in 2018)

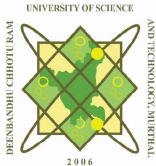
BACHELOR OF ARCHITECTURE IV SEMESTER (FIVE YEAR FULL TIME)

| S.N o. | Course No. | Category | Course Title | Teaching Schedule | | Mark s of Class work | Exam Marks | | Total mark s | Credi t | Dura tion of Exa m |
|-----------|------------|----------|--|----------------------|------------|-------------------------------|------------|---------------|--------------------|------------|--------------------------------|
| | | | | L | Stu dio | | Theo ry | Portfo lio | | | |
| 1 | AR – 202 C | PC | Architectural Design IV | 0 | 6 | 100 | - | 100 | 200 | 6 | 3 |
| 2 | AR – 204 C | PC | Principles of Architecture IV | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 3 | AR – 206 C | PC | Site Planning and theory of Landscape IV | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 4 | AR – 208C | BS & AE | Building Construction IV | 0 | 6 | 100 | 100 | - | 200 | 6 | 3 |
| 5 | AR – 210 C | BS & AE | Building Services IV | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 6 | AR – 212 C | BS & AE | Structural Design IV | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 7 | AR – 214 C | BS & AE | Surveying Practice | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 8 | AR – 216 C | SEC | Computer in Architecture IV | | 4 | 100 | - | - | 100 | 4 | - |
| 9 | AR – 218 C | | Educational Tour IV | | | 100 | | | 100 | 2 | - |
| Total | | | | 10 | 16 | 650 | 350 | 100 | 1100 | 28 | |

Note:

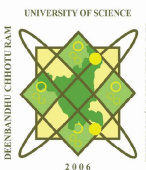
- The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronics gadgets including Cellular phones are not allowed in the examination.
- Theory exam shall be conducted for the studio subjects of Building Construction II (AR 208-C) in the drawing hall having the provisions of drawing boards.
- Following stationary shall be required for the conduct of Building Construction II (AR 208-C) exams for each candidate:
 - Cartridge sheet – 4 nos.
- Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-IV (AR202-C) by an external and internal examiner.

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|---|------------|----------|---|----------------------|------------|-------------------------------|------------|---------------|--------------------|------------|--------------------------------|
| | | | SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | |
| | | | Choice Based Credit Scheme w.e.f.2020-21 (for the students admitted in 2018) | | | | | | | | |
| BACHELOR OF ARCHITECTURE V SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.N o. | Course No. | Category | Course Title | Teaching Schedule | | Mark s of Class work | Exam Marks | | Total mark s | Credi t | Dura tion of Exa m |
| | | | | L | Stu dio | | Theo ry | Portfo lio | | | |
| 1 | AR – 301 C | PC | Architectural Design V | 0 | 9 | 150 | - | 150 | 300 | 9 | 3 |
| 2 | AR – 303 C | PC | History of Architecture V | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 3 | AR – 305 C | BS & AE | Building Construction V | 0 | 6 | 100 | 100 | - | 200 | 6 | 3 |
| 4 | AR – 307 C | BS & AE | Building Services V | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 5 | AR – 309 C | BS & AE | Structural Design V | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 8 | AR – 311 C | BS & AE | Specifications | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 9 | AR – 313 C | PAEC | Building byelaws & Office management | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 10 | AR – 315 C | SEC | Computer in Architecture V | 0 | 4 | 100 | - | - | 100 | 4 | - |
| Total | | | | 10 | 19 | 600 | 350 | 150 | 1100 | 29 | - |

Note:

- The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronics gadgets including Cellular phones are not allowed in the examination.
- Theory exam shall be conducted for the studio subjects of Building Construction II (AR 305-C) in the drawing hall having the provisions of drawing boards.
- Following stationary shall be required for the conduct of Building Construction II (AR 305-C) exams for each candidate:
 - Cartridge sheet – 4 nos.
- Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-V (AR301-C) by an external and internal examiner.

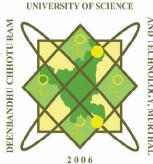
|  | | DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT | | | | | | | | | |
|---|------------|---|--|----------------------|------------|-------------------------------|------------|---------------|--------------------|------------|--------------------------------|
| | | SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | | |
| | | Choice Based Credit Scheme w.e.f.2020-21 (for the students admitted in 2018) | | | | | | | | | |
| BACHELOR OF ARCHITECTURE VI SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.N o. | Course No. | Category | Course Title | Teaching Schedule | | Mark s of Class work | Exam Marks | | Total mark s | Credi t | Dura tion of Exa m |
| | | | | L | Stu dio | | Theo ry | Portfo lio | | | |
| 1 | AR – 302 C | PC | Architectural Design VI | 0 | 9 | 150 | - | 150 | 300 | 6 | 3 |
| 2 | AR – 304 C | PC | Modern & Contemporary Architecture VI | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 3 | AR – 306C | BS & AE | Working Drawing VI | 0 | 6 | 100 | 100 | - | 200 | 6 | 3 |
| 4 | AR – 308 C | BS & AE | Building Services VI | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 5 | AR – 310 C | BS & AE | Structural Design VI | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 6 | AR – 312 C | BS & AE | Building Maintenance VI | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 7 | AR – 314 C | SEC | Computer in Architecture VI | | 4 | 100 | - | - | 100 | 4 | - |
| 8 | AR – 316 C | SEC | Educational Tour | | | 100 | | | 100 | 2 | - |
| 9 | | Mandatory | Constitution of India/Essence of Indian Traditional Knowledge* | 3 | | 25 | 75 | | 100 | - | 3 |
| Total | | | | 11 | 19 | 675 | 375 | 150 | 1200 | 26 | |

* Course No. will be decided at University level

Note:

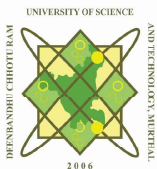
1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory exam shall be conducted for the studio subjects of Working Drawing VI (AR 306-C) in the drawing hall having the provisions of drawing boards.
4. Following stationery shall be required for the conduct of Working Drawing VI (AR 306-C) exams for each candidate:
 - a. Cartridge sheet – 4 nos.
5. Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-VI (AR302-C) by an external and internal examiner.

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|---|------------|---|--------------------|-------------------|-----------|---------------------|------------|--------|-------------|--------|------------------|
| | | SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | | |
| | | Choice Based Credit Scheme w.e.f.2021-22 (for the students admitted in 2018) | | | | | | | | | |
| BACHELOR OF ARCHITECTURE VII SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.No. | Course No. | Category | Course Title | Teaching Schedule | | Marks of Class work | Exam Marks | | Total marks | Credit | Duration of Exam |
| | | | | L | Practical | | | Theory | | | |
| 1 | AR – 401 C | PAEC | Practical Training | - | 32 | 150 | | 150 | 300 | 16 | 3 |
| Total | | | | - | 32 | 150 | | 150 | 300 | 16 | 3 |

Note:

Evaluation for AR-401-C shall be done through a viva voce/presentation conducted by Chairperson Architecture/Practical Training Coordinator and an External Examiner.

|  | | DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT | | | | | | | | | |
|---|------------|---|-------------------------------|----------------------|------------|-------------------------------|------------|---------------|--------------------|------------|--------------------------------|
| | | SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | | |
| | | Choice Based Credit Scheme w.e.f.2021-22 (for the students admitted in 2018) | | | | | | | | | |
| BACHELOR OF ARCHITECTURE VIII SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.N o. | Course No. | Categor y | Course Title | Teaching Schedule | | Mark s of Class work | Exam Marks | | Total mark s | Credi t | Dura tion of Exa m |
| | | | | L | Stu dio | | Theo ry | Portfo lio | | | |
| 1 | AR – 402 C | PC | Architectural Design VIII | 0 | 9 | 150 | - | 150 | 300 | 9 | 3 |
| 2 | AR – 404 C | PAEC | Research Techniques | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| 3 | AR – 406C | BS & AE | Building Construction VIII | 0 | 6 | 100 | 100 | - | 200 | 6 | 3 |
| 4 | AR - | PE | Programme Elective I | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| 5 | AR - | PE | Programme Elective II | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| 6 | AR - | PE | Programme Elective III | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| 7 | | OE | Open Elective I* | 3 | 0 | 25 | 75 | - | 100 | 3 | 3 |
| Total | | | | 15 | 15 | 475 | 375 | 150 | 1000 | 30 | |

*Course No. will be decided at University level

Programme Elective I

AR – 408 C Urban Design-VIII

AR – 410 C Housing-VIII

AR – 412 C Urban and Regional Planning-VIII

Programme Elective II

AR – 414 C Conservation of Built Heritage-VIII

AR – 416 C Energy Conscious Architecture-VIII

AR – 418 C Disaster Management in Architecture--VIII

Programme Elective III

AR - 420 C Interior Design-VIII


AR – 422 C Building Information Management System

AR – 424 C Advanced Structural Design VIII

Note:

- The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronics gadgets including Cellular phones are not allowed in the examination.
- Theory Exam shall be conducted for the studio subjects of Building Construction-VIII (AR406-C) in the drawing hall having the provision of drawing boards.
- Following stationery shall be required for the conduct of Building Construction-VIII (AR406-C) exams for each candidate:
 - Cartridge sheet – 4 nos.
- Portfolio exam (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-VIII (AR402-C) by an External and an Internal Examiner.
- The choice of students for any elective shall not be binding on the department to offer, if the department does not have expertise. The minimum strength of the students should be 5 to run an elective.

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|---|------------|----------|---|----------------------|------------|-------------------------------|------------|------------|--------------------|------------|--------------------------------|
| | | | SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | |
| | | | Choice Based Credit Scheme w.e.f.2022-23 (for the students admitted in 2018) | | | | | | | | |
| BACHELOR OF ARCHITECTURE IX SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.N o. | Course No. | Category | Course Title | Teaching Schedule | | Mark s of Class work | Exam Marks | | Total mark s | Credi t | Dura tion of Exa m |
| | | | | L | Stu dio | | | Theo ry | | | |
| 1 | AR – 501 C | PC | Architectural Design IX | 0 | 9 | 150 | - | 150 | 300 | 9 | 3 |
| 2 | AR – 503 C | PAEC | Project Management IX | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| 3 | AR – 505 C | PAEC | Dissertation IX | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| 4 | AR – 507C | BS & AE | Building Construction IX | 0 | 6 | 100 | 100 | - | 200 | 6 | 3 |
| | AR - | PE | Programme Elective IV | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| | AR - | PE | Programme Elective V | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| | | OE | Open Elective II* | 3 | 0 | 25 | 75 | - | 100 | 3 | 3 |
| Total | | | | 15 | 16 | 475 | 375 | 150 | 1000 | 30 | |

* Course No. will be decided at University level

Programme Elective IV

AR – 509 C Landscape Design –IX

AR – 511 C Traffic & Transportation –IX

AR – 513 C Tall Building & Façade Architecture – IX

Programme Elective IV

AR – 515 C Appropriate Building Technology-IX

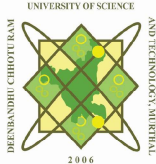
AR – 517 C Sustainable Architecture-IX

AR – 519 C Architectural photography and Journalism-IX

Note:

- The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronics gadgets including Cellular phones are not allowed in the examination.
- Theory Exam shall be conducted for the studio subjects of Building Construction-IX (AR507-C) in the drawing Hall having the provision of Drawing boards.
- Following stationery shall be required for the conduct of Building Construction-IX (AR507-C) exams for each candidate:
 - Cartridge sheet – 4 nos.
- Portfolio exam (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-IX (AR501-C) by an External and an Internal Examiner.
- The choice of students for any elective shall not be binding on the department to offer, if the department does not have expertise. The minimum strength of the students should be **five** to run an elective.
- For Dissertation, B. Arch. coordinator will be assigned a load of **three** periods per week excluding his/ her own guiding load. Dissertation supervisor (guiding teacher) will be assigned a load of maximum one contact period per week for a group of four students. Work load allocated for the joint supervision within the department will be treated as **half** for each supervisor.

1st Year Syllabus was approved in 13th Meeting of Academic Council held on 18.06.2018 and 2nd Year Syllabus was approved in 14th Meeting of Academic Council held on 11.06.2019. Applicable to all students admitted in 2018 and onwards.

|  | | DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT | | | | | | | | | |
|---|------------|---|-----------------------|-------------------|------------|-------------------------------|------------|---------------|--------------------|------------|--------------------------------|
| | | SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | | |
| | | Choice Based Credit Scheme w.e.f.2022-23 (for the students admitted in 2018) | | | | | | | | | |
| BACHELOR OF ARCHITECTURE X SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.No. | Course No. | Category | Course Title | Teaching Schedule | | Mark s of Class work | Exam Marks | | Total mark s | Credi t | Dura tion of Exa m |
| | | | | L | Stu dio | | Theo ry | Portfo lio | | | |
| 1 | AR – 502 C | PC | Architectural Thesis | 0 | 32 | 300 | - | 300 | 600 | 32 | 3 |
| 2 | AR – 504 C | PAEC | Professional Practice | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| Total | | | | 3 | 32 | 350 | 35 | 300 | 700 | 35 | |

NOTE

- For Thesis, B. Arch. coordinator will be assigned a load of 6 periods per week excluding his/ her own guiding load. Thesis supervisor (guiding teacher) will be assigned a load of maximum one contact period per week for a group of four students. Work load allocated for the joint supervision within the department will be treated as half for each supervisor.

BACHELOR OF ARCHITECTURE

AR 101C

ARCHITECTURAL DESIGN-I

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 6 | 100 | - | 100 | 200 | 6 | 3 |

INTENT:

To introduce the various facets of art and architecture and the formal vocabulary of design.

To understand the elements and principles of Basic Design as the building blocks of creative design and visual composition.

To nurture creativity and sensitize the students from the science stream to various design aspects and aesthetic line of thinking.

CONTENTS:

Introduction to Architectural Design through Basic Design terminology and concepts

Elements of Design: Properties, qualities and characteristics of point, line, direction, plane, shape, form, colour and texture.

Volumetric study of Platonic solids like Cube, Cuboids, Cylinder, Pyramid, Sphere etc. and Archimedean solids.

Exercises of 2D composition of simple geometric shapes (triangles, rectangles, circles) as lines and as cut and paste in monochromatic schemes and in color schemes.

Elementary design exercises, 2D and 3D compositions, for study and exploration using elements and principles of design: Scale, Proportion, Balance, Harmony, Rhythm Contrast, etc

Application of form and color in designing real life 2D objects like design of a carpet, a sari border, a necktie, a rangoli, a pavement pattern, curtain fabric, logo design, poster making, 3D objects like planter, sculpture etc. using commonly available materials like paper, matchsticks, clay, P.O.P etc.

Exercises of composition of 3D spaces and their representation in 2D

Exercise of 3D composition of solids increased complexity (multiple solids in various positions like tilted, overlapping, superimposed, interpenetrating, etc.) and their representation in 2D

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

At least **ten** problems are to be completed in the entire semester, covering the entire syllabus uniformly.

Seven Problems can be included in the sessionals & **three** problems can be left for external portfolio exams.

| I | Sessional evaluation | Weightage |
|----|---------------------------------------|-----------|
| | Minor Test – I | 10 % |
| | Minor Test – II | 10 % |
| | Design Exercises (seven) | 60% |
| | Portfolio exercises (part evaluation) | 20 % |
| II | Portfolio evaluation | |
| | Portfolio exercises (three) | 100% |

READING LIST: (to be amplified by the subject teacher)

- Baskinger, Mark and Bardel, William (2013) Drawing Ideas: A Hand-Drawn Approach for Better Design, Watson-Guption.
- Broomer, F. Gerald (1974) Elements of Design: Space, Davis Publications Inc., Worcester, Massachusetts.
- Charles Wallschlagger and Cynthia Busic-Snyder (1992) Basic Visual Concepts and Principles for Artists, Architects and Designers, Mc Graw Hill, New York.
- Ching, Francis D. K. (1979) Architecture: Form, Space and Order, Van Nostrand Reinhold Co.
- Exner V. and Pressel D. (2009) Basics Spatial Design, Birkhauser.
- Gordon, Bob and Gordon Maggie (2002) Complete Guide to Digital Graphic Design, Thames and Hudson, London.
- Grillo, Paul Jacques (1960) Form, function and design, Dover Publications, Inc. New York.
- Hillyer, V M and Huey, E G (1996) Story of Sculpture, Nelson, Meredith Publishing Company, NY.
- Item, Johannes (1973) The Art of Colour, Van Nostrand Reinhold, NY.
- Jackson, Paul (2011) Folding Techniques for Designers: From sheet to form, Laurence King Publishing

1st Year Syllabus was approved in 13th Meeting of Academic Council held on 18.06.2018 and 2nd Year Syllabus was approved in 14th Meeting of Academic Council held on 11.06.2019. Applicable to all students admitted in 2018 and onwards.

11. Joshua C. Taylor (1981) Learning to Look: A Handbook for the Visual Arts, (Phoenix Books), University of Chicago Press.
12. Maier, Manfred (1977) Basic Principles of Design, Vol.1, 2, 3 & 4, Van Nostrand Reinhold, NY.
13. Nathan Knobler (1980) Visual Dialogue, Harcourt School; 3 Sub edition
14. Owen Cappleman and Michael Jack Jordon (1993) Foundations in Architecture: An Annotated Anthology of Beginning Design Project, Van Nostrand Reinhold New York.
15. Paul J. Zelanski and Mary Pat Fisher (2010) The Art of Seeing, Pearson.
16. Pramod V.S. (1973) Design fundamentals in Architecture, Somaiya Publications Pvt. Ltd., New Delhi.
17. Rochon, Richard and Linton, Herald (1991) Colour in Architectural Illustration, Van Nostrand Reinhold, NY.
18. Sausmarez, Maurice De (1987) Basic Design – The dynamics of Visual Design, Herbert Press, London.
19. Wong, Wucius (1977) Principles of three dimensional Design, Van Nostrand Reinhold, New York.

BACHELOR OF ARCHITECTURE

AR103C

ARCHITECTURAL DRAWING-I

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|--------|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | Studio | | Theory | Portfolio | | | |
| | 4 | 50 | 50 | - | 100 | 4 | 3 |

INTENT:

To develop the drawing skills as tools for creative thinking, visualization, perception, imagination, representation and to understand fundamentals of architectural drawing

To understand the graphic treatment of two and three dimensional drawings including perception and presentation of simple architectural shapes, forms and basic elements of building /structure.

To familiarize for preparing and developing architectural presentation techniques including lettering and symbols etc.

CONTENT:

UNIT I: Basics of Architectural Drawing

Use of different drawing instruments, Types of lines-elevation lines, construction lines, section lines, hidden lines, centre lines

Drawing of different types of Architectural Letterings, dimensions

Understanding concept of scale, their construction including plain and diagonal scales.

Application of architectural scale - drawing of interesting 2 dimensional images in reduced and enlarge scales.

UNIT II: Introduction to Orthographic Projections

Principles of Orthographic Projections-conventions, Types of Orthographic projections, First angle projection

Orthographic projections of basic elements like point, lines and planes with reference to HP and VP.

Projection of line parallel to both reference planes, parallel to one and inclined to other reference plane, inclined to both the reference planes followed by illustrative examples in each case.

Projection of plane parallel to VP, parallel to HP, perpendicular to VP and inclined to HP, perpendicular to HP and inclined to VP, inclined to both HP and VP followed by illustrative examples in each case.

UNIT III: Projections of Right Regular Solids

Orthographic projections of regular Solids- - solids bounded by planes such as Prism and pyramids and solids of revolution such as Cylinder and Cone.

Projection of solids having axis perpendicular to one of the reference planes, axis parallel to either of the reference plane and inclined to other reference plane, axis inclined to both the reference planes followed by illustrative examples in each case.

Drawing of relevant simple compositions of solids in plan and all elevations.

UNIT IV: Application of architectural drawing

Architectural Graphic codes/ Symbols presentations (in plans, sections and elevations) of basic building materials and constructional elements, furniture, services like water supply, sanitation and electrical etc., Preparation of measured drawings (plan and elevations) of minor innovative built form, furniture, building components etc.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Minimum 12 sheets covering the entire syllabus uniformly must be prepared in the studio under supervision of the teacher.

| I | Sessional evaluation | Weightage |
|----|-------------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments /class tests (12) | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student
 - Four cartridge sheet (white)

1st Year Syllabus was approved in 13th Meeting of Academic Council held on 18.06.2018 and 2nd Year Syllabus was approved in 14th Meeting of Academic Council held on 11.06.2019. Applicable to all students admitted in 2018 and onwards.

4. Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 20 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 15 marks each.

READING LIST: (to be amplified by the subject teacher)

1. Bhat, N D (1995) Engineering Drawing, Charotar Publishing House, Bangalore, India
2. Gopalakrishna, K R (2001) Engineering Graphics, Subhas Publications, Bangalore, India

BACHELOR OF ARCHITECTURE**AR105C****GRAPHICS-I**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|--------|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | Studio | | Theory | Portfolio | | | |
| | 4 | 50 | 50 | - | 100 | 4 | 3 |

INTENT

To develop the skill of using the pencil in free hand drawing and rendering to support Architectural Design and Drawing

CONTENT**UNIT I:**

Lines, Planes, Simple Solids

Composition in simple solids with shading / shadows

UNIT II:

Outdoor sketching

Scaled freehand sketching of Foliage, Human Figures, Automobiles

UNIT III:

Quick sketching of simple objects like apple, telephone, bottle, chair, table etc. in black pencil.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Minimum 10-12 sheets must be prepared in the studio under supervision of the teacher. The medium includes use of Black / Color pencils.

| I | Sessional evaluation | Weightage |
|----|-------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/class tests | 60% |
| II | Theory examination | 100% |

INSTRUCTION TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50 (minimum passing marks: 20)
- Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student
 - Four cartridge sheet (white)
- Total THREE questions are to be set, one from each unit out of which candidate has to attempt any TWO questions each of 25 marks.

READING LIST: (to be amplified by the subject teacher)

- Bruce D. Kurty (1987) Visual imagination – An introduction of Art, Prentice Hall, New Jersey.
- Gowing, L. (1990) The Encyclopedia of Visual Arts Vol.1 to Vol.5, The Encyclopedia Britannica, London.
- Rochan, Richard & Linton, Herald (1989) Colour in Architectural Illustration, Van Nostrand Reinhold.
- Walker, Theodore D. (1989) Perspective Sketches, Van Nostrand Reinhold, New York.

BACHELOR OF ARCHITECTURE

AR107C

HISTORY OF ARCHITECTURE-I

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT:

To inculcate the appreciation of 'History of Built Environment' in the larger context of Time, Space, Man and Architecture; to develop a curiosity of a past era; to appreciate the glory of a past era through its Architecture.

CONTENT

UNIT I: Eastern World (Indian Subcontinent)

Indus valley civilization

Aryan/Vedic civilization

Buddhist and Jain civilization

UNIT II:

Indian Aryan Temple Architecture

Early and late Chalukyan architecture

Dravidian Temple Architecture

UNIT III: Western World

Ancient civilizations - Mesopotamian, Sumerian, Babylonian, Persian, Assyrian

Egyptian civilization

Classical Greek architecture

Roman architecture

UNIT IV:

Early Christian architecture

Romanesque architecture

Early Gothic architecture

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Student shall be encouraged to take up exercises of free hand sketching of exemplar historical edifices.

| I | Sessional evaluation | Weightage |
|----|---|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class (stress on sketches) | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST:

- Brown, P. (1976) Indian Architecture (Buddhist) 7th reprint, Taraporevala Sons & Co. Pvt. Ltd. Mumbai.
- Brown, P. (1976) Indian Architecture (Islamic), 7th reprint, Taraporevala Sons & Co. Pvt. Ltd. Mumbai.
- Copplestone, Trewin (ed) (1979) World Architecture, The Hamlyn Publishing Group Limited, Toronto.
- Fletcher, Sir Bannister (1999) History of Architecture – 20th edition, edited by Dan Cruickshank, CBS Publishers & Distributors, New Delhi.
- Gympel, Jan (1996) The story of architecture, Könemann Verlagsgesellschaft mbH, Köln, Germany.
- Marian, Moffett et al (2003) World history of architecture, Laurence King Publishing, London.
- Stierlin, Henri (1997) Greece from Mycenae to the Parthenon, Benedikt Taschen Verlag GmbH, Köln.

BACHELOR OF ARCHITECTURE**AR109C****PRINCIPLES OF ARCHITECTURE I**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT:

To introduce evolution of design thinking, process and methodology.

To understand basic principles of architecture.

To appreciate 'design', the background thinking in the design of art forms: the design of natural objects.

CONTENT**UNIT I: Basic design**

Concept of design in everyday life

Objectives of Design

Nature and design-appreciation of beautiful objects in nature, principles of organization in nature

Introduction to theory of colour

UNIT II: Introduction to Architecture

Definition of Architecture – Origin of Architecture – architecture as a discipline– context for architecture as satisfying human needs: functional, aesthetic, and psychological-outline of components and aspects of architectural form-site, structure, skin, materials, services, use, circulation, expression, character, experience.

UNIT III: Elements of architecture

Basic Design and Architectural Design-Elemental Differentiation

Geometry in Architecture- point, line, plane and volume-linear elements, planar elements and volumetric elements with respect to the evolution of architectural form and space.

Form in architecture- pattern, shape, size, color, texture, position, orientation, visual inertia, light, surface

UNIT IV: Principles of composition

Principles of architectural composition- axis, symmetry and asymmetry, hierarchy, datum, rhythm, repetition, unity, variety, harmony, focus, emphasis, climax, contrast, transformation, measure and balance, spaces on human scale and proportion Golden Section, Le modular, Fibonacci series

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Student shall be encouraged to apply principals of design in real life objects or nature and prepare collage/ portfolio of graphic interpretation of principles of design in every day object.

| I | Sessional evaluation | Weightage |
|----|---|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST

- Ching, Francis D. K. (1979) Architecture-Form, Space and Order, Litton Educational Publishing Inc., Van Nostrand Reinhold Company, London.
- Norberg - Schulz, Christian (1971) Existence, Space and Architecture, Studio Vista Limited, London.
- Pandya, Yatin (2007) Elements of Space Making, Mapin Publications, Ahmedabad.
- Pandya, Yatin, (2005) Concepts of Space in Traditional Indian Architecture, Mapin Publications, Ahmedabad.
- Parmar, V.S. (1990) Design Fundamentals, Somaiya Publications Private Limited, New Delhi.
- Walsh, Margaret (1971) The colour Source Book, Thames and Hudson, London.

BACHELOR OF ARCHITECTURE

AR111C

WORKSHOP - I

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|--------|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | Studio | | Theory | Portfolio | | | |
| | 4 | 100 | - | | 100 | 4 | - |

INTENT:

To hone skills of constructing three dimensional forms using different model making materials and equipment in different scale.

CONTENT:

UNIT I: Introduction

Introduction to different materials like paper, thermocol, mud, wood, foam sheet, sun board, cork sheet, metal sheets, wires, plaster of Paris (PoP), etc. for making models

Introduction to various tools and joining techniques required for model making.

UNIT II: Model making techniques

Making basic shapes out of different materials to explore the nature and texture of the material.

Model making techniques for quick study models

UNIT III: Study model

Preparation of study models of simple objects, contour models

Models in appropriate scale for interior and exterior spaces

UNIT IV: Different types of Models

Introduction to various types of models at appropriate scales- site model, study model, block model, finished presentation models, etc

Model making techniques for rendered models

Introduction to digital medium to explore models digitally, 3D printing

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

The classes to be conducted in the workshop and construction yard.

| I | Sessional evaluation | Weightage |
|---|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Projects/Tests/Performance in class | 60% |

READING LIST: (to be amplified by the subject teacher)

1. Burbank, Nelson, (1986) House Carpentry Simplified, McGraw Hill Publications, NY.
2. Hajra Choudhury (1998) Workshop Technology, Vol 1, Media Promoters & Publishers P. Ltd, Bombay.
3. Krendlise L.N. (1984) Wood working, MIR Publications, Moscow.
4. Sharma, S. K. & Kaul B. K. (1988) A Text Book of Building Construction, S. Chand & Co., New Delhi.
5. Sheldon, Roger (1993) Opportunities in carpentry career, UBA. VGM Career horizon, NY.
6. Sushil Kumar (2006) Building Construction, Standard Publishers Distributors, New Delhi.
7. Williams, J.J. (1981) Basic Carpentry Techniques, Ortho Books.

BACHELOR OF ARCHITECTURE**AR113C****BUILDING CONSTRUCTION - I**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 4 | 50 | 50 | | 100 | 4 | 3 |

INTENT:

To introduce the students to the basic principles of construction and methods/techniques of construction through various elements/components of building

To understand the relationship between architectural design, building materials, construction, services etc. as an integral component of the conversion of Architectural Concepts into tangible reality.

CONTENT:**UNIT I: Introduction**

Basic components/elements of a 'building' from foundation to roof.

Basic tools and equipment used in construction.

Typical section through a load bearing wall showing foundation, plinth, window or door sill, lintel with chajja, roof slab, cornice and parapet details etc.

UNIT II: Substructure

Introduction to types of soil and foundations with emphasis on simple foundation for load bearing walls, plinth filling, steps, etc.

Typical section through foundation.

UNIT III: Masonry

Types of bricks and their dimensions, Types of bond – English, Flemish, Rat trap etc. and L, T, cross joints in different thickness of brick walls

Classification of stone masonry: rubble work, ashlar work, masonry joints

Composite masonry: cement concrete (hollow and solid); hollow clay tile masonry; glass block masonry.

Typical section through a load bearing wall showing elements from foundation to parapet.

UNIT IV: Lintels and Arches

General idea of load transmission in load bearing & frame structures, their advantages, disadvantages and suitability.

Construction details of brick and stone arches including lintels. Brick Jallies.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

In each class teacher will deliver lecture on the subject to be followed by drawing.

Market survey/ site visits to nearby construction site are to be conducted

Hands on exercises in the workshop or construction yard such as simple walls, pavement, Brick Jallies etc.

Minimum 10-12 sheets must be prepared in the studio under supervision of the teacher.

| I | Sessional evaluation | Weightage |
|----|----------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Projects | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student
 - Four Cartridge Sheet (White)
- Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 20 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 15 marks each.
- Exam shall be of 3 hours duration and of Maximum marks: 50. (minimum passing marks 20)

READING LIST: (to be amplified by the subject teacher)

1. Barry, R (1986) Construction of Buildings, London, vol. 1 to 5.
2. BIS (2016) National Building Code, SP 7, Bureau of Indian Standards.
3. Foster, Stroud (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
4. McKay, W.B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.
5. Prabhu, Balagopal T. S. (1987) Building Drawing and Detailing, Spades Publishers Pvt. Ltd., Calicut.
6. Punmia, B. C. (1993) Building Construction, Delhi.
7. Singh, Gurucharan (1981) Building Construction Engineering, Standard Book House, New Delhi.
8. Relevant IS codes

BACHELOR OF ARCHITECTURE

AR115C

BUILDING MATERIALS - I

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 2 | 50 | 50 | | 100 | 2 | 3 |

INTENT:

To make the students aware of natural and manmade building materials used in construction industries and to understand their relationship with architectural design and building construction.

CONTENT:

UNIT I: Timber and its products

Study of various materials used commonly for building construction in rural & urban areas, with their properties, various types, market forms available and application in buildings

Timber: classification and structure of tree, defects in timber, storage of timber, uses of timber, conversion and seasoning, Market Forms & Industrial Timber, their suitability, limitations, precautions, treatment of timber etc.

Bamboo as building material

Plywood and Board: types and qualities, Substitute wood products like Medium Density Fibreboard (MDF) etc, Veneers, Laminates etc.

UNIT II: Masonry materials

Classification of bricks, Fire Brick, Fly Ash Bricks, Tiles, Terra-cotta

Stones: Classification of rocks, application of Stones, Qualities of Good Building Stones, Dressing, Common Building Stones of India.

UNIT III: Cement mortar and concrete

Cement: Properties, Different Types and Uses in Building construction

Cement Mortar: Composition, Classification and Uses of Mortar

Concrete: Proportioning Concrete, compacting, Curing, and Types of Concrete.

UNIT IV: Metal and glass

Metals: Ferrous & Nonferrous Metals and Alloys, Commercial Forms, their Suitability, limitations, precautions, etc.

Glass: Classification with Commercial Forms, their Suitability, limitations, precautions, etc.

Paints and Varnishes: Different types of paints, preparation, primer method of application on different surface, their Suitability, limitations, precautions, etc. Types of varnishes, low VOC paints

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Market survey and industry visits may be organized to introduce materials in market, sizes available in market, product types, prices. Visit to RMC plant/ Brick kiln/artificial timber seasoning kiln/ plywood plant etc.

| I | Sessional evaluation | Weightage |
|----|---|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Varghese, P.G. (2007) A Text Book of Building Materials, Prentice-Hall of India Pvt. Ltd., Publication.
- Rai, Mohan and Jain, M.P. Advances in Building Materials and Construction Singh publication by CBRI, Roorkee.
- Zhang, H. (2011) Building Materials in Civil Engineering, Woodhead Publishing

1st Year Syllabus was approved in 13th Meeting of Academic Council held on 18.06.2018 and 2nd Year Syllabus was approved in 14th Meeting of Academic Council held on 11.06.2019. Applicable to all students admitted in 2018 and onwards.

4. Jha, Janardan (1976) Engineering Materials, Khanna Publishers.
5. Rangawala P.C. (1989) Engineering Materials, Charter Publishing House, Anand, India.
6. Sushil Kumar (2003), Building construction, Standard Publication and Distributors, New Delhi.
7. BIS (2016) National Building Code, Bureau of Indian Standards.

BACHELOR OF ARCHITECTURE**AR117C****THEORY OF STRUCTURES**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT:

To inculcate the understanding of the basic principles of structural mechanics for understanding of Structural Systems and basic analysis of structures.

CONTENT:**BASIC STRUCTURAL MECHANICS & ANALYSIS OF STRUCTURES**

UNIT I: Force and its units, Laws of forces, Resultant of a Force System, Law of Inertia, Law of action and reaction, Free body diagram, Static equilibrium & conditions of equilibrium, conditions of statical determinacy, Degree of Indeterminacy.

Types of supports and support reactions, Determination of support reactions for statically determinate structures, Analysis of forces, moments and couples in structures.

UNIT II: Analysis of a perfect truss by method of joints and method of sections.

Simple stress and strains, elastic constants, stress strain curves, relationship among elastic constants. Study of beams with different types of support conditions and different types of loadings. BIS 875 code for estimation of design loads in a building.

UNIT III: Shear force and shear force diagrams, Bending moment & Bending moment diagrams for determinate beams, Sagging and Hogging Bending Moments, Sign Convention, Point of contra-flexure and determination of its location. Flexural and shear stresses under bending, Determination of deflection in the beams (only formulae to be told, no derivation) Deflected shapes of the beams.

UNIT IV: Centre of Gravity and Centroid and its determination for a plane lamina.

Moment of Inertia and its determination for a plane lamina, Parallel Axis theorem and Perpendicular Axis theorem.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Visit to Testing lab of building materials

| I | Sessional evaluation | Weightage |
|----|---|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Beer, F. P. & Johnston, R. E. Jr (1962) Mechanics for Engineers, Statics and dynamics, McGraw Hill, International Student Edition.
- BIS (1987) Code for the Estimation of Design Loads in a Building, I.S. 875.
- Punmia, B.C. & Jain, A. K. (2002) Mechanics of Materials, Laxmi Publications (P) Ltd., New Delhi.
- Ramamrutham, S. & Narayan, R. (2008) Strength of Materials, Dhanpat Rai & Sons, New Delhi.
- Singh, Harbhajan (2010) Structure Mechanics for Architects, Abhishek Publications, Chandigarh.

BACHELOR OF ARCHITECTURE

AR 102C

ARCHITECTURAL DESIGN-II

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 6 | 100 | - | 100 | 200 | 6 | 3 |

INTENT:

Conceptualization of Form, Space and Structure through creative thinking
To appreciate the process of design and the complexities involved in architectural design.

CONTENT:

Basic anthropometrics-average measurements of human body (adult and children) in different postures-its proportion and graphic representation.

Basic human functions and their implications for spatial planning. Minimum and optimum areas for various functions.

Activity space analysis related to form, function and expression of individual spaces like Bed room, Drawing room, Kitchen, Bath room etc. including, the furniture layout, circulation, clearances, lighting and ventilation, etc. of existing house and re-design of these spaces. Understanding relationship of horizontal and vertical spaces. Preparing user profile, bubble and circulation diagrams.

Application of Basic design in mono-cellular activity through the manipulation of elements and principle of design, Integration of form and function in the design of mono cellular structure like florist kiosk, gift/souvenir shop, pavilions, bus shelter, milk booth, PCO, Guard cabin, cycle stand, entrance gate, traffic police kiosk, ATM centre etc.

Portfolio design exercise: Single building for 4-6 users involving multiple activities and spaces, residence for single family etc.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

Minimum **five** design exercises are to be completed in the entire semester, covering the entire syllabus uniformly.

Total four exercises to be included in the sessionals and **one** design can be left for external portfolio exams.

Site visits and proto type study visits to be conducted.

| I | Sessional evaluation | Weightage |
|----|---------------------------------------|-----------|
| | Minor Test – I | 10 % |
| | Minor Test – II | 10 % |
| | Design Exercises (four) | 60% |
| | Portfolio exercises (part evaluation) | 20 % |
| II | Portfolio evaluation | |
| | Portfolio exercise (one) | 100% |

READING LIST: (to be amplified by the subject teacher)

1. Baker, Geoffrey H. (1996) Design Strategies in Architecture- An Approach to the Analysis of Form, Taylor & Francis.
2. Burden, Ernest (1987) Design Communication, McGraw Hill.
3. Chiara, Joseph De and Crosbie, Michael J (2001) Time Saver Standards for Building Types, McGraw Hill Professional.
4. Chiara, Joseph De, Panero, Julius and Zelnik, Martin (2001) Time Saver Standards for Interior Design and Space Planning, McGraw Hill.
5. Ching, Francis D.K. (1996) Architecture: Form, Space, and Order, Van Nostrand Reinhold, New York, 2nd edn.
6. Habraken, N. John, Mignucci, Andrés and Teicher, Jonathan (2014) Conversations With Form: A Workbook for Students of Architecture, Routledge.
7. Wagenknecht, Kay and Herte (1989) Site + Sculpture – A collaborated design Process, Van Nostrand Reinhold, NY.

BACHELOR OF ARCHITECTURE

AR104C

ARCHITECTURAL DRAWING II

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 4 | 50 | 50 | | 100 | 4 | 3 |

INTENT:

To develop the capability of understanding and drawing three dimensional solids and their various complex sections as a basis of representing architectural design.

CONTENT

UNIT I: Orthographic projects of Regular solids in inclined position

Orthographic Projections of right regular solids - Prism, Cylinder, Pyramid, Cone with axes inclined to one of the reference planes and parallel to the other followed by illustrative examples in each case

Orthographic Projections of right regular solids - Prism, Cylinder, Pyramid, Cone with axes inclined to both the H.P. and V.P. followed by illustrative examples in each case

Projection of relevant simple compositions of group of solids in inclined positions

UNIT II: Sections of Right regular Solids

Sections and true sections of all types of right regular solids - Prism, Cylinder, Pyramid, Cone with section plane parallel to the V.P., section plane parallel to the H.P., section plane perpendicular to the H.P. and inclined to the V.P., section plane perpendicular to the V.P. and inclined to the H.P. followed by illustrative examples in each case

Section of relevant simple compositions of group of solids

UNIT III: Development of surface

Development of lateral surface of all types of right regular solids- Prism, Cylinder, Pyramid, Cone

Inter penetration of right regular solids - Prism, Cylinder, Pyramid, Cone using line method and cutting plane method followed by illustrative examples in each case

Intersection of two prisms, intersection of cylinder and cylinder, intersection of cylinder and prism, intersection of cone and cylinder, intersection of cone and prism, intersection of cone and cone followed by illustrative examples in each case

UNIT IV: 3D projections/views

Concept of Isometric & Axonometric projections / views. Understanding concept of Isometric scale

Drawing of Isometric views of all right regular solids Prism, Cylinder, Pyramid, Cone including few of interesting compositions of building elements (foundation to slab) like column, beam and slabs etc.

Drawing of Axonometric and exploded axonometric views of simple built form and building spaces.

Draw simple annotation, dimensioning and scale

NOTE:

Detailed teaching program to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

Minimum 12 exercises are to be completed in the entire semester covering the entire syllabus uniformly in the studio under supervision of the teacher.

| I | Sessional evaluation | Weightage |
|----|-------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/class tests | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks: 20)
- Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student
 - Four cartridge sheet (white)
- Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 20 marks and rest of the FOUR QUESTIONS shall be from four units (one question

from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 15 marks each.

READING LIST: (to be amplified by the subject teacher)

1. Bhat, N D (1995) Engineering Drawing, Charotar Publishing House, Bangalore, India
2. Gopalakrishna, K R (2001) Engineering Graphics, Subhas Publications, Bangalore, India

BACHELOR OF ARCHITECTURE

AR106C

GRAPHICS-II

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|--------|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | Studio | | Theory | Portfolio | | | |
| | 4 | 50 | 50 | - | 100 | 4 | 3 |

INTENT

To make students experiment in different color mediums for the final application of rendering architectural drawings.

CONTENT

UNIT I:

Introduction to Architectural Rendering

Color wheel

Representing building material in color

Representing Architectural elements like Foliage, Automobile, Human Figures, Landscape etc.

UNIT II:

Use of ink for rendering

Rendering on different kinds of paper like Cartridge, Handmade, Ivory etc.

UNIT III:

Quick sketches of buildings in 3 dimension like kiosks, bus shelters, traffic booths, entrance gate, cycle stand etc.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Minimum 10-12 sheets must be prepared in the studio under supervision of the teacher.

The medium includes use of water colours, poster colour, crayons, markers and ink.

| I | Sessional evaluation | Weightage |
|----|----------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Projects | 60% |
| II | Theory examination | 100% |

INSTRUCTION TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50 (minimum passing marks: 20)
- Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student
 - Four cartridge sheet (white)
- Total THREE questions are to be set, one from each unit out of which candidate has to attempt any TWO questions each of 25 marks.

READING LIST: (to be amplified by the subject teacher)

- Bruce D. Kurty (1987) Visual imagination – An introduction of Art, Prentice Hall, New Jersey.
- Gill, Robert W. (1984) Manual of Rendering in pen and ink, Thames and Hudson, London
- Gowing, L. (1990) The Encyclopedia of Visual Arts Vol.1 to Vol.5, The Encyclopedia Britannica, London.
- Hartt, Fredrick (1993) Art: A History Painting, Sculpture and Architecture, Prentice Hall, Inc., 4th edn.
- Hayashi Studio (1994) Water Colour Rendering, Graphic-Sha Publishing Co., Ltd.
- Rochan, Richard & Linton, Herald (1989) Colour in Architectural Illustration, Van Nostrand Reinhold.
- Smith, Ray (1995) Water Colour Landscape, Dorling Kindersley, London.
- Walker, Theodore D. (1989) Perspective Sketches, Van Nostrand Reinhold, New York.

BACHELOR OF ARCHITECTURE

AR108C

PRINCIPLES OF ARCHITECTURE - II

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT

To generate and appreciation of background aspects of thinking required in architectural design.

The objectives of the course is to understand the principles and percepts of issues as related to architectural design in theory and practice.

CONTENT

UNIT I: Organization of Form and Space

Elements of spatial definition – form defining space - elevated base plane, depressed base plane, vertical and horizontal elements defining space -depth and density of space - spatial juxtaposition and interpenetration – spatial characteristics of elementary shapes - qualities of architectural space -degree of enclosure.

Spatial organisation: Centralized, Linear, Radial Clustered, Grid – built form and open space relationships.

UNIT II: Movement in architecture

Detailed study of building circulation that affects perception of architectural form and space

Types of circulation- circulation within spatial units, horizontal and vertical circulation – Building approach and entrance, path configuration and form, path space relationship, orientation.

Circulation and Spaces between Buildings

UNIT III: Fundamentals of Architectural Design

Function, Structure and Form -expression of design like, expression of climate and topography, expression of culture and regional characters, expression of circulation and function of building, expression of structure and technology in design.

Appreciation of architecture with respect to man and his behavior-Anthromorphism and architecture

Programming in Architectural Design, Relationship of Plan, Section and Elevation, Architectural Scale

UNIT IV: Concepts in Architectural Design

Principles of perception – proximity, similarity, etc., experience of space, Gestalt ideas of visual perception, Figure and ground, Positive and negative spaces, Tangible and Intangible in Architecture

Ideas and Intent in design - Intuitive, contextual, Iconic, Experiential, Environmental-Energy based design, Symbolic, Modular; Ideologies/ philosophies from the practice of architecture through contemporary history; design communication through graphics.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Organization of space and evolution of concept in architecture design to be integrated with design studio.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Ching, Francis D. K. (1979) Architecture-Form, Space and Order, Litton Educational Publishing Inc., Van Nostrand Reinhold Company, London.
- Norberg - Schulz, Christian (1971) Existence, Space and Architecture, Studio Vista Limited, London.
- Pandya, Yatin (2007) Elements of Space Making, Mapin Publications, Ahmedabad.
- Pandya, Yatin, (2005) Concepts of Space in Traditional Indian Architecture, Mapin Publications, Ahmedabad.
- Parmar, V.S. (1990) Design Fundamentals, Somaiya Publications Private Limited, New Delhi.

1st Year Syllabus was approved in 13th Meeting of Academic Council held on 18.06.2018 and 2nd Year Syllabus was approved in 14th Meeting of Academic Council held on 11.06.2019. Applicable to all students admitted in 2018 and onwards.

6. Walsh, Margaret (1971) The colour Source Book, Thames and Hudson, London.

BACHELOR OF ARCHITECTURE

AR110C

BUILDING CONSTRUCTION - II

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 6 | 100 | 100 | | 200 | 6 | 3 |

INTENT:

To familiarize the student with the various aspects of building construction with the basic material as wood.

CONTENT:

UNIT I: Doors

Doors: Definition of terms, types of wooden doors: ledged, ledged and braced, paneled, flush door. Hinged, single and double shutters, sliding, folding, sliding and folding, revolving, pivoted.

Fixing details of frame, style, rail, panel, glazing including fixtures and fastenings.

UNIT II: Windows

Windows: types of wooden windows, casement, top and bottom hung, pivoted and sliding sash. Ventilators and their details

Hardware: fixtures, locks, hinges, fastenings for doors and windows; moldings, architrave

UNIT III: Flooring and staircase

Types of wooden floorings (ground and first floor), Wooden Staircase and their details

UNIT IV: Roof

Roof Trusses: Timber trusses, types; fixing details showing purlin, rafter, tie, strut, cleat etc. Different types of roof coverings: tiles, asbestos and metal sheets etc. with fixing details.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

In each class teacher will deliver lecture on the subject to be followed by drawing.

Market survey/ site visits to different construction sites and industry for different types of doors/ windows are to be conducted

Hands on exercises of doors/ windows and construction joints in workshop

Case study of typology of doors and windows as design element

Minimum 10-12 sheets must be prepared in the studio under supervision of the teacher covering entire syllabus uniformly.

| I | Sessional evaluation | Weightage |
|----|----------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Projects | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam. shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student
 - Four Cartridge Sheet (White)
- Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 20 marks, (due consideration has to be given to building materials) and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 15 marks each.
- Exam. shall be of 3 hours duration and of Maximum marks: 50. (minimum passing marks 20)

READING LIST: (to be amplified by the subject teacher)

- Foster, Stroud (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
- Singh, Gurucharan (1981) Building Construction Engineering, Standard Book House, New Delhi.
- McKay, W.B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.
- Barry, R (1986) Construction of Buildings, London, vol. 1 to 5.
- Punmia, B. C. (1993) Building Construction, Delhi.
- BIS (2011) National Building Code, SP 7, Bureau of Indian Standards. Relevant IS codes

BACHELOR OF ARCHITECTURE

AR112C

CLIMATE RESPONSIVE ARCHITECTURE II

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT:

To understand fundamentals of architectural science, climate on global and site levels, factors of thermal comfort, solar geometry, natural ventilation and climate responsive building design and site planning.

To apply the IS codes for climate responsive architecture

CONTENT:

UNIT I: Climate and thermal comfort

Climatology as a science for the study of weather conditions averaged over a period of time

Global climatic factors, the elements of climate- temperature, humidity, solar radiation, wind, rainfall; measurements and representations of climatic data

Classifications of climates: tropical climate classification, climatic zones of India

Micro climate effects of local factors and landscape elements on site climatic elements

Thermal balance of human body, physiological and environmental factors of thermal comfort

Bioclimatic chart, comfort zone, overheated and under heated periods

UNIT II: Principles of thermal design in buildings

Thermal quantities: temperature, heat, specific heat, sensible heat, latent heat, thermal capacity.

Heat flow through building envelope: conduction, convection, radiation; thermal balance equation

Thermo-physical properties of building materials and elements: conductivity (k), density, surface conductance, air-to-air thermal transmittance (U value), effects of cavities

UNIT III: Sun and wind in architecture

Apparent movement of the sun, Sun path diagrams and its application, green house effect

Solar control-orientation, internal blinds and curtains, high performance glasses, taxonomy of shading devices

Design of fixed external solar shading devices: solar angles, shadow angles, solar shading masks etc.

Functions of natural ventilation; supply of fresh air, stack effect due to the thermal forces, convective cooling, physiological cooling, wind simulators, air movement due to natural and built form-factors affecting the indoor air flow, air flow around buildings, wind shadow etc. wind tower, wind scoop.

UNIT IV: Design tools and strategies

Design strategies in five climatic zones of India

Climate responsive traditional architecture in five climatic zones of India

Contemporary responses to climate through published exemplar studies

Design tools: Mahoney tables, Computer analysis of climate and comfort using appropriate software, analog models of shading devices (use of sun dials), models of wind turbines

Assessment of appropriateness of various Renewable Energy Systems based on climatic conditions

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

A visit to the University weather station/environmental lab and hands on experience with the various instruments for measuring climatic elements should be conducted.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)

2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. BIS (1987) Handbook of Functional Requirements of Buildings (other than industrial buildings) SP:41 (S&T), Bureau of Indian Standard, New Delhi.
2. Kabre, Chitrarekha (2018) Sustainable building design: applications using climatic data in India, Springer.
3. Koenigsberger, et. al. (1975) Manual of Tropical Housing and Building (Part-II), Climate Design, Orient Longman Ltd.
4. Szokolay, S. V. (2008) Introduction to Architectural Science, Architectural Press.
5. Watson, Donald et al (ed) (1997) Time saver standards for architectural design data, 7th edn, McGraw-Hill, Inc, ch 3-6.

BACHELOR OF ARCHITECTURE

AR114C

STRUCTURAL DESIGN - II

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT:

To inculcate the understanding of the basis for the analysis and design of a structural component subjected to bending & Design of basic structural elements using timber & Brick Masonry.

CONTENT:

DESIGN OF TIMBER STRUCTURES & BRICK MASONRY

UNIT I: Stress, Strain and Modulus of elasticity; Stress diagram, Strain diagram, Bending Stresses and Shear Stresses.

Study of a section subjected to pure bending; Neutral Axis, Moment of Resistance and Section Modulus.

UNIT II: Properties of Structural Timber, Defects of timber and their impact on structural properties of timber, permissible stresses in timbers and modification factors. Classification of timber, Introduction to IS Code of Timber Construction – IS: 883. Introduction to Bamboo as structural material

UNIT III: Analysis and Design of flexural members of timber.

Built up beams and flitched beams.

Analysis and Design of timber columns; Solid columns and Built up columns.

Design of members of a simple truss.

Unit IV: Brick as a structural material, Design of a load bearing brick wall and wall footing.

Types of masonry used as structural system for building structures. Structural properties of brick masonry and analysis and design of low rise masonry buildings including masonry foundation.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|---|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- BIS (1984, reaffirmed 2005) Code of Practice for Design of Structural Timber in Buildings, IS: 883.
- BIS (1987, reaffirmed 2002), Code of Practice for Structural Use of Un-reinforced Masonry.
- BIS (1991) Handbook on Masonry Design and Construction, SP 20(S & T): Bureau of Indian Standards, New Delhi
- Kazimi, M. A., Jindal, R. S. (1985) Design of Steel Structures, Prentice Hall of India Private Ltd., New Delhi.
- Newman, M. (1995) Design and Construction of Wood Framed Buildings, McGraw Hill Inc., New York.
- Punmia, B. C., Jain, A. K. (1998) Comprehensive Design of Steel Structures, Laxmi Publications (P) Ltd., New Delhi.
- Singh, H. (2007) Design of Masonry and Timber Structures, Abhishek Publications, Chandigarh.

BACHELOR OF ARCHITECTURE

AR116C

EDUCATIONAL TOUR -II

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | - | 100 | - | - | 100 | 2 | - |

INTENT:

To expose students to Historical, traditional and Contemporary Architecture

CONTENT:

Vacation Assignment/ Study tour is to be undertaken in II semester and before the commencement of III semester classes.

This assignment could be an appreciation of a noted building or a study tour for visiting places of architectural interest both traditional and contemporary. The choice of the building to be documented and the places to be visited will be decided by the department. The assignment may be given as group work (4 to 6 students per group). The students have to submit/present a photo-documentation report on the architectural appreciation or the study tour within 15 days from the beginning of the III Semester.

BACHELOR OF ARCHITECTURE

HUM101C

ENGLISH LANGUAGE SKILLS

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 25 | 75 | - | 100 | 2 | 3 |

INTENT:

Course objectives:

1. To equip students with English Language skills needed in academic and professional world
2. To make students technically proficient in handling language skills required for competitive exams.
3. To inculcate human/ethical values in the students to ensure their holistic development
4. To develop ability to critically read the literary texts

Course outcomes: The students will be able to

1. Acquire basic proficiency in English
2. Develop their verbal ability
3. Enhance their writing, reading and analytical skills
4. Develop proficiency in reading along with sensitivity to the impact literary texts can have on their minds/lives

Course Contents:

Unit I: Basic Writing skills (a) Subject Verb Agreement (b) Noun Pronoun Agreement (c) Governance of Nouns Through Prepositions (d) Basic Verb Patterns (V, SV, SVO, SVOO, SVC, SVOC, SVOA)

Unit II: Vocabulary Building (a) One word substitution* (List attached) (b) Phrasal Verbs* (List attached) (b) Commonly used Idioms * (List attached) (d) Words/Phrases/Idioms from the texts prescribed in Unit IV-- their meaning and use in sentences

Unit III: Creating Grammatical Cohesion (a) Referring Time in Language (Tenses) (b) Use of Conditional Sentences (c) Use of Active and Passive Voice (d) Synthesis of Sentences using Coordinating and Subordinating Conjunctions

Unit IV: Reading and Writing Practices (a) Literary Texts: i. "The Secret of Work" by Swami Vivekananda** ii. "Public Transport in London and Delhi" by Nirad C. Chaudhuri # iii. "An Outline of Intellectual Rubbish" by Bertrand Russell # iv. "Mother Teresa" by Khushwant Singh # (b) Writing official Letters- Issues Concerning Students' academic and social life (c) Essay Writing (d) Paragraph Writing

Note: Eight hour time on an average to each unit is recommended for class room teaching purposes.

Scheme of End Semester Examination (Major Test): 1. The duration of examination will be three hours. 2. Nine questions of 15 marks each will be set, out of which the examinees will have to attempt five questions. 3. First question of 15 marks will be compulsory. It will cover all the four units of the syllabus. The question will have sub-parts with marks assigned against each. 4. Question No 02 to 09 will be set from the four units of the syllabus - two from each unit of 15 marks each. The nature of the questions in each unit will depend upon the nature of content therein. Examinees will have to attempt four more questions, selecting one from each unit. The questions may have parts.

Instruction for paper setter: Recommended pattern of questions in each unit will be as follows: Unit I Two questions of 15 marks each will be set from this unit. Examinees will attempt either of the two questions. Questions will be in the form of correcting the errors in the sentences, picking up the right alternative, filling in the blanks or completing the sentences. Examinees can also be asked to frame sentences on the patterns given or vice versa. Unit II Two questions of 15 marks each will be set from this unit out of which one is to be attempted. Questions will be in the form of giving the meaning of phrasal verbs, idioms and proverbs and using them in sentences/contexts of one's own or in the form of matching exercises, or choosing the correct alternative. The phrases/idioms/proverbs may be given from the texts prescribed in Unit IV. Examinees may also be asked to pick up the odd ones from the given series. Unit III Two questions of 15 marks each will be set from this unit also out of which one is to be attempted. Questions will be set on testing examinees' knowledge of the components

prescribed preferably in the style deemed fit for the component by the examiner. Unit IV Two questions of 15 marks each will be set from this unit out of which one needs to be attempted. The questions may have parts if required. One question will be set on the literary texts prescribed. This question may be in the form of comprehension passage, long/short answer question, explanation of lines/passage from the text with reference to the context. The second Question will be in the form of writing formal letter / essay / paragraph. Recommended Readings: 1. *Bhatnagar, Nitin and Mamta Bhatnagar. Communicative English for Engineers and Professionals. Pearson Education, 2013.(The soft copy of the book is available in the university library) 2 . # Bhatnagar, k. Manmohan.Ed. The Spectrum of Life: An Anthology of Modern Prose. Delhi: Macmillan India Ltd., 2006. 3. Sinha, R.P.Current English Grammar and Usage. OUP, 2017. 4. Rizvi, M. Ashraf. Effective Technical Communication. McGraw Hill Education (India) Pvt. Ltd., 2014. 5. Eastwood, John. Oxford Guide to English Grammar. OUP, 2010. 6. Kumar, Sanjay and Pushp Lata. Communication Skills. OUP, 2011. 7. Raman, Meenakshi and Sangeeta Sharma.Communication Skills.New Delhi:OUP,2011. 8. Hill, L. A. A Guide to Correct English. London:OUP,1965. 9. Oxford Dictionary of English Idioms. New Delhi: OUP, 2009 10.**Vivekananda, Swami. Karma Yoga. New Delhi: Sahityashila Prakashan, 2015. 11.**

<http://yousigma.com/religionandphilosophy/swamivivekananda/thescecretowork.pdf>

Approved by Board of UG Studies, Department of Humanities on 19 March 2018

BACHELOR OF ARCHITECTURE**HUM103C****ENGLISH LANGUAGE****LABCATEGORY: HUMANITIES**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|----------------------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio/ Practical | | | |
| - | 2 | 25 | - | 75 | 100 | 1 | 3 |

Course Objectives:

1. To develop English language skills especially speaking and listening of the students
2. To make the students excel in their professional lives through proficiency in communication
3. To enhance the students' linguistic and communicative competence
4. To enable them to face the challenges of professional and social life

Course Outcomes:

The Students will be able to

1. Acquire basic proficiency in Spoken English
2. Enhance their listening skills with listening comprehension exercises
3. Polish their speaking skills in English both at social and professional platforms
4. Present themselves confidently and meaningfully in professional and social circles.

Course Contents:

- (i) Listening comprehension
- (ii) Recognition of phonemes in International Phonetic Alphabet
- (iii) Self introduction and introduction of another person
- (iv) Conversation and dialogues in common everyday situations
- (iv) Communication at work place (Standard phrases and sentences in various situations)
- (vi) Telephonic communication
- (vii) Speeches for special occasions (Welcome speeches, Introduction speeches, Felicitation speeches and Farewell speeches)
- (viii) Tag Questions
- (ix) Formal Presentations on literary texts prescribed in theory paper

Note: Three hour time to each segment is recommended for instruction and practice.

Approved by Board of UG Studies, Department of Humanities on 19 March 2018

Scheme of End Semester Practical Exam:

1. A small passage may be read out to the examinees and they will have to write the answers to the questions asked at the end of the passage. Questions will be short answer type.
2. Examinees may be asked to identify the sounds of phonemes in given words.
3. Examinees may be asked to introduce themselves or others, participate in role play activities in mock situations, give short responses, engage in hypothetical telephonic conversation or supply the tag questions to statements etc.
4. Examinees may also be asked to deliver speeches on given situations or make presentation on the literary texts prescribed in Unit IV of theory paper.

Recommended Readings:

1. Bhatnagar, Nitin and Mamta Bhatnagar. *Communicative English for Engineers and Professionals*. Pearson Education, 2013.
2. Swan, Michael. *Practical English Usage*. OUP, 1995.
3. Gangal, J.K. *Practical Course in Spoken English*. New Delhi: PHI Learning, 2015.
4. Konar, Nira. *Communication Skills for Professionals*. New Delhi: PHI Learning Pvt.Ltd., 2009.
5. Bansal, R.K. and J.B. Harrison. *Spoken English*. Orient Longman, 1983.
6. Sharma, Sangeeta and Binod Mishra. *Communication Skills for Engineers and Scientists*. Delhi: PHI Learning Pvt. Ltd., 2015.

BACHELOR OF ARCHITECTURE

AR 201C

ARCHITECTURAL DESIGN-III

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 6 | 100 | - | 100 | 200 | 6 | 3 |

INTENT:

Appreciation of the complexities and contradictions in the architectural design process.

To train student in design development of moderate complexity through understanding and appreciation of space and functional requirements such as circulation, facilitation and area analysis, with particular stress on techniques of graphic representation as an integrated process in architectural design.

To adhere to basics of technical drawings.

CONTENTS:

Introduction of exercises interconnecting basic design and architectural design, understanding the arrangement of solids for aesthetic consideration to foster basic architectural qualities in design like composition and other human considerations like, privacy, convenience, comfort, etc.; understanding the significance of the factors in creating ideal environment; learning the design process;

Design of simple multi cellular structure like Artists Studio, Architect's office, Refectory, Departmental store, Small Club, Clinic/ Dispensary, Bank branch, Small Guest House, Primary Health Centre, Restaurant, Post office, police station etc.

The students shall have scientific knowledge required to design climate responsive buildings, a clear understanding of the various climate elements - radiation, air temperature, humidity and wind speed as tools of design. Due emphasis shall be given to sustainable building materials with appropriate building construction technique in design solution.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

Site visits and proto type study visits to be conducted.

The design shall be sensitive to the needs of disabled, aged people and children.

These shall be minimum of 2 exercises as a part of sessionals out of which, one will be a time problem. One exercise will be meant for portfolio evaluation.

| I | Sessional evaluation | Weightage |
|----|---------------------------------------|-----------|
| | Minor Test – I | 10 % |
| | Minor Test – II | 10 % |
| | Design Exercises | 60% |
| | Portfolio exercises (part evaluation) | 20 % |
| II | Portfolio evaluation | |
| | Portfolio exercises (three) | 100% |

READING LIST: (to be amplified by the subject teacher)

1. Chiara, J. D. (1984) Time Saver Standard for Site Planning, McGraw Hill Book Co., NY.
2. Chiara, J. D. & Crosbie, M. J., (2001) Time-Saver Standards for Building Types 4th Edition, McGraw Hill Book Co.
3. Ching, F. D. K. (1996) Architecture: Form, Space, and Order, Van Nostrand Reinhold, New York, 2nd edn.
4. Cohen, U. and McMurtry, R. (1985) Museum and Children, Design Guide, The School of Urban Planning and Architecture, University of Wisconsin, Milwaukee.
5. Helper, D. and Wallach, P. (1987) Architecture Drafting and Design, Mc-Graw Hill Company, NY.
6. Juliet, M. (1984) Designing room for children, Little Brown and Company, London.
7. Neufert, E. (2000) Neufert – Architect's Data, Crosby Lockwood and Sons, London.

BACHELOR OF ARCHITECTURE

AR203C

ARCHITECTURAL DRAWING-III

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|--------|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | Studio | | Theory | Portfolio | | | |
| | 4 | 50 | 50 | - | 100 | 4 | 3 |

INTENT:

To understand the concept of shade and shadows and its application in architecture and develop the skill of perspective drawing.

CONTENT:

UNIT I: Perspective drawing, its concepts and various elements and methods Two-point Perspective drawings of 3 D solids like cube, cone pyramid etc. with changes in different parameters.

UNIT II: Two-point perspective drawings of small structures with changes in different parameters.

UNIT III: One-point perspective drawing of interior of a room like drawing room, class room, bed room etc.

UNIT IV: Shade and shadow of object of different shape at different levels and planes Shade and shadows of building facades.

Shade and shadow of simple building in perspective.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Minimum 12 sheets covering the entire syllabus uniformly must be prepared in the studio under supervision of the teacher.

| I | Sessional evaluation | Weightage |
|----|-------------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments /class tests (12) | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student
Four cartridge sheet (white)
- Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 20 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 15 marks each.

READING LIST: (to be amplified by the subject teacher)

- Bhat, N D (1995) Engineering Drawing, Charotar Publishing House, Bangalore, India
- Gopalakrishna, K R (2001) Engineering Graphics, Subhas Publications, Bangalore, India

BACHELOR OF ARCHITECTURE

AR205C

GRAPHICS-III

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|--------|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | Studio | | Theory | Portfolio | | | |
| | 4 | 50 | 50 | - | 100 | 4 | 3 |

INTENT

To augment and enhance the skill and techniques in architectural rendering using different mediums.

CONTENT

UNIT I:

Introduction to rendering of architectural drawing

Quick sketches of site plan, plan, elevation, section with professional markers

UNIT II:

Techniques for rendering drawings in black, color pencil, water color and ink

Rendering of plan, section and elevation in different mediums

UNIT III:

Rendering of two point perspective of a building in different mediums

Rendering of one point perspective of an interior space in ink/colour

Internal spaces like bedroom, drawing room, kitchen, bathroom in markers.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Minimum 12 sheets must be prepared in the studio under supervision of the teacher.

| I | Sessional evaluation | Weightage |
|----|-------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/class tests | 60% |
| II | Theory examination | 100% |

INSTRUCTION TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50 (minimum passing marks: 20)
2. Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
3. Following Stationery shall be provided to each of the student
Four cartridge sheet (white)
4. Total THREE questions are to be set, one from each unit out of which candidate has to attempt any TWO questions each of 25 marks.

READING LIST: (to be amplified by the subject teacher)

1. Haft, P. S. (1991) Architectural Illustration in Water Colour, Whitney Library, NY.
2. Hartt, F. (1976) Art: A History Painting and Sculpture and Architecture, Harry N. Abrams, NY
3. Hayashi, S. (1994) Water Colour Rendering, Graphic-Sha Publishing Co., Ltd.
4. Item, J. (1973) The Art of Colour, Van Nostrand Reinhold, NY.
5. Maier, M. (1977) Basic Principles of Design, Vol.1, 2, 3 & 4, Van Nostrand Reinhold, NY.
6. Theodore, D. W. (1989) Perspective Sketches, Van Nonstrand Reinhold, New York

BACHELOR OF ARCHITECTURE**AR207C****HISTORY OF ARCHITECTURE-III**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT:

To appreciate the growth and development of architecture from 12th to the 18th century in the Indian sub-continent and Europe.

CONTENT**UNIT I: Indo-Islamic Architecture**

The coming of Islam to the region and its Architectural Implications

Architecture of the Sultans in the Delhi Region

Development of Architecture in the important provinces

UNIT II: Indo-Islamic Architecture

Architecture of the Early Rulers of the Mughal Dynasty

Architecture of the Later Rulers of the Mughal Dynasty

UNIT III: Architecture in Europe

The birth of Renaissance in Florence in 15th century

Renaissance in Italy in 16th century

Renaissance and the Cult of personality in 16th century

UNIT IV: Architecture in Europe

Baroque and Rocco

Influences of Italian Renaissance on Architecture in rest of Europe

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Student shall be encouraged to take up exercises of free hand sketching of exemplar historical edifices.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class (stress on sketches) | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST:

- Asher, C. B. (1992) Architecture of Mughal India, Cambridge.
- Brown, P. (1976) Indian Architecture (Islamic period), 7th reprint, Taraporevala Sons & Co. Pvt. Ltd. Mumbai.
- Fergusson, J. (1998) History of Indian and Eastern Architecture, 2 Vols. Delhi. Reprint
- Fletcher, Sir B. (1999) History of Architecture–20th edn, Dan Cruickshank ed, CBS Publishers & Distributors, New Delhi.
- Grover, S. (1980) The Architecture of India: Islamic, Sahibabad.
- Hitchcock H. R. et al (1963) World Architecture: An Illustrated History, London.
- Koch, E. (1991) Mughal Architecture: An outline of its History & Development (1526-1856), Munich.
- Murray, P. (1969) Architecture of the Italian Renaissance, London.
- Pevsner, N. (1945) An Outline of European Architecture, London.
- Pothorn, H. (1971) Styles of Architecture, London.
- Risebero, B. (1979) The Story of Western Architecture, London.
- Summerson, Sir J. (1963) The Classical Language of Architecture, London.
- Tadgell, C. (1990) The History of Architecture in India: from the dawn of civilization to the end of the Raj, Delhi.
- Volwahsen, A. (1970) Living Architecture: Islamic Indian, London.

1st Year Syllabus was approved in 13th Meeting of Academic Council held on 18.06.2018 and 2nd Year Syllabus was approved in 14th Meeting of Academic Council held on 11.06.2019. Applicable to all students admitted in 2018 and onwards.

BACHELOR OF ARCHITECTURE

AR209C

WORKSHOP - III

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|--------|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | Studio | | Theory | Portfolio | | | |
| | 4 | 100 | - | | 100 | 4 | - |

INTENT:

To appreciate the application of wood as a construction material in building design.

To get hands on experience in basic carpentry and enhance the skill of architectural model making.

CONTENT:

UNIT I:

Use of carpentry tools and machines and latest tools

Characteristics of wood, ply, boards

UNIT II:

Exercises in making of carpentry joints

Exercises using commercial boards and MDF boards

UNIT III:

Model making in mount board, thermocol and wood

Making of one detailed model of a building

UNIT IV:

Making of detailed site model of a contouring site

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

The classes to be conducted in the workshop and construction yard.

| I | Sessional evaluation | Weightage |
|---|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Projects/Tests/Performance in class | 60% |

READING LIST: (to be amplified by the subject teacher)

1. Burbank, N., (1986) House Carpentry Simplified, McGraw Hill Publications, NY.
2. Choudhury, H. (1998) Workshop Technology, Vol 1, Media Promoters & Publishers P. Ltd, Bombay.
3. Krendlise L. N. (1984) Wood working, MIR Publications, Moscow.
4. Sharma, S. K. & Kaul B. K. (1988) A Text Book of Building Construction, S. Chand & Co., New Delhi.
5. Sheldon, R. (1993) Opportunities in carpentry career, UBA. VGM Career horizon, NY.
6. Sushil Kumar (2006) Building Construction, Standard Publishers Distributors, New Delhi.
7. Williams, J. J. (1981) Basic Carpentry Techniques, Ortho Books
8. Punmia, B. C. (2005) Building Construction, Fire Well Media.
9. Jain, A. K. and Jain, A. K. (2008) Building Construction, Laxmi Publications (P) Ltd., New Delhi.

BACHELOR OF ARCHITECTURE

AR211C

BUILDING CONSTRUCTION - III

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 4 | 50 | 50 | | 100 | 4 | 3 |

INTENT:

To understand the construction details used in 3-4 storied RC buildings

CONTENT:

UNIT I:

Principles of RC foundation, types of RC foundations, RC footings and shallow foundation- isolated and combined, raft, piles

UNIT II:

Introduction to RC frame structures

Details of beams and columns of RC frame structure with in-fills

UNIT III:

RC stairs - types and construction details of RC cast-in situ stairs, pre-cast steps, fixing of handrails.

Detailed section through a multi-storey RC frame structure

UNIT IV:

Types of Cladding systems – stone, timber, weatherboard, fiber cement, brick tiles, vinyl, metal (Aluminum Composite Panels (ACP), precast concrete cladding panel.

Various types of flooring (brick, IPC, terrazzo, stone, wood, ceramic tiles others), skirting, dadoing with various finishes.

Roof finishes (over concrete slabs) with weather proofing and thermal insulation over RC roof.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

In each class teacher will deliver lecture on the subject to be followed by drawing.

Market survey/ site visits to nearby construction site are to be conducted

Hands on exercises in the workshop or construction yard such as concrete casting, etc.

Minimum 12 sheets must be prepared in the studio under supervision of the teacher.

| I | Sessional evaluation | Weightage |
|----|----------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Projects | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student
Four Cartridge Sheet (White)
- Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 20 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 15 marks each.
- Exam shall be of 3 hours duration and of Maximum marks: 50. (minimum passing marks 20)

READING LIST: (to be amplified by the subject teacher)

- Barry, R (1986) Construction of Buildings, London, vol. 1 to 5.
- BIS (2016) National Building Code, SP 7, Bureau of Indian Standards.
- Foster, Stroud (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
- McKay, W.B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.
- Punmia, B. C. (2005) Building Construction, Firewell Media, Delhi.
- Singh, G. N. (1981) Building Construction Engineering, Standard Book House, New Delhi.
- Relevant IS codes.

BACHELOR OF ARCHITECTURE

AR213C

ADVANCED BUILDING MATERIALS-III

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 2 | 50 | 50 | | 100 | 2 | 3 |

INTENT:

To make the students aware of advanced building materials used in construction industry and to understand their relationship with architectural design and building construction.

CONTENT:

UNIT I: ADVANCED CONCRETE

Reinforced Cement Concrete (RCC), Ready Mixed Concrete (RMC), Lightweight concrete, Aerated concrete, Fibre Reinforced Concrete, High Performance Concrete, Polymer Concrete, Ferro Cement, Precast and Prestressed concrete

UNIT II: ADVANCED GLASS

Types of glass- float glass, cast glass, glass blocks, foamed glass. Decorative glass, solarcontrol, toughened glass, wired glass, laminated glass, fire-resistant glass, glass blocks, structural glass - properties and application in building

UNIT III: PLASTICS

Components and classification of plastic, Property and types of plastic, application of plastic in buildings
Plastic as finishing materials (walling, flooring etc)

UNIT IV: DAMP PROOFING AND WATER PROOFING

Damp proofing: Hot applied and cold applied – Emulsified asphalt, Bentonite clay, Butyl rubber, silicones, Vinyls, Epoxy resins and metallic water proofing materials, their properties and uses.

Water proofing: water proofing membranes such as rag, asbestos, glass felt, plastic and synthetic rubber vinyl, butyl rubber, neoprene, polyvinyl chloride – prefabricated membranes sheet lead, asphalt their properties and uses. Adhesives, Sealants and joint fillers

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Market survey and industry visits may be organized to introduce materials in market, sizes available in market, product types, prices. Visit to Industry and or site for material applications.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Varghese, P. G. (2007) A Text Book of Building Materials, Prentice-Hall of India Pvt. Ltd., Publication.
- Rai, Mohan and Jain, M. P. Advances in Building Materials and Construction Singh publication by CBRI, Roorkee.
- Zhang, H. (2011) Building Materials in Civil Engineering, Woodhead Publishing
- Jha, Janardan (1976) Engineering Materials, Khanna Publishers.
- Rangawala P. C. (1989) Engineering Materials, Charter Publishing House, Anand, India.
- Sushil Kumar (2003), Building construction, Standard Publication and Distributors, New Delhi.
- BIS (2016) National Building Code, Bureau of Indian Standards

1st Year Syllabus was approved in 13th Meeting of Academic Council held on 18.06.2018 and 2nd Year Syllabus was approved in 14th Meeting of Academic Council held on 11.06.2019. Applicable to all students admitted in 2018 and onwards.

BACHELOR OF ARCHITECTURE

AR215C

BUILDING SERVICES III

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT:

Appreciating designing and layout of water supply, plumbing, drainage and sanitation of simple buildings.

CONTENT

UNIT I:

Introduction to water supply and sanitation. Traditional sources of water supply, treatment of water, transportation and distribution at town level. Classification of water based on its usage. Rain water harvesting

UNIT II:

Water supply system: fittings, direct and indirect supply, layout and sizes of pipes, hot water supply, storage

UNIT III:

Sewerage system: systems, fittings and fixtures, sizes and layout, sewage collection, sewage treatment and disposal at town level.

UNIT IV:

Solid waste management, environment oriented waste water treatment

Rainwater (storm water) drainage

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Birdie J.S. and Birdie G.S. (1998) Water Supply and Sanitary Engineering, Dhanpathray Publishing Company, New Delhi.
2. Burke, Ken (1982) Basic Plumbing Techniques, Ortho Books, Chevron Chemical Company, San Ramon, Canada.
3. Hussain, S.K. (1982) Water Supply and Sanitary Engineering, Dhanpatray and Sons, New Delhi.
4. Rangwala, S.C. (1969) Fundamentals of Water Supply and Sanitary Engineering, Charotar Publishing Company, Anand.
5. Wise, Alan Frederick Edward & Swaffield, J.A. (2002) Water, Sanitary & waste Services for Building, 5th edn, Butterworth-Heinemann, Oxford.

BACHELOR OF ARCHITECTURE

AR217C

STRUCTURE DESIGN-III

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT:

To inculcate the understanding of properties of concrete and steel and the basis for the design of RCC structural elements.

CONTENT:

CONCRETE TECHNOLOGY AND PRINCIPLES OF DESIGN OF RCC STRUCTURES

Section A: Structural Properties of the constituent materials of RCC:

UNIT I: Structural Properties and tests for cement; Initial and final setting times of cement, properties of fine and coarse aggregates, requirements of water, Abram's water-cement ratio law, Stress-strain curves and characteristic strengths of structural steel.

UNIT II: Introduction to Nominal mix concrete and Design Mix Concrete. Characteristic compressive strength of concrete and its determination, Workability of concrete, Slump test, compacting factor test; Compaction and Curing of concrete, Durability of concrete, Gain of strength of concrete with time, Age factor.

Section B: Basics of RCC design:

UNIT III: Concept of RC, Modular ratio and derivation of its formula, Permissible stresses in concrete and steel, Fundamental assumptions for the analysis and design of a singly reinforced RC beam, stress diagram & strain diagram for a singly reinforced rectangular section under flexure (design for simply supported beam and for cantilever beam). IS: 456-2000 recommendations in regard of singly reinforced beams. Under-Reinforced, Balanced and Over-Reinforced sections: Formulation, Analysis of a given section and determination of moment of resistance/load carrying capacity

UNIT IV: Design under shear, bond and development length, Analysis & Design of a doubly reinforced RC beam, Continuous and Cantilever Beams

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Visit to Testing lab of building materials

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- BIS (2000) Indian Standard Code of Practice for Plain and Reinforced Concrete I.S: 456, Bureau of Indian Standards.
- Punmia, B. C., Jain, A. K., and Jain, A. K. (1992) Reinforced concrete structures, Vol. I, Firewall Media, New Delhi.
- Singh, H. (2008) Design of Reinforced concrete structures for Architects, Abhishek Publications, Chandigarh.
- Mallick, S. K. and Gupta, A. P. (1980) Reinforced Concrete, Oxford & IBH publishing company Pvt. Ltd. New Delhi.
- Shetty, M. S. (2008) Concrete Technology, S. Chand Limited.
- Neville A. M. (2012) Properties of Concrete, Prentice Hall
- Mehta, P. K. and Moterio, P. J. M. (2005) Concrete: Microstructure and properties, McGraw-Hill Professional
- Dayaratnam P. (1983) Reinforced Concrete Design, M. Primlani.

BACHELOR OF ARCHITECTURE

AR 202C

ARCHITECTURAL DESIGN-IV

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 6 | 100 | - | 100 | 200 | 6 | 3 |

INTENT:

To understand the nuances of traditional architecture both in rural and semi urban/urban context of a settlement.

CONTENTS:

Appreciation of traditional settlement patterns and building typologies in both rural and semi-urban/urban contexts in terms of material, technology, form, user, space, climate responsiveness etc.

Building types for rural context could include Aganwadi, Kisan Kendra, Community health center, Kalyan Kendra, Co-operative Societies, Vocational Training Centers, Veterinary Centre, primary school etc

Building types for semi urban/urban context could include Community health centre, reading room cum public library, poly clinic, gymnasium, community centre cum club, Vocational Training Centers, primary school etc.

Formulation of design criteria- application of climatic data, socio-cultural factors, behavioral aspects and structural considerations; Site analysis and design concepts, application of building services

The students would be familiarized with indigenous terminology.

The emphasis will be construction details as applicable to Indian climatic conditions.

The design problem would induce students to experiment with built and open spaces. All portfolio to include one drawing showing construction system and materials, services.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

Site visits and proto type study visits to be conducted.

The design shall be sensitive to the needs of disabled, aged people and children.

There shall be minimum of 2 exercises as a part of sessionals out of which, one is design in the rural context and other is a time problem. One exercise design in semi urban/urban context will form part of portfolio evaluation.

| I | Sessional evaluation | Weightage |
|----|---------------------------------------|-----------|
| | Minor Test | 20 % |
| | Design Exercises | 60% |
| | Portfolio exercises (part evaluation) | 20 % |
| II | Portfolio evaluation | |
| | Portfolio exercises (three) | 100% |

READING LIST: (to be amplified by the subject teacher)

1. Chiara, J. D. (1984) Time Saver Standard for Site Planning, McGraw Hill Book Co., NY.
2. Chiara, J. D. & Crosbie, M. J., (2001) Time-Saver Standards for Building Types 4th Edition, McGraw Hill Book Co.
3. Ching, F. D. K. (1996) Architecture: Form, Space, and Order, Van Nostrand Reinhold, New York, 2nd edn.
4. Cohen, U. and McMurtry, R. (1985) Museum and Children, Design Guide, The School of Urban Planning and Architecture, University of Wisconsin, Milwaukee.
5. Helper, D. and Wallach, P. (1987) Architecture Drafting and Design, Mc-Graw Hill Company, NY.
6. Juliet, M. (1984) Designing room for children, Little Brown and Company, London.
7. Neufert, E. (2000) Neufert – Architect's Data, Crosby Lockwood and Sons, London.

BACHELOR OF ARCHITECTURE**AR204C****PRINCIPLES OF ARCHITECTURE - IV**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT:

To provide an insight into the ideas of influential theorists from antiquity to the present time.

CONTENT:**UNIT I:**

Theory in Antiquity and Renaissance – Concepts of Vitruvius, Leone Battista Alberti, Andrea Palladio

UNIT II:

18th Century Theory – Ideas of Laugier, Boullee, Ledoux, Durand

19th Century Theory – Concepts of Viollet Le Duc, Choisy, John Ruskin, William Morris, Pugin, John Ruskin, Karl Friedrich Schinkel, Henri O Labrouste, Louis Sullivan

UNIT III:

Modern Movement Theory – Ideas of Adolf Loos, Antoni Gaudi, Eero Saarinen, Erich Mendelsohn, Richard Neutra, Alvar Alto, Frank Lloyd Wright, Le Corbusier, Mies van der Rohe, Walter Gropius, Otto Wagner, Louis Kahn, Kenzo Tange.

Post Modern Theory – Ideas on Post-Modern Classicism by Robert Venturi, Charles Jencks, Philip Johnson
Deconstruction – Fundamental beliefs and philosophy. Ideas of Peter Eisenman, Bernard Tschumi, Frank O. Gehry, Zaha Hadid, Rem Koolhaas, Norman Foster, Ken Yeang et al

UNIT IV:

Theory of Indian architecture: antiquity to modern times

Impact of Architectural design theories and ideas on architects in India, pre-independence and post independent
Claude Batley, Habib Rahman, Charles Correa, Achute P. Kanvinde, B. V. Doshi, Joseph Allen Stein, Anant Raje, Raj Rewal, Uttam C. Jain, Kulbhushan and Meenakshi Jain, Hasmukh Patel, Dulal Mukherjee, Chandavarkar and Thacker et al

Search for appropriate architecture in the 21st century: Rahul Mehrotra, Vasant and Rewathi Kamath, Nimish Patel and Parul Jhaveri, Sanjay Mohe, Sanjay Prakash, Vinod Gupta, Karan Grover et al

INTENT

To generate and appreciation of background aspects of thinking required in architectural design.

The objectives of the course are to understand the principles and percepts of issues as related to architectural design in theory and practice.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Broadbent, G. (1990) Design in Architecture, Spon Press.
2. Frampton, K. (1985) Modern Architecture: A Critical History, New York.
3. Jencks, C (1986) Modern Movements in Architecture, New York.
4. Lang, J., Desai, M. and Desai, M. (1997) Architecture and Independence-The Search for Identity- India 1880 to 1980, Delhi.
5. Lang, Jon T. (2002) A Concise history of modern architecture in India, Orient Blackswan.
6. Morgan M. H. (1960) Vitruvius: The Ten Books on Architecture, Dover Publications.
7. Venturi, R. (1977) Complexity and Contradiction in Architecture, New York.

BACHELOR OF ARCHITECTURE**AR206C****SITE PLANNING & THEORY OF LANDSCAPE-IV**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT

To develop a conceptual understanding of landscape design and site planning principles.

To develop skills in integrating landscape design with built environments

CONTENT**UNIT I: Introduction and History of Landscape Design**

Introduction to landscape design and its role in built environment. Changing perception of man's relationship with nature in various phases of history and its influence on environment.

A brief review of landscape design and garden design in history: Persian, Spanish, Italian, French, Renaissance, Mughal, English, Japanese garden styles. Evolution of concepts in landscape design after the industrial revolution leading to new theories in integrating built spaces to open spaces.

Increasing awareness of ecological variables in landscape design.

UNIT II: Site Studies and Site Planning

Principles of site planning and land use; review of definition applied in typical landscape development situations.

Site survey and appraisal – understanding different site characteristics –topography, vegetation, hydrology, access, surroundings etc. Site characteristics and establishing relationship with design / Architecture Programme Philosophical and design issues related to site development – siting of buildings, spatial and contextual relationships of built and outdoor space and circulation, site and its relationship to surroundings.

Importance of climate and social factors in development of site. Process of design development. Identifying functional requirements of site. Development of site by mutual exploitation of forms, grading principles, drainage

UNIT III: Plants and Design

Introduction to study of plants in relation to landscape design and architecture. An overview of use of plants in history. Study of Plant material – Botanical nomenclature, anatomy and physiology of plant growth study of trees, shrubs, ground cover, indoor plants in Indian context.

Design with plants – Basic principles of designs. The physical attribute of plants and relation to design.

Appearance, functional and visual effects of plants in landscape design and built environment.

Selection and management of plant material in relation to built environment.

UNIT IV: Elements in Landscape Design

Use of landform, water and vegetation in landscape design.

Hard landscapes: design of paths, roadways streets, terraces etc and use of land form effectively.

Soft landscapes: design of lawns, shrubs, hedges, trees – in relation to buildings and other landscape elements.

Design concepts related to use of sculpture, outdoor lightings

Architectural features, street furniture and grouping them into meaningful compositions for visual and functional effects. Examples and application of Landscape design principles in small projects such as small gardens, courtyards, residential outdoor, urban spaces etc.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1st Year Syllabus was approved in 13th Meeting of Academic Council held on 18.06.2018 and 2nd Year Syllabus was approved in 14th Meeting of Academic Council held on 11.06.2019. Applicable to all students admitted in 2018 and onwards.

1. Birlested, J. (1998) Relating Architecture to Landscape, E and F N Spon, London.
2. Booth, N. K. and Hiss, J. E. (1991) Residential Landscape Architecture, Prentice Hall, New Jersey.
3. Cerver, F A (1997) International landscape architecture, F A Cerver, Spain.
4. Laurie, M. (1986) Introduction to Landscape Architecture, Elsevier, New York.
5. Lynch, K. and Hack, G. (1988) Site planning, MIT Press, Cambridge.
6. Santapau. H. (1981) Common Trees. National Book Trust, New Delhi.
7. Simonds, J. O. (1983) Landscape Architecture: A manual of site planning and design, McGraw Hill, New York.
8. Toye, S. S. (2003) Introduction to landscape design, Central Techno Publications, Nagpur.
9. Trivedi, P. Pratibha (1990). Beautiful Shrubs. Indian Council of Agricultural Research, New Delhi.
10. Ward, H. C. & Dines, N. T. (1995) Time Savers Standards for Landscape Architecture design and construction data, McGraw Hill, New York.

BACHELOR OF ARCHITECTURE**AR208C****BUILDING CONSTRUCTION - IV**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 6 | 100 | 100 | | 200 | 6 | 3 |

INTENT:

To understand the design and drawing of interior building elements in different materials.

CONTENT:**UNIT I:**

Timbering of trenches, shoring, underpinning, scaffolding, strutting and waling
Form-work for RC columns, beams, slabs, walls and stairs, types of formwork
Reinforcement detail

UNIT II:

Expansion joints and construction joints
Water proofing construction details
Basement construction: internal and external tanking details

UNIT III:

Conventions for doors and windows, types and their uses, swing, sliding and folding, revolving
Aluminum doors and windows
Steel doors and windows
PVC doors and windows

UNIT IV:

Vertical surfaces, external cladding materials and construction (stone, metal, wood and other materials)
Composite materials
Market survey of different sections, industrial field visits to manufacturing units.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

In each class teacher will deliver lecture on the subject to be followed by drawing.

Market survey/ site visits to nearby construction site are to be conducted

Minimum 12 sheets must be prepared in the studio under supervision of the teacher.

| I | Sessional evaluation | Weightage |
|----|----------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Projects | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student
Four Cartridge Sheet (White)
- Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 40 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 30 marks each.
- Exam shall be of 3 hours duration and of Maximum marks: 100. (minimum passing marks 40)

READING LIST: (to be amplified by the subject teacher)

- Barry, R(1986) Construction of Buildings, London, vol. 1 to 5.
- BIS (2011) National Building Code, SP 7, Bureau of Indian Standards.
- Foster, S. (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
- McKay, W. B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.
- Prabhu, B. T. S. (1987) Building Drawing and Detailing, Spades Publishers Pvt. Ltd., Calicut.
- Punmia, B. C. (2005) Building Construction, Firewell Media, Delhi.
- Singh, Gurucharan (1981) Building Construction Engineering, Standard Book House, New Delhi.
- Relevant IS codes

1st Year Syllabus was approved in 13th Meeting of Academic Council held on 18.06.2018 and 2nd Year Syllabus was approved in 14th Meeting of Academic Council held on 11.06.2019. Applicable to all students admitted in 2018 and onwards.

BACHELOR OF ARCHITECTURE

AR210C

BUILDING SERVICES - IV

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 2 | 50 | 50 | | 100 | 2 | 3 |

INTENT: To understand the electrical system in domestic and multistoried buildings including lighting, fixtures and fittings, and cabling.

CONTENT:

UNIT I:

Introduction to engineering services for buildings

Electrical Services: sources of electrical energy supplied to buildings

Electricity generation, transmission and distribution.

Instruments for measurement, metering

Electricity Authority Act, rules and regulations

UNIT II:

Rules and regulations regarding electrification of buildings as appropriate with relevant standards

Types of electrical wiring system, earthing, scope and requirements

Requirements of electrical materials such as conductors, insulators

Types and requirements of electrical cables

Control equipment such as switch gear, safety devices to be used in electrical layouts

UNIT III:

Electrical lighting

Integration of Electrical lighting with day lighting, sensors

Instruments for measurement lux meters

Type of lamps and luminaries, lighting density and efficiency

Outdoor lighting, Specialized lighting like art galleries etc.

UNIT IV:

Graphical symbols of electrical systems

Plug load calculation of a small building

Electrical drawing of a small building

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Raina K. B. & Bhattacharya S. K. (2007) Electrical Design, Estimating & Costing, New Age International Publishers, ND
2. Dagostino, F. R. (1978) Mechanical and Electrical Systems in Construction in Architecture, Reston Publishing Company, Prentice Hill Co., Virginia.
3. Egan, D. M. (1983) Concepts in Architectural Lighting, McGraw Hill Book Company.
4. Flynn, J. E. et. al (1992) Architectural Interior Systems: Lighting, Acoustics and Air conditioning, Van Nostrand Reinhold
5. NBO (1966) Hand book for Building Engineers, National Buildings Organisation, New Delhi.
6. Grondzik, W. T., Kwok, A.G., Stein, B, Reynolds, J. S. (2009) Mechanical and Electrical Equipment for Buildings, Wiley

BACHELOR OF ARCHITECTURE**AR212C****STRUCTURAL DESIGN - IV**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 2 | 50 | 50 | | 100 | 2 | 3 |

INTENT:

To inculcate the understanding of shear failure, design for shear reinforcement, requirement of development length, effect of Torsion on the reinforcement design and design of some basic components of a building by Limit State Method.

CONTENT:**DESIGN REQUIREMENTS OF REINFORCED CONCRETE STRUCTURES**

UNIT I: Concept of Limit State Design, Characteristic strength of steel and concrete, Loads and Loading conditions, Limit State of Collapse and Serviceability

UNIT II: Analysis and Design of reinforcement for a section subjected to torsion, Side face reinforcement. Design and Detailing of a lintel beam & lintel with sun shade. Analysis & Design of Flanged Beams

UNIT III: Analysis of slabs spanning in one direction and spanning in two directions. Design & Detailing of a one way slab, Design & Detailing of a cantilever chajja. Design & detailing of a two way slab.

UNIT IV: Design of isolated footing including wall footing, square, rectangular, trapezoidal, circular footings including one way and two way shears, flexure and checks.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

- Ramamrutham (2003) Theory of Structures, Dhanpat Rai and Sons, Delhi.
- Jain, O. P. and Krishna, Jai (1963) Plain and Reinforced Concrete, Nem Chand.
- N Krishna Raju (2003) Reinforced Concrete Design: Principles and Practice, New Age International (P) Ltd.

BACHELOR OF ARCHITECTURE**AR214C****SURVEYING PRACTICE - IV**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 2 | 50 | 50 | | 100 | 2 | 3 |

INTENT:

Introduction of basic concepts of surveying, Photogrammetry, Remote sensing and Geographical Information System.

CONTENT:**UNIT I:**

Introduction to surveying and its principles. Types of surveying, Map and Plan, its Scale and uses. Sources of errors in survey-linear measurement: accurate and approximate methods.

Chain Surveying.

UNIT II:

Compass Surveying, Leveling

UNIT III

Plane Table surveying, Contouring

UNIT IV

Basic concepts of Photogrammetry, Automated Surveying – Introduction to use of Digital Surveying – Instruments such as distomat – total station, Electronic Theodolite, G.P.S. Remote sensing, Geographical Information systems and their applications.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Advance Survey instruments to be demonstrated. Lectures to be supported with field exercises.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

- Arora, K.R. (2000) Surveying Vol. I, 6th edn. Standard Book House, Delhi.
- Kevin (1962) Site Planning. MIT Press, Massachusetts.
- Punmia, B.C. (1996) Surveying Vol. 1, 13th edn. Laxmi Publications Pvt. Ltd., New Delhi.

BACHELOR OF ARCHITECTURE**AR216C****COMPUTER IN ARCHITECTURE - IV**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 4 | 100 | | | 100 | 4 | - |

INTENT:

To help students to get accustomed to Drafting & Sketching at the initial stage.

CONTENT:

AutoCAD 2D (Basic & Advanced), Sketch book designer.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Each student must produce individual work for evaluation.

| I | Sessional evaluation | Weightage |
|---|---|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/ Project/Presentations/Performance in the class | 60% |

READING:

Relevant software manuals

BACHELOR OF ARCHITECTURE

AR218C

EDUCATIONAL TOUR -IV

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | - | 100 | - | - | 100 | 2 | - |

INTENT:

To expose students to Historical, traditional and Contemporary Architecture

CONTENT:

Vacation Assignment/ Study tour is to be undertaken in 4th semester and before the commencement of 5th semester classes.

This assignment could be an appreciation of a noted building or a study tour for visiting places of architectural interest both traditional and contemporary. The choice of the building to be documented and the places to be visited will be decided by the department. The assignment may be given as group work (4 to 6 students per group). The students have to submit/present a photo-documentation and measured drawing report on the architectural appreciation of building studied during the study tour within 15 days from the beginning of the 5th Semester.

**DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY,
MURTHAL**

**SCHEME OF STUDIES & EXAMINATION FOR
BACHELOR OF ARCHITECTURE
(FIVE YEAR FULL TIME)**

(Choice Based Credit scheme w.e.f. 2018-19)

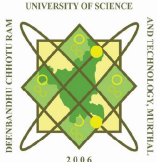
Program Outcomes (POs):

After completion of the program graduates will be able to

- PO 1:** Graduates of this Programme will be equipped with requisite knowledge of a range of subjects encompassing sciences, humanities, social sciences and technology to be able to effectively meet their professional goals.
- PO 2:** Graduates of this Programme will possess the ability to design and build following critical observation, assimilation and analysis of pre-design data.
- PO 3:** Graduates of this Programme will be trained to perceive the built environment as more than the sum of its parts and therefore make a design intervention that responds to environmental, social, cultural, and economic contexts.
- PO 4:** Graduates of this Programme will be trained to work both as individuals in their own right, but also as part of a larger team environment.
- PO 5:** Graduates of this Programme will be equipped to critically observe, assimilate and analyse the given situation before recommending the appropriate architectural intervention for a given situation.
- PO 6:** Graduates of this Programme will be professionally responsible individuals with a strong ethical grounding and sensitivity towards environmental, social, cultural and economic sustainability.
- PO 7:** Graduates of this Programme will be effective communicators using a range of mediums from verbal and written skills to graphic and drawing communication tools to present their ideas.
- PO 8:** Graduates of this Programme will be able to appreciate the many contextual layers from the local to the global that are determinants of the built environment.
- PO 9:** Graduates of this Programme will be made aware of the importance of self-education and engaging in life-long learning.
- PO 10:** Graduates of this Programme will be well rounded individuals fully aware of contemporary issues in general and how they affect the profession of architecture in particular.
- PO 11:** Graduates of this Programme will be equipped to handle all relevant contemporary architecture software notably AutoCAD; Revit; Ecotect; M-Color; besides knowledge of other softwares like MS Office and Adobe Photoshop.

| S. no. | Graduate Attributes | Program Outcomes (POs) | | | | | | | | | | |
|--------|--|------------------------|------|------|------|------|------|------|------|------|-------|-------|
| | | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 |
| 1 | Engineering Knowledge (Architecture) | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | | ✓ | |
| 2 | Problem Analysis | | ✓ | ✓ | | ✓ | | | ✓ | | | ✓ |
| 3 | Design/Development of Solutions | | ✓ | ✓ | | ✓ | | | ✓ | | | ✓ |
| 4 | Conduct Investigations of Complex Problems | ✓ | ✓ | ✓ | | ✓ | | | ✓ | | ✓ | ✓ |
| 5 | Modern Tool Usage | | ✓ | ✓ | | ✓ | | | ✓ | | | ✓ |
| 6 | The Engineer & Society (Architect) | | | | ✓ | | ✓ | | | | ✓ | |
| 7 | Environment and Sustainability | | | | ✓ | | ✓ | | | | ✓ | |
| 8 | Ethics | | | | ✓ | | ✓ | | | | ✓ | |
| 9 | Individual & Team Work | | | | ✓ | | ✓ | | | ✓ | ✓ | |
| 10 | Communication | | | | | | | ✓ | ✓ | | | ✓ |
| 11 | Project Management & Finance | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | | ✓ | |
| 12 | Lifelong Learning | | | | | | | | | ✓ | ✓ | |

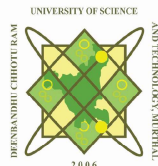
B. Arch. 5th semester to 7th semester : Approved in 15th meeting of Academic Council held on 14.08.2020. applicable to all students admitted in 2018-19 & onwards and trailing students.

|  <div>UNIVERSITY OF SCIENCE AND TECHNOLOGY, MURTHAL 2006</div> | | | DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT | | | | | | | | |
|---|------------|----------|---|----------------------|------------|-------------------------------|------------|---------------|--------------------|------------|--------------------------------|
| | | | SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | |
| | | | Choice Based Credit Scheme w.e.f.2018-19 | | | | | | | | |
| BACHELOR OF ARCHITECTURE V SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.N o. | Course No. | Category | Course Title | Teaching Schedule | | Mark s of Class work | Exam Marks | | Total mark s | Credi t | Dura tion of Exa m |
| | | | | L | Stu dio | | Theo ry | Portfo lio | | | |
| 1 | AR – 301 C | PC | Architectural Design V | 0 | 9 | 150 | - | 150 | 300 | 9 | 3 |
| 2 | AR – 303 C | PC | History of Architecture V | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 3 | AR – 305 C | BS & AE | Building Construction V | 0 | 6 | 100 | 100 | - | 200 | 6 | 3 |
| 4 | AR – 307 C | BS & AE | Building Services V | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 5 | AR – 309 C | BS & AE | Structural Design V | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 8 | AR – 311 C | BS & AE | Specifications | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 9 | AR – 313 C | PAEC | Building byelaws & Office management | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 10 | AR – 315 C | SEC | Computer in Architecture V | 0 | 4 | 100 | - | - | 100 | 4 | - |
| Total | | | | 10 | 19 | 600 | 350 | 150 | 1100 | 29 | - |

Note:

1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory exam shall be conducted for the studio subjects of Building Construction II (AR 305-C) in the drawing hall having the provisions of drawing boards.
4. Following stationary shall be required for the conduct of Building Construction II (AR 305-C) exams for each candidate:
 - a. Cartridge sheet – 4 nos.
5. Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-V (AR301-C) by an external and internal examiner.

B. Arch. 5th semester to 7th semester : Approved in 15th meeting of Academic Council held on 14.08.2020. applicable to all students admitted in 2018-19 & onwards and trailing students.


|  | | | DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT | | | | | | | | |
|---|------------|-----------|---|----------------------|------------|-------------------------------|------------|---------------|--------------------|------------|--------------------------------|
| | | | SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | |
| | | | Choice Based Credit Scheme w.e.f.2018-19 | | | | | | | | |
| BACHELOR OF ARCHITECTURE VI SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.N o. | Course No. | Category | Course Title | Teaching Schedule | | Mark s of Class work | Exam Marks | | Total mark s | Credi t | Dura tion of Exa m |
| | | | | L | Stu dio | | Theo ry | Portfo lio | | | |
| 1 | AR – 302 C | PC | Architectural Design VI | 0 | 9 | 150 | - | 150 | 300 | 6 | 3 |
| 2 | AR – 304 C | PC | Modern & Contemporary Architecture VI | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 3 | AR – 306C | BS & AE | Working Drawing VI | 0 | 6 | 100 | 100 | - | 200 | 6 | 3 |
| 4 | AR – 308 C | BS & AE | Building Services VI | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 5 | AR – 310 C | BS & AE | Structural Design VI | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 6 | AR – 312 C | BS & AE | Building Maintenance VI | 2 | 0 | 50 | 50 | - | 100 | 2 | 3 |
| 7 | AR – 314 C | SEC | Computer in Architecture VI | | 4 | 100 | - | - | 100 | 4 | - |
| 8 | AR – 316 C | SEC | Educational Tour | | | 100 | | | 100 | 2 | - |
| 9 | | Mandatory | Constitution of India/Essence of Indian Traditional Knowledge* | 3 | | 25 | 75 | | 100 | - | 3 |
| Total | | | | 11 | 19 | 675 | 375 | 150 | 1200 | 26 | |

* Course No. will be decided at University level

Note:

1. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination.
3. Theory exam shall be conducted for the studio subjects of Working Drawing VI (AR 306-C) in the drawing hall having the provisions of drawing boards.
4. Following stationery shall be required for the conduct of Working Drawing VI (AR 306-C) exams for each candidate:
 - a. Cartridge sheet – 4 nos.
5. Portfolio examination (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-VI (AR302-C) by an external and internal examiner.

B. Arch. 5th semester to 7th semester : Approved in 15th meeting of Academic Council held on 14.08.2020. applicable to all students admitted in 2018-19 & onwards and trailing students.

|  | | DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT | | | | | | | | | |
|---|------------|---|--------------------|-------------------|-------------------|-------------------------------|------------|---------------|--------------------|------------|--------------------------------|
| | | SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | | |
| | | Choice Based Credit Scheme w.e.f.2018-19 | | | | | | | | | |
| BACHELOR OF ARCHITECTURE VII SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.No. | Course No. | Category | Course Title | Teaching Schedule | | Mark s of Class work | Exam Marks | | Total mark s | Credi t | Dura tion of Exa m |
| | | | | L | Pra ctic al | | Theo ry | Portfo lio | | | |
| 1 | AR – 401 C | PAEC | Practical Training | - | 32 | 150 | | 150 | 300 | 16 | 3 |
| Total | | | | - | 32 | 150 | | 150 | 300 | 16 | 3 |

Note:

Evaluation for AR-401-C shall be done through a viva voce/presentation conducted by Chairperson Architecture/Practical Training Coordinator and an External Examiner.

BACHELOR OF ARCHITECTURE

AR 301C

ARCHITECTURAL DESIGN-V

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 9 | 150 | - | 150 | 300 | 9 | 3 |

INTENT:

To inculcate the appreciation of the design process and an understanding of the design complexities and contradictions to resolve architectural design problems for Institutional Infrastructure.

CONTENT:

The following issues relating to institutional design will be addressed to:

Nature of contemporary institutions, correlation to urban structure.

Development control and urban infrastructure affecting design.

Various approaches to building in urban context.

Integration of function: movement, climate, acoustics, structure and services into the group of buildings.

Landscaping and site planning

Institutional character from abstract to detail.

User behavior and requirement pertaining to the physically handicapped.

Necessary theoretical inputs to be given highlighting the norms and design issues. The topics not covered as design problems may be covered by the studio faculty members through lecture/slide shows.

The topics to be covered as design problems may include:

Design of Institutional buildings: Senior Secondary Schools, colleges with its various learning departments such as medical, engineering, law, business, music and dance colleges, vocational training institutions,

Socio-cultural Centres, Museums, Library, Art galleries, Cultural center, Performing Arts Centre, Industrial

Buildings Adaptive reuse of buildings of a documented building

All portfolio to include two drawings showing construction system and building services.

In both the design projects the provisions of National Building Code 2016, Energy Conservation Building Code 2017 and other relevant codes should be incorporated.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

Site visits and proto type study visits to be conducted.

The design shall be sensitive to the needs of disabled, aged people and children.

These shall be minimum of 2 exercises as a part of sessionals out of which, one will be a time problem. One exercise will be meant for portfolio evaluation.

| I | Sessional evaluation | Weightage |
|----|---------------------------------------|-----------|
| | Minor Test – I | 10 % |
| | Minor Test – II | 10 % |
| | Design Exercises | 60% |
| | Portfolio exercises (part evaluation) | 20 % |
| II | Portfolio evaluation | |
| | Portfolio exercises (three) | 100% |

READING LIST: (to be amplified by the subject teacher)

1. Chiarajoseph de et al (1990) Time Savers Standards of Building Types. McGraw – Hill.
2. Kirk, P. H. and Sternberg, D. E. (1960) Doctors Offices and Clinics, 2nd ed. Reinhold Pub., USA.
3. Konya, A. (1986) Libraries: A Briefing and Design Guide. The Architectural Press, London.
4. Neufert, E. (2000) Neufert Architects Data. Granada Pub. Ltd., London.
5. Pevsner, N. (1976) A History of Building Types. Thames and Hudson, London.
6. Rosenfield, I. (1969) Hospital Architecture and Beyond. Van Nostrand Reinhold, New York.
7. Stone, G. L. Institutional Buildings Architecture of Controlled Environment.
8. Tergsone, W. R. Practical Laboratory Planning.
9. Wild, F. (1972) Libraries for Schools and Universities. Van Nostrand Reinhold, New York.

BACHELOR OF ARCHITECTURE**AR303C****HISTORY OF ARCHITECTURE-V**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT:

To understand the growth and development of architecture and appreciation of the role of the intangibles that brought this growth and development from the 18th Century to the advent of European Modernism.

CONTENT**UNIT I: Architecture in Europe – (Late 18th to early 20th century)**

Industrial Revolution and its architectural Implications

19th Century Neo Classicism

Development of Architecture in Victorian England

Technology of Iron and Steel

UNIT II: Architecture in Europe – (Late 18th to early 20th century)

Town Planning Trends in Europe

Rise of the Idea of Expositions

Birth of the American Skyscraper

Alternate Trends in late 19th and early 20th century in Europe.

UNIT III: Architecture in Colonial India (Late 18th to early 20th century)

Culture of colonialism

British Response to Indian Context

Early British Architecture

UNIT IV: Architecture in Colonial India (Late 18th to early 20th century)

Birth of Indo Saracenic Architecture

Princely India's Architectural response

Public Works Department (PWD)

Classical Revival

Building of New Delhi

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

- Archer, M. (1968) Indian Architecture and the British, Middlesex.
- Curl, J. S. (1990) Victorian Architecture, London.
- Davies, P. (1985) Splendours of the Raj, London.
- Fletcher, Sir B. (1999) History of Architecture—20th edn, Dan Cruickshank ed, CBS Publishers & Distributors, New Delhi.
- Hitchcock, H. R. et al (1963) World Architecture: An Illustrated History, London.
- Irving, R. G. (1981) Indian Summer: Lutyens, Baker, and Imperial Delhi, London.
- Metcalf, T. R. (1989) An Imperial Vision Indian Architecture and Britain's Raj, London.
- Morris, J. and Winchester, S. (1983) Stones of Empire - The Buildings of the Raj, Oxford.
- Nilsson, S. (1968) European Architecture in India 1750-1850, London.
- Risebero, B. (1979) The Story of Western Architecture, London.
- Volwachen, A. (2002) Imperial Delhi: The British Capital of the Indian Empire, London.

BACHELOR OF ARCHITECTURE**AR305C****BUILDING CONSTRUCTION - V**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 6 | 100 | 100 | | 200 | 6 | 3 |

INTENT:

To understand the design and drawing of interior building elements in different materials.

CONTENT:**UNIT I:**

Introduction to structural steel, types of steel used in buildings

Joining details of various steel members

Market survey of available steel sections

UNIT II:

Steel foundations

Structural steel frame

UNIT III:

Steel support system for roofing

Steel trusses

Collapsible and rolling shutters, Case studies and construction yard exercises

UNIT IV:

Steel staircase, Metal stairs - types and construction details of steel stairs.

Steel Mezzanine floor

Steel cladding

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

In each class teacher will deliver lecture on the subject to be followed by drawing.

Market survey/ site visits to nearby construction site are to be conducted

Minimum 10-12 sheets must be prepared in the studio under supervision of the teacher.

| I | Sessional evaluation | Weightage |
|----|----------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Projects | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student
 - Four Cartridge Sheet (White)
- Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 40 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 30 marks each.
- Exam shall be of 3 hours duration and of Maximum marks: 100. (Minimum passing marks 40)

READING LIST: (to be amplified by the subject teacher)

- Barry, R (1986) Construction of Buildings, London, vol. 1 to 5.
- BIS (2013) National Building Code, SP 7, Bureau of Indian Standards.
- Foster, Stroud (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
- McKay, W. B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.
- Prabhu, Balagopal T. S. (1987) Building Drawing and Detailing, Spades Publishers Pvt. Ltd., Calicut.
- Punmia, B. C. (2005) Building Construction, Firewell Media, Delhi.
- Singh, Gurucharan (1981) Building Construction Engineering, Standard Book House, New Delhi.
- Relevant IS codes

BACHELOR OF ARCHITECTURE**AR307C****BUILDING SERVICES - V**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT:

To appreciate the role of acoustics and fire protection in buildings.

CONTENT:**UNIT I:**

Introduction to the study of acoustics, basic terminology, sound and distance – inverse square law; absorption of sound, sound absorption co-efficient. Reverberation time, Sabines' formula, various sound absorbing materials. Behavior of sound in enclosed spaces. Acoustical defects

UNIT II:

Acoustical design for halls used for drama, music, speech, cinema theatres and open air theatres. Noise and its types – outdoor and indoor noise, air born noise, structure borne noise, impact noise. Acoustical materials and constructional measures of noise control, insulation of machinery, sound insulation. Noise control at neighbourhood and city level.

UNIT III:

Causes of fire, reasons for loss of life due to fire, development of fire, fire load, fire hazards
National Building Code: grading of structural elements due to fire, classification of building types, norms for fire-exit ways and building materials, concept of fire zoning, doorways, stairways, passages and corridors, fire escapes etc. Rules for fire protection and firefighting requirements for high-rise buildings in India

UNIT IV:

Brief description of characteristics of combustible and noncombustible materials in case of fire
Fire resisting materials, fire resistant rating
Concepts in passive fire protection and control – including design of escape routes, pressurization and compartmentation, etc.
Active fire control using portable extinguishers. Basic concepts in fixed firefighting installations.
Automatic fire detection and alarm systems
Fire preventive techniques, fire protection equipment

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.
Appropriate Standards must be explained and used; site visits to be organized.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Egan, D. (1988) Architectural Acoustics, McGraw Hill Book Co., NY.
- Kinsleter, L. E. and Frey, A. R. (1989) Fundamentals of Acoustics (ed.2), Wiley Eastern Ltd., New Delhi.
- Knudson, V. (1950) Acoustical Designing in Architecture, John Wiley, N.Y.
- Narasimhan, V. (1974) Introduction to Building Physics, Central Building Research Institute, Roorkee.
- Parich, P. (1979) Acoustics: Noise and Buildings, Faber and Faber, London.
- Templeton and Saunders (1987) Acoustic Design, Architectural Press, London.
- BIS (2016) National Building Code, SP 7, Bureau of Indian Standards.

B. Arch. 5th semester to 7th semester : Approved in 15th meeting of Academic Council held on 14.08.2020. applicable to all students admitted in 2018-19 & onwards and trailing students.

BACHELOR OF ARCHITECTURE**AR309C****STRUCTURAL DESIGN - V**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | | 100 | 2 | 3 |

INTENT:

To understand the principles and design of simple steel structures.

CONTENT:

PRINCIPLES OF DESIGN OF STEEL STRUCTURES:

UNIT I:

Structural Properties of steel and use of steel as a structural material.

Classification of rolled steel sections and their properties.

UNIT II:

Riveted, Bolted & Pinned connection.

Welded connections.

UNIT III:

Design of Tension members.

Design of compression members, lacing & bracing

UNIT IV:

Analysis and Design of simple Beams & Plated Beams.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

- BIS (1984) Indian Standard Code of Practice for General Construction in Steel IS : 800.
- Duggal, S. K. (2009) Design of Steel Structures, Tata McGraw Hill Publishing Company Ltd., New Delhi.
- Singh, H. (2008) Analysis & Design of Steel Structures for Architects, Abhishek Publications, Chandigarh.
- Punmia, B. C., Jain, A. K. & Jain, A. K., (1998) Comprehensive Design of Steel Structures, Laxmi Publications (P) Ltd., New Delhi.
- Arya, A. S. & Ajmani, J. L. (1974) Design of Steel Structures, Nem Chand & Bros., Roorkee.

BACHELOR OF ARCHITECTURE

AR311C

SPECIFICATIONS - V

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | | 100 | 2 | 3 |

INTENT:

To appreciate the technique and role of this subject in Architecture

CONTENT:

UNIT I: SPECIFICATION AND SPECIFICATION WRITING

Necessity of specification, importance of specification. How to write specification. Types of Specification.

Principles of Specification writing. Important aspects of the design of specification.

Sources of information. Classification of Specification. Brief Specification for 1st class, 2nd class, 3rd class building.

Detailed specification for earthwork excavation, plain cement concrete, reinforced concrete, first class and second class brickwork, damp proof course, ceramic tiles/marble flooring and dado, woodwork for doors, windows frames and shutters, cement plastering, painting & weathering course in terrace. HSR and CSR (CPWD) to be referred.

UNIT II: ESTIMATION

Types & purpose. Approximate estimate of buildings. Bill of quality, factors to be considered.

Principles of measurement and billing. Contingencies. Measurement of basic materials like brick, wood, concrete and unit of measurement for various items of work. Abstract of an estimate. Costs associated with constructed facilities. Approaches to cost estimation. Type of construction cost estimates. Cost Indices. Applications of cost indices to estimating. Estimate based on engineer's list of quantities. Estimation of operating costs.

HSR and CSR (CPWD) to be referred.

UNIT III: DETAILED ESTIMATE

Deriving detailed quantity estimates for various items of work for a single storied building. To include earthwork excavation, brick work, plain cement concrete, reinforced cement concrete works, woodwork, iron works, plastering, painting, flooring, weathering course.

UNIT IV: VALUATION AND BUDGETING

Valuation. Explanation of terms. Types of values. Sinking fund. Years of purchase. Depreciation.

Types of depreciation. Valuation of real properties. Types, methods and purpose of valuation.

Elements of cash flow. Time value of money. Capital investment decision. Types of business firms.

Budget and Budgetary Control. Types of Budgets. Preparation of financial budget.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks: 20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

- Rangwala. S.C, 'Estimating, Costing and Valuation (Professional practice)', Charotar Publishing House, 1984
- M.Chakraborti, 'Estimating, Costing, Specification and Valuation in Civil Engineering. 2010
- B.N. Dutta, 'Estimating and Costing' UBS Publishers and Distributors. 2000.
- S.Sanga Reddi and P.L.Meiyappan, 'Construction Management', Kumaran Publication, Coimbatore.
- Gurcharan Singh and Jagdish Singh, 'Estimating Costing and Valuation', Standard Publishers Distributors, 2012.
- Latest schedule of rates of P.W.D.
- PWD Standard Specifications. Govt Publication.

B. Arch. 5th semester to 7th semester : Approved in 15th meeting of Academic Council held on 14.08.2020. applicable to all students admitted in 2018-19 & onwards and trailing students.

BACHELOR OF ARCHITECTURE**AR313C****BUILDING BYELAWS & OFFICE MANAGEMENT - V**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | | 100 | 2 | 3 |

INTENT:

To acquaint the students with building legislation and basis office procedure and management techniques in architecture

CONTENT:**UNIT I: Introduction to building codes and norms**

Introduction to Building codes, bye laws and regulations, their need and relevance.

Overview of basic terminologies, nature of building codes in special regions like heritage zones, air funnels, environmentally sensitive zones, disaster prone regions, coastal zones, hilly areas, etc.

Unit II: Study of building regulations

Study of structure of Building bye laws, National Building Code etc.

General building requirements, building classifications and permissible uses.

Norms for exterior and interior open spaces, setbacks and margins, norms for building projections in open spaces, considerations in FAR, guidelines for open green areas.

Plinth, habitable rooms, kitchen, wet areas, mezzanine, store rooms, elevated parts like chimneys, parapets etc.

Means of access, norms for access widths for various types of buildings, requirements of parking spaces,

Equivalent Car Space (ECS), standards for turning radius, access to service areas.

Unit III: Norms for Local bye laws

Study of local planning bodies such as corporation, municipal board's and panchayats

Building bye laws framed by local bodies of Chandigarh, Delhi, Haryana

Procedural method for use of bye laws for submission drawings, obtaining building permits, architectural control and provision of building services, regulations for super structures, building height regulations, regulations for multi-storied buildings etc.

Unit IV: Office management

Architectural office, architect, contractor, client relationships

Office correspondence, filing and record keeping

Human resource management.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

| I | Sessional evaluation | Weightage |
|----|---|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/ Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

- Durga Prasad, M. V. (1997) Law of Flats, Apartments and Buildings, 4th edn Asia Law House, Hyderabad.
- Scott, G. J. (1997) Architectural Building Codes, Van Nostrand Reinhold, NY.
- BIS (2016) National Building Code, SP 7, Bureau of Indian Standards.
- Energy Conservation Building Code 2017

BACHELOR OF ARCHITECTURE**AR315C****COMPUTER IN ARCHITECTURE - V**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 4 | 100 | - | | 100 | 4 | - |

INTENT:

To appreciate the potential of the computer as a drafting aid for an architect.

CONTENT:

Advanced 2D commands of AutoCAD – latest version

Basic 3D commands of AutoCAD – latest version

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Each student must produce individual work for evaluation.

| I | Sessional evaluation | Weightage |
|---|---|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/ Project/Presentations/Performance in the class | 60% |

READING:

Relevant software manuals

BACHELOR OF ARCHITECTURE

AR 302C

ARCHITECTURAL DESIGN-VI

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 9 | 150 | - | 150 | 300 | 9 | 3 |

INTENT: To inculcate the appreciation of the design process and an understanding of the design complexities and contradictions to resolve architectural design problems for Housing of different typologies and public buildings.

CONTENT:

Design of Midrise apartments:

Issues to be addressed for the design project pertaining to apartment design:

Density, mixed land use, ground coverage, development controls.

Type of occupancy, social strata, social status and prevalent social strata, urban systems, services and their integration with the project.

User requirements (derived from surveys)

Issues in appropriate technology and costs.

Issues of hierarchy, identity of space, public and private scales of space. Integration of community institutions etc.

Detailing for the disabled and the elderly.

Indian / local architectural responses to climate, culture, traditional values, building elements, symbols motifs and special character.

Details from the dwelling cell to immediate shared space to communal space shall be emphasized and worked out. Socio cultural layer of the occupants shall form a strong fabric in the ultimate weave of the design. Projects shall aim at developing a very sensitive attitude towards micro level human habitation and role of architecture in enhancing or curbing the quality of living.

Examples of projects: Apartments for IT employees, Govt. servants, teaching faculty, Textile weavers, etc. luxury flats in the center of the city, group housing in the suburbs.

Design of public buildings:

The role of urban space as a public realm and the need to create such spaces as extension of private domain in a public building shall be investigated and shall become one of the architectural goals of the project. Some of the prerequisites of the project shall be; 1. Multiple functions, 2. Public access to majority of the spaces, 3. Large gathering areas which are open and extendable to the immediate urban context.

Examples of projects: Large scale exhibition spaces, Auditorium, Cinema halls, Sports stadium, etc.

Detailing of architectural features of the major project like entrance lobby, skylights and staircases has to be attempted.

All portfolio to include two drawings showing construction system, materials and building services.

In both the design projects the provisions of National Building Code 2016, Energy Conservation Building Code 2017 and other relevant codes should be incorporated.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

Site visits and proto type study visits to be conducted.

These shall be minimum of 2 exercises as a part of sessionals out of which, one will be a time problem.

One exercise will be meant for portfolio evaluation.

| I | Sessional evaluation | Weightage |
|----|---------------------------------------|-----------|
| | Minor Test | 20 % |
| | Design Exercises | 60% |
| | Portfolio exercises (part evaluation) | 20 % |
| II | Portfolio evaluation | |
| | Portfolio exercises | 100% |

READING LIST: (to be amplified by the subject teacher)

1. Alexander, C. (1977) Pattern language: Towns, Buildings, Construction. Oxford University Press, New York.
2. Chiara, De Joseph et al (1995) Timesavers standard for Housing and Residential development, McGraw Hill Inc, NY

B. Arch. 5th semester to 7th semester : Approved in 15th meeting of Academic Council held on 14.08.2020. applicable to all students admitted in 2018-19 & onwards and trailing students.

BACHELOR OF ARCHITECTURE**AR304C****MODERN & CONTEMPORARY ARCHITECTURE - VI**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | | 100 | 2 | 3 |

INTENT:

To understand the growth and development of architecture and the ideas that propelled this development from the advent of the Modern Movement in the early decades of the 20th Century to contemporary trends across the world and in India.

CONTENT:**UNIT I: (The Western World: Early 20th century to the contemporary era)**

Early Modernism

Post War Decades: The International Style

Alternatives to the International Styles

UNIT II: (The Western World: Early 20th century to the contemporary era)

Late Modernism

Slick Tech Architecture

Post Modernism

Neo Modernism

UNIT III: (The Indian Scenario: Early 20th century to the contemporary era)

Post Independence Architecture

The Arrival of Modernism in India

Foreign Architects and their influence on Indian Architects

Rediscovering India's Indigenous Architectural Tradition

UNIT IV: (The Indian Scenario: Early 20th century to the contemporary era)

Current trends in Indian Architecture

Exploring Regionalism in Indian Architecture

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

- Bill Risebero, The Story of Western Architecture, (London, 1979)
- Charles Jencks, Modern Movements in Architecture, (New York, 1986)
- Harry N. Abrams Inc., Architecture: From Pre-history to Post-Modernism / The Western Tradition, (New York, 1980)
- H. R. Hitchcock et al, World Architecture: An Illustrated History, (London, 1963)
- John Musgrove ed., Sir Bannister Fletcher's - A History of Architecture, (London, 1987)
- Kenneth Frampton, Modern Architecture: A Critical History, (New York, 1985)
- Le Corbusier, Towards a New Architecture, (New York, 1960)
- Nikolaus Pevsner, An Outline of European Architecture, (London, 1945)
- Robert Venturi, Complexity and Contradiction in Architecture, (New York, 1977)
- Vincent Scully Jr., Modern Architecture, (New York, 1977)
- Charles Correa and Kenneth Frampton, Charles Correa, (London, 1997)
- G.H.R. Tillotson, The Tradition of Indian Architecture: Continuity, Controversy and Change since 1850, (Delhi, 1989)
- Bhatia, Gautam (2003) Laurie Baker: Life, Work and Writings, Delhi.
- James Steele, The Complete Architecture of Bal Krishna Doshi: Rethinking Modernism for the Developing World, (Delhi, 1998)

B. Arch. 5th semester to 7th semester : Approved in 15th meeting of Academic Council held on 14.08.2020. applicable to all students admitted in 2018-19 & onwards and trailing students.

BACHELOR OF ARCHITECTURE

AR306C

WORKING DRAWING - VI

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 6 | 100 | 100 | | 200 | 6 | 3 |

INTENT:

To enable students to prepare working drawings; which are used for construction of buildings.

CONTENT:

Architectural Drafting - lettering, dimensioning lines, drafting conventions, title blocks, office standards, representation of different materials in section, graphic symbols. Complete working drawings of the project handled in an earlier Architectural design studio comprising of:

UNIT I:

Intent of working drawing and standard practices, Demonstration of professional working drawings of architects

All floor plans, schedules of doors, windows, finishes, levels,

Roof plans

Grid plan, demarcation plan, foundation plan

UNIT II:

All exterior elevations

Interior elevations

Relevant sections

Joinery details

UNIT III:

Kitchen detail

Toilet detail

Staircase detail

UNIT IV:

Wardrobe detail

Electrical drawings, water supply and sanitary drawings, rain water disposal drawings

Site plan and its detailing

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

In each class teacher will deliver lecture on the subject to be followed by drawing.

Market survey/ site visits to nearby construction site are to be conducted

Minimum 10-12 sheets must be prepared in the studio under supervision of the teacher.

| I | Sessional evaluation | Weightage |
|----|----------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Projects | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student
 - Four Cartridge Sheet (White)
- Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 40 marks and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 30 marks each.
- Exam shall be of 3 hours duration and of Maximum marks: 100. (minimum passing marks 40)

READING LIST: (to be amplified by the subject teacher)

- Barry, R. (1986) Construction of Buildings, London, vol. 1 to 5.
- Foster, S. (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
- McKay, W. B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.

BACHELOR OF ARCHITECTURE

AR308C

BUILDING SERVICES - VI

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | - | 100 | 2 | 3 |

INTENT:

To appreciate how buildings can be made more comfortable by adding mechanical systems like artificial ventilation, air conditioning, horizontal and vertical mechanical transportation systems.

CONTENT:

UNIT I:

Human Comfort conditions

Need for mechanical ventilation in buildings. Rate of ventilation for different occupancies.

Methods and equipment employed for mechanical ventilation in buildings.

UNIT II: Air Conditioning

Principles of Air-conditioning, Indoor Air Quality, Carnot cycles, gas laws, refrigeration, cycles and refrigerants.

Architectural considerations for air conditioned buildings

Definition, advantages and disadvantages, brief introduction to psychrometric process, air-cycle and refrigeration cycle. Summer and winter air-conditioning, calculation of air-conditioning loads

Zoning: purpose and advantages. Air-distribution systems: Ducts and duct systems. Air-outlets

Compressors, condensers, evaporators, heat exchangers, etc.

UNIT III: Air-conditioning methods and equipment:

Window units, split units, ductable air conditioners and package system.

Central air-conditioning systems: AC plant and room, all air systems and chilled water systems, AHU and FC units, Building ducting, diffusers and grills.

Location of air-conditioning equipment in buildings. Architectural requirement of various equipment.

Residential and commercial air-conditioning, energy conservation techniques.

Introduction to the concept of 'Clean Room' and their architectural requirements

UNIT IV: Elevators (Lifts) and escalators

Brief history-types of Elevators like traction, hydraulic etc. Doubledecker, sky lobby, lift lobby, lift interiors etc.,

Definition and components

Elevating a building: environmental considerations i.e., location in building, serving floors, grouping, size, shape of passenger car, door arrangement etc.

Types of lifts, passenger, capsule, hospital bed- lift; goods-lift etc.

Working and operation of lifts, parts of lifts; industry standards and capacity calculations.

Provision to be made in buildings for installation: location, systems, sizes, equipment, spatial requirement

Introduction to working of escalator and design, escalators location, equipment.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used; site visits to be organized.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Grondzik, WT, Kwok, AG, Stein, B, Reynolds, JS (2009) Mechanical and Electrical Equipment for Buildings, Wiley.

BACHELOR OF ARCHITECTURE**AR310C****STRUCTURAL DESIGN - VI**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | | 100 | 2 | 3 |

INTENT:

To inculcate the understanding of design of some basic components of a building by Working Stress Method.

CONTENT:

DESIGN OF RCC STRUCTURAL COMPONENTS OF A BUILDING:

UNIT I: Design and detailing of a two way slab with corners held down.

Slab with edges fixed or continuous.

UNIT II: Design and Detailing of stair with stair slab spanning horizontally and stair slab spanning longitudinally.

Distribution of loading on stairs, Design of Dog-legged stairs and stairs with quarter space landing

UNIT III: Compression Members: Analysis and design of axially loaded short and long (square & circular) columns. Columns with lateral ties and helical reinforcement. I.S. Code recommendations for longitudinal reinforcement, transverse reinforcement, cover to reinforcement, effective length of columns, Permissible loads in short and long columns. Composite column, Reinforced concrete walls.

UNIT IV: Properties of soil as load bearing strata for building structures Soil classification as BIS standard and field investigation of soils. Concept of safe bearing capacity/allowable bearing pressure of soils. Different types of building foundation based soil conditions and building characteristics. Design of continuous and isolated footings. Introduction to various types of shallow foundations pressure distribution beneath footings, bearing capacity of soil. I.S. code recommendations for design of footings. Analysis and design of continuous footings under masonry wall and under concrete wall. Analysis and design of an isolated square footing of uniform depth.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

- Sinha, S. N. (2002) Reinforced Concrete Design, Tata Mc-Graw Hill publishing company Ltd. New Delhi.
- Punmia, B. C., Jain, A. K. & Jain, A. K., (2005) Soil Mechanics and Foundations, Firewall Media.
- Singh, H. (2008) Design of Reinforced concrete structures for Architects, Abhishek Publications, Chandigarh.
- Krishnamurthy, D. (1985) Elementary Structural Design & Drawing, Volume 2, CBS Publishers & Distributors, Delhi.

BACHELOR OF ARCHITECTURE**AR312C****BUILDING MAINTENANCE - VI**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 2 | - | 50 | 50 | | 100 | 2 | 3 |

INTENT:

To familiarize the students with common defects arising in the buildings with age, with preventive measures and system of maintenance.

CONTENT:**UNIT I:**

Principles of maintenance of buildings- definition, objectives, classification of building maintenance

Building deterioration and design considerations

Economic considerations in building maintenance

UNIT II:

Foundation and substructures defects

Foundation rehabilitation methods: shoring and underpinning

Dampness in buildings and its maintenance.

Cracks in building and repairing structural and non-structural cracks, bulging and leaning of walls

Surface protection

UNIT III:

Maintenance of water supply systems at unit level and city

Standards of World Health Organization, Central Public Health Engineering and Environment Organization

(CPHEEO), Public Health Engineering Department (PHED) at State level, Municipal Corporation level

Maintenance of sewerage system at unit level and city.

UNIT IV:

Maintenance of mechanical and electrical systems in buildings.

Repair and Rehabilitation of distressed structures (Repair and Retrofitting)

Computerized Maintenance Management

Exemplars study

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used, site visits to be organized.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/Project/Presentations/Performance in the class | 60% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING:

- BRE (1991) Housing Defects reference Manual, The Building Research Establishment, Chapman and Hall.
- Chudley, R (1981) The maintenance and adaption of buildings, Longman, New York.
- CPWD (2001) Maintenance Manual, Central Public Works Department, New Delhi.
- CPWD (2002) Handbook of RCC, Central Public Work Department, New Delhi.
- Eldridge, H. J. (1976) Common Defects in Buildings, Her Majesty's Stationery Office, London.
- NBA (1983) Common Building Defects - Diagnosis & Remedy, National Building Agency, UK.
- Panchdhari, A. C. (1998) Maintenance of Buildings, New Age International (P) Limited Publishers, New Delhi.
- Ransom, W H (1981) Building Failures: Diagnosis and Avoidance, Spon Press.
- Richardson, B., (1995). Remedial Treatment of Buildings. 2nd Edition, London: Architectural Press.

B. Arch. 5th semester to 7th semester : Approved in 15th meeting of Academic Council held on 14.08.2020. applicable to all students admitted in 2018-19 & onwards and trailing students.

BACHELOR OF ARCHITECTURE**AR314C****COMPUTER IN ARCHITECTURE - VI**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 4 | 100 | - | | 100 | 4 | - |

INTENT:

To appreciate the potential of the computer as an aid to the architect in both drawing and design. **CONTENT:**
 Navisworks, 3D Studio Max

(Helps students to do coordination between multi disciplines, preparing construction drawings, visualization.)

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.
 Each student must produce individual work for evaluation.

| I | Sessional evaluation | Weightage |
|---|---|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments/Quizzes/Tutorial Tests/ Project/Presentations/Performance in the class | 60% |

READING:

Relevant software manuals

BACHELOR OF ARCHITECTURE

AR316C

EDUCATIONAL TOUR -VI

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | - | 100 | - | - | 100 | 2 | - |

INTENT:

To expose students to Historical, traditional and Contemporary Architecture

CONTENT:

Vacation Assignment/ Study tour is to be undertaken in 6th Semester.

This assignment could be an appreciation of a noted building or a study tour for visiting places of architectural interest both traditional and contemporary. The choice of the building to be documented and the places to be visited will be decided by the department. The assignment may be given as group work (4 to 6 students per group). The students have to submit/present a photo-documentation report on the architectural appreciation or the study tour within 15 days from the beginning of the 6th Semester.

BACHELOR OF ARCHITECTURE

AR401C

PRACTICAL TRAINING-VII

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | - | 150 | - | 150 | 300 | 32 | 3 |

INTENT:

To offer students an opportunity to work in an architect's office/ organizations and get acquainted with the demands of the profession

CONTENT:

The professional training shall be for duration of minimum twenty four (24) working weeks (SIX MONTHS) in various aspects of architectural practice. During this period, the candidate shall produce a report comprising of four section viz., Training Report, Building Study, Building Material Study and Detailing study.

The Training Report shall consist of the various drawings, observations, technical graphic data, design, structure, construction methods, services, use of material etc. obtained during the process of training. The building study shall be a critical appraisal of one of the noted buildings designed and supervised by the firm in which the candidate has taken the training. The Building Material Study shall include pertinent data, characteristics and applications of a contemporary building material. The detailing study shall deal with the various aspects of an interesting detail done by the firm, where the candidate has done the training or any other project of interest Professional training will be carried out as per the professional training rules as prescribed in training manual.

NOTE:

This entire semester will be used for Practical Training which is to be undertaken with an architect registered with the Council of Architecture and should have a minimum professional experience of ten years.

Trainees are required to submit monthly progress reports of the work done by them in the office. These reports will be monitored by a faculty member designated as the Practical Training Coordinator.

A Practical Training Examination will be conducted at the end of the training period, in which the work done by the trainee will be assessed through a viva voce.

| | Evaluation | Weightage |
|----|----------------------|-----------|
| I | Sessional evaluation | |
| | Training Report | 50% |
| II | Portfolio evaluation | |
| | Viva-voce | 50% |

AR 402 C**ARCHITECTURAL DESIGN-VIII**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|--------|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | Studio | | Theory | Portfolio | | | |
| - | 9 | 150 | - | 150 | 300 | 9 | - |

INTENT:

To develop design skills for complex service intensive buildings and structural systems.

CONTENT:

Projects shall be of urban scale with multiple functions and a need for imagery as one of the architectural goals.

Design issues should address the following:

- Macro and micro climate
- User behaviour and requirements
- Utility and space enhancement
- Form and function
- Circulation: horizontal and vertical.
- Site Planning and Landscape detailing
- Structural details such as beam framing, building services / HVAC etc.
- Use of innovations in materials and techniques of construction.
- Energy efficient design, water conservation and waste recycling
- Energy Management systems
- Lighting and acoustics
- Communications and security systems
- Design detailing considering the barrier free environment
- Socio-economic profile of user group
- Parking details and standards
- Application of energy rating systems viz. LEED, GRIHA

Design of high rise buildings/services oriented buildings like Multiplexes; Shopping malls, commercial complexes, 5 star hotels, theme-based hotels, recreational buildings, hospitals, IT centres, etc. Design of transport terminal like airports, bus terminals, railway station, etc.

All portfolio to include two drawings showing construction system and materials, services.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester. Student may be allowed to choose project and detail out on one or more parameters.

Site visits and proto type study visits to be conducted.

These shall be one major design problem as a part of sessionals partially evaluated upto Pre –Final stage . Final design will be meant for portfolio evaluation

| I | Sessional evaluation | Weightage |
|----|---|-----------|
| | Minor Test | 20 % |
| | Programme formulation (site, case & literature studies) | 20% |
| | Concept | 20 % |
| | Pre- Final Stage | 40% |
| II | Portfolio evaluation | |
| | Portfolio exercises | 100% |

READING LIST: (to be amplified by the subject teacher)

- Chiara Joseph de et al (1990) Time Savers Standards of Building Types. McGraw – Hill.
- National Building Code 2016
- Hall and Rozer Greeno, Building Services Handbook

AR 406 C**BUILDING CONSTRUCTION-VIII**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 6 | 100 | 100 | | 200 | 6 | 3 |

INTENT:

To generate awareness about special construction details used in interiors such as hotels, hospitals, offices, shopping malls, industrial, housing.

CONTENT:**UNIT I:**

Furniture layout and details

False ceiling layout and details

UNIT II:

Partition details and design.

Paneling design and details.

UNIT III:

Staircase design and details.

Shop front / Public Spaces design and details.

UNIT IV:

Flooring layout and details.

Electrical layout

Interior accessories planters, signage, display boards etc.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

In each class teacher will deliver lecture on the subject to be followed by drawing.

Market survey, industrial visits to manufacturing units and field visits are to be conducted

Minimum 10 sheets must be prepared in the studio under supervision of the teacher.

Use of Computer Aided Drawing techniques may be encouraged.

| I | Sessional evaluation | Weightage |
|----|--------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam. shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student - Cartridge Sheet (White)
- Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 40 marks, (due consideration has to be given to building materials) and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 30 marks each.
- Exam. shall be of 3 hours duration and of Maximum marks: 100. (minimum passing marks 40)

READING LIST: (to be amplified by the subject teacher)

- Barry, R (1986) Construction of Buildings, London, vol. 1 to 5.
- BIS (2011) National Building Code, SP 7, Bureau of Indian Standards.
- Foster, Stroud (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
- McKay, W. B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.
- Prabhu, Balagopal T. S. (1987) Building Drawing and Detailing, Spades Publishers Pvt. Ltd., Calicut.
- Punmia, B. C. (2005) Building Construction, Firewell Media, Delhi.
- Singh, Gurucharan (1981) Building Construction Engineering, Standard Book House, New Delhi.
- Relevant IS codes

AR 404 C**RESEARCH
TECHNIQUES-VIII**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

The course objective is to provide the essential tools to conduct research in architecture and to publish research findings.

CONTENT:**UNIT I: Fundamentals of Research**

Introduction to research, types of research in architecture, planning and allied fields, research methods: qualitative, quantitative and mixed measures Elements of research, research methodology, characteristics of good research,

selection of appropriate research design, planning the research: problem statement, literature review, critical thinking, types of hypothesis, types of sample, methods of data collection, data analysis, research proposal preparation

UNIT II: Quantitative Research in Architectural Design Development

Data collection, tools of data collection, Types of research survey, questionnaires

Introduction to Statistical analysis of data and graphical representation.

Statistical theories: regression analysis, factor analysis and multivariate analysis

UNIT III: Qualitative Research in Architectural Design

Development Interviews in research, observation, physical traces,

archival research Case studies in architectural research

Applied researches in architectural design

UNIT IV: Report Writing and Presentation

Introduction to report and research paper writing- components of research paper and research report

Introduction to different styles of referencing - Harvard and Chicago styles, introduction to plagiarism policy and tools.

Presentation techniques: oral presentation, layout, printing process, internet, overhead, power point

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Exercises | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Creswell, J. W. (2002) Research design: qualitative, quantitative, & mixed methods approaches. Thousand Oaks, Sage.
- Denscombe, M (2003) The good research guide: for small-scale research projects. Oxford University Press, London.
- Dwivedi, R. S. (2001) Research Methods in behavioral science, McMillan, New Delhi.
- Graziano, A. (1989) Research methods process of inquiry, Harper Collins Publishing New York.
- Groat, L. and Wang, D. (2002) Architectural research methods, John Wiley publication, New York.
- Harrigan, J. E. (1987) Human factors research methods, Elsevier, Amsterdam.

7. Kothari, C R (1990) Research Methodology: methods & techniques, 2nd edn, Wishwa Prakashan, New Delhi.
8. Sanhoff, Henry (1991) Visual research methods in design, Van Nostrand Reinhold, New York.
9. Zeisel, John (1995) Inquiry by Design: tools for environment-behaviour research, Cambridge University press, Cambridge.

AR 408 C**URBAN DESIGN-VIII**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

To initiate the students to the basic principles of urban design.

To develop an ability to be sensitive to urban issues and give effective design ideas for situations involving public realm.

CONTENT:**UNIT I:**

Definition of Urban Design. Necessity and benefits of quality urban design.

Scope, levels and scales and size of urban design.

Urban design vocabulary, terminologies and elements in urban design such as neighbourhood, street, block, building, architectural elements..

UNIT II:

History of urban design, through a selection of iconic examples.

Nature/ environment (formal and informal urban environment) and Built and un-built, influence of byelaws and zoning regulation, architectural controls.

Importance of designing in an urban context.

UNIT III:

Circulation and urban design: intercity/intra-city.

Pedestrianisation, urban furniture, physical infrastructure related to urban design

Townscape analysis and urban visual studies. Formulation of issues for intervention.

UNIT IV:

Building typology and its impact on urban form.

Physical and nonphysical determinants of city form patterns

Social cultural Approach that impact the urban design

Urban design tool: applications of urban design principles in existing developments as well as in new proposals.

Exemplar studies

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

The assignments can be done through case studies (primary and secondary), book reviews and short exercises.

| I | Sessional evaluation | Weightage |
|----|--------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Exercises | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Banargee, Tridib Southworth, Michael (1990) City Sense and City Design, M I T Press.
- Broadbent, Geoffrey (1990) Emerging concepts in urban space design, Van Nostrand Reinhold, London.
- Christopher, Alexander (1977) Pattern Language, Oxford University Press.
- Christopher, Alexander (1987) New theory of urban design, Oxford University Press.
- Christopher, Alexander et al (1988) Oregon experiment, Oxford University Press.
- Cullen, Gordon (1968) Townscape, Architectural Press, London.
- Gallion Arthur B and Eisner, Simon (1963) Urban pattern city planning and design, Van Nostrand.
- Krier, Rob (1984) Urban Space, Academy editions.
- Lynch, Kevin (2000) Good city form, MIT Press, London.
- Lynch, Kevin (2000) Image of the city, MIT Press, London.
- Spreiregen, P D (1965) Urban Design: The Architecture of Towns and Cities, McGraw Hill.

12. Watson, Donald et al (2003) Time saver standards for urban design, McGraw Hill, New York.

AR 420 C**INTERIOR DESIGN-VIII**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

To appreciate the complexities and constraints in the design and execution of architectural interiors considering post pandemic context.

CONTENT:**UNIT I:**

History of interior & theory design
Constraints effecting interior design

UNIT II:

Art in interior design
Furniture and furnishings

UNIT III:

Color in interiors
Lighting in interiors

UNIT IV:

Interior design accessories
Building material for interior finishes
MEP services layout, fixtures, materials and methods

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Exercises | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Ching, Francis D. K. (1987) Interior Design Illustrated, Van Nostrand Reinhold, New York.
- De Chiara, Joseph (1992) Time Savers Standard for Interior Design and Space Planning, McGraw Hill Publishing Company.
- Jain, Shashi (1994) Creative Interiors, Management Publishing Company, New Delhi.
- Korn, Ahmed A. (1992) Interior Design, Iqara Publication Limited, Bombay.

AR 410 C**HOUSING-VIII**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

To understand housing in terms of issues, problems and directions in urban and rural context.

CONTENT:**UNIT I:**

Definitions and vocabulary

Historical development of housing in various contexts

Impacts of industrialization and urbanization

Development of housing under various five year plans

UNIT II:

Housing process and product; Housing Surveys, Housing need and demand;

Basic principles of formulating housing standards for rural and urban areas, desirable and minimum standards Housing and planning codes, laws and legislations related to housing like development control rules and regulations

UNIT III:

Review of different forms of housing in both developed and developing countries;

Case studies; acquaintance with housing strategies like upgrading existing shelter, private partnership

Housing Construction Technology: building materials and alternative technologies, strategies for cost reduction

Factors influencing housing sector like land value, economic policy, managing and financing housing projects;

UNIT IV:

Types of Housing, ownership types

Slums and its upgradation and improvement schemes

Role of housing agencies like housing boards, State development Authorities, Housing and Urban Development Corporation etc. in housing development

Social and Physical Infrastructure requirement in housing, National Housing Policy, State Housing Policy

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Exercises | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks: 20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Chiara Joseph De et al (1995). Time saver standards for housing and residential development. McGraw Hill, New York
- Correa, C. (1999) Housing and urbanization, Urban Design Research Institute, Mumbai.
- Desai A. R. and Pillai, S. D. (1990) Slums and urbanization. Popular Prakashan, Mumbai.
- Mehta, M. and Mehta, D. (1989) Metropolitan housing market. Sage Publications, New Delhi

AR 412 C**URBAN AND REGIONAL PLANNING-VIII**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

To give an introduction to the discipline of urban and regional Planning

CONTENT:**UNIT I:**

Definition and vocabulary of urban and regional planning, different types of plans

Historical evolution of town planning, Industrialization and Urbanisation

Evolution of town planning in India: pre-independence and post-independence.

UNIT II:

Planning theories and models – enunciated by Ebenezer Howard, Patrick Geddes, Soria Y Mata, Doxiadis, Le-Corbusier, Clarence Stein, Clarence Arthur Perry, Hilberseimer – their relevance to Indian conditions.

Techniques of development for new towns and regions, existing towns, urban renewal schemes and development through community participation.

The future of cities and planning, growth management, smart growth and sustainable development

UNIT III:

Role of Urban and Regional planning policies and perspectives at different levels like national level, state level, district level etc.

Planning norms and development norms for urban and Regional approaches Socio-

cultural, economic planning, land use planning etc. General principles and working.

Detailed survey and preparation of questionnaire for land use, socioeconomic, transportation planning etc.

UNIT IV:

Regional planning, ecology and planning

Services, and network, infrastructure planning

Planning laws and legislation, Special Economic Zones (SEZs), UDRPFI recommendations

Physical, social and economic parameters for regional planning.

Implementation of regional plans.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

| I | Sessional evaluation | Weightage |
|----|--------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Exercises | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)

Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Agarwal, M. K. (1996) Urban Transportation in India, Allied Publishers, Mumbai
2. Catanese, A. J. and Snyder, J. C. (1979) Introduction to Urban Planning, McGraw Hill, New York
3. Chand, M. and Puri, V. K. (1990) Regional Planning in India, Allied Pub. Ltd., Bombay
4. Eisner, S. (1993) Urban Pattern, Van Nostrand Reinhold, New York.
4. Gowda, K. S. R. (1986) Urban and regional planning, Prasaraanga, Mysore.
5. Hall, P. (1992) Urban and Regional Planning, Routledge, London
6. Khosla, R. K. () Urban and Rural Development in India, Indian Publishers & Distributors, Delhi.
7. Krier, R. (1984) Urban Space, London.
8. Levy, J. M. (1988) Contemporary Urban Planning, Prentice Hall, New Jersey
9. Rangwala, S. C. and Others (2003) Town Planning, 18th ed. Charotar Pub. House, Anand.
10. S.K. Kulshreshtha. Urban and Regional Planning.

CONSERVATION OF BUILT HERITAGE-VIII

AR 414 C

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

To inculcate the ability to appreciate historical architecture and introduce basic issues of conservation as one of the specializations of architecture.

CONTENT:

UNIT I:

Definitions and Vocabulary
History of built heritage conservation and natural heritage
Types of Interventions in the historic built environment
Conservation principles and approaches

UNIT II:

International Conservation
Conventions Conservation
Charters World Heritage
Inventorising and documenting built heritage

UNIT III:

History of built heritage conservation in India
Methods and approaches for built heritage conservation
Conservation bodies and agencies
Statutory framework for built heritage conservation

UNIT IV:

Structural conservation
Material conservation
Historic site management
Risk management of historic sites
Built Heritage and sustainable development, case studies

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Exercises | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Cohen, N (1999) Urban Conservation, MIT Press.
- Feilden, BM (1982) Conservation of Historic Buildings. Oxford.
- Jokilehto, J (2002) A History of Architectural Conservation. ICCROM.
- Rabun, JS *et al* (2008) Building Evaluation for Adaptive Reuse & Preservation. New Jersey.
- US/ICOMOS International Symposium (4th :2001 :Philadelphia, Pa.) (2003) Managing change: sustainable approaches to the conservation of the built environment. Los Angeles.
- Watt, D (1999) Building Pathology: principles & practice. Blackw
- Publication by INTACH, ICOMOS and ASI

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

To familiarize the students with the problems and methods of energy conservation through practical exercises

CONTENT:**UNIT I: Energy and Architecture**

Definition of energy and related terms, units of measurements

Energy scenario: World/Asia energy outlook, Brundtland report, Kyoto protocol, Agenda 21, IPCC,

IEA Climatic data: Test Reference Year (TRY), Typical Meteorological Year (TMY), Example

Weather Year (EWY) World Meteorological Organization, Indian Meteorological Department

Field experiments using HOBO sensors, environmental meters, anemometer, lux meter

Standard effective temperature, Adaptive thermal comfort, thermal neutrality, psychrometric

process, comfort zone-summer and winter, Control Potential Zone (CPZ) analysis

UNIT II Environmental control in building

Heat exchange of buildings (steady-state): heat gain and loss calculation, Mean Radiant

Temperature (MRT) Envelope load dominated buildings and internal load dominated buildings

Means of thermal control: micro climate (settlement), structural controls (building), mechanical control

Bioclimatic strategies (i) building layout (shape), (ii) orientation (solar and wind consideration), (iii) resistive

thermal insulation (iv) capacity thermal insulation (v) reflective thermal insulation (vi) Orientation, size of

windows, (WWR), internal and external shading devices, high performance glasses- SC, SHGC, VLT

(vii) Minimize infiltration (viii) Mass effect, phase changing material (ix) Direct solar gain-glazed walls, bay

windows, sun spaces etc) (x) Minimize external air flow, (xi) Promote ventilation-solar chimney, night flush

cooling, induced ventilation, (xii) colour of envelope, (xiii) landscaping around building, cool roof

UNIT III: Passive solar heating and cooling (Exemplar studies)

Climate responsive traditional architecture in different climates: control micro-climate around the building by settlement pattern, built form – open space relationship & façade articulation & appropriate building materials

(i) Passive low energy solar heating: Indirect gain (Trombe wall, water wall, solar chimney, transwall, roof pond, roof radiation trap, solarium etc.), Isolated gain systems-natural convective loops etc.

(ii) Passive low energy cooling of buildings: Comfort ventilation, nocturnal ventilation, radiant cooling, direct and indirect evaporative cooling, passive down draft evaporative cooling, earth sheltering, cooling of outdoor spaces

UNIT IV: Energy modeling and Building Energy codes

Energy modeling of buildings using computer

Building energy management system (BEMS)

The principles of integrated design, systems approach

International building energy codes and rating systems

Building energy codes in India: National Building Code, Energy Conservation Building Code

(ECBC), GRIHA and LEED rating systems

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

| I | Sessional evaluation | Weightage |
|----|--------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Exercises | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. ASHRAE (2005) Fundamentals Handbook (SI), American Society of Heating, Refrigerating and Air-Conditioning Engineers, New York.
2. BEE (2007). Energy Conservation Building Code, Bureau of Energy Efficiency, Ministry of Power, Government of India.
3. BIS (2005) National Building Code, SP: 7 (S & T), Bureau of Indian Standard, New Delhi.
4. Boutet, T. S. (1987) Controlling air movement, McGraw Hill Book Co.
5. Buchanan, P. (2005) Ten shades of green: architecture and the natural world, The Architectural League of New York.
6. Givoni, B. (1994) Passive and low-energy cooling of buildings, Van Nostrand Reinhold Co.
7. Guzowski, M. (2000) Daylighting for sustainable design, McGraw Hill (Professional Architecture Series).
8. Hyde, R. (2000) Climate responsive design: a study of buildings in moderate and hot humid climates, E & F N Spon, London.
9. IGBC (2007). LEED – India, Green Building Rating System, (LEED-India NC), version 1.0, Indian Green Building Council, Hyderabad. http://www.igbc.in/site/mmbase/attachments/48344/LEED.Abrid_Ver.pdf
10. Majumdar, M. (Ed.) (2002) Energy efficient buildings in India, MNES/TERI.
11. MNRE (2010). Green Rating for Integrated Habitat Assessment, Ministry of New and Renewable Energy, Government of India, New Delhi. <http://www.grihaIndia.org/index.php>.
12. Nayak J. K. et.al (1999) Manual on Solar Passive Architecture, Solar Energy Center, Ministry of Non-Conventional Energy Sources, Government of India, New Delhi
13. Pita, E. G. (2002) Air conditioning, principles and systems: an energy approach, Prentice Hall of India.
14. Sayigh, A. A. M. (1991) Energy conservation in buildings, Pergamon Press, Oxford.
15. Shaw, A. (1989) Energy design for architects, Fairmont Press, Lilburn.
16. Szokolay, S. V. (2008) Introduction to Architectural Science, Architectural Press
17. Watson, D. et al (ed) (1997) Time saver standards for architectural design data, 7th edn, McGraw-Hill, Inc, ch 3-6.

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| | | | | | | | |
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3 | 3 |

INTENT :To create awareness about various issues and challenges pertaining to disasters that impact the built environment.

UNIT I:

Introduction to basic definitions: Hazard, Risk, Vulnerability, Disaster, Coping Capacity

Factors causing disasters, Classification of Disasters – Natural, Manmade, Low, Medium and High Impact, Pandemic

Overview of Disaster Management scenario in India, Institutional Framework of disaster management

UNIT II:

Overview of the impact of various types of disasters on the built environment

Behaviour of structural and non-structural building components in case of disaster, simulation studies

Design guidelines and norms for risk reduction for various disaster scenarios

Site Planning, Building geometry and form, Structural Engineering, Landscape

Building Repair and Retrofitting measures

UNIT III:

Earthquake Resistant and cyclone resistance measures in design and planning of buildings

Local practices: traditional regional responses, provisions of National Building Code

Earthquake resistant construction details for Foundations, soil stabilization, retaining walls, plinth fill, flooring, walls, openings, roofs, terraces, parapets, boundary walls, underground and overhead tanks, staircases and base isolation of structures; introduction to IS codes. Cyclone-resistant / Urban Flooding in buildings: general guidelines

UNIT IV:

Disaster Management - strategies, policy, framework

Risk Assessment, Vulnerability mapping, Risk prevention, Mitigation

Emergency Preparedness and Response, Recovery

Case studies to illustrate the above

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Mini Project / Term paper | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Arnold, Christopher and Reitherman, R (1982) Building Configuration and Seismic Design, John Wiley and Sons.
- Carter, W.N (1990) Disaster Management- a disaster manager's handbook, Asian Development Bank, Manila.
- Disasters and Development -National Geographic. Restless Earth: Disaster of nature.

4. Dutta, SC (2012) Improving Earthquake and cyclone resistance of structures, The Energy Resource Institute, New Delhi.
 5. Mukhopadhyay, Asim Kumar (2005) Crisis and Disaster Management Turbulance and Aftermath, New age International (P) Limited, New Delhi
 6. Sharma, V. K. (1995) Disaster management, Indian Institute of Public Administration, United Press, New Delhi
 7. United Nations (1986) Disaster Prevention & Mitigation, United Nations Disaster Relief Organization.
-

AR422 C**BUILDING INFORMATION
MANAGEMENT SYSTEM VIII**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| | | | | | | | |
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | | 50 | 100 | 3 | - |

INTENT:

To equip students with skills and information to build comprehensive Building Information Models (BIM) using appropriate Digital software and Media.

CONTENT:**UNIT I INTRODUCTION TO THE FUNDAMENTALS**

Key concepts of BIM - reading and manipulating the software Interface - navigating within views - selection methods - the importance of levels and grids- creating walls, doors, windows, and components - working with essential modification commands and load family.

Creating floors, ceilings, and stairs - working with type and instance parameters-importing drawings - understanding the project browser and type properties palettes - adding sheets, inserting views onto sheets - adding dimensions and text to the mode and plotting.

UNIT II ADVANCED MODELING – FAMILY TYPES AND TOPO SURFACE MODELLING

Creating curtain walls, schedules, details, a custom family, and family types - “flex” a family with family types and work with reference planes - creating rooms and an area plan – tag components - customize existing wall styles. Create and edit a topo-surface, add site and parking components - draw label contours - work with phasing - understand groups and links- work with stacked walls - and learn the basics of rendering and create a project template. RENDERING AND MATERIAL

APPLICATION Choosing material for buildings- Creating custom walls, floors, and roofs - keynoting – working with mass elements - enhancing rendering with lighting - producing customized materials - Using sun and shadow settings - Walkthrough technique - adding decals - working with design options and worksets - and calculating energy analysis - managing revisions.

UNIT III BIM FOR BUILDING ENERGY SIMULATION

Energy simulation for conceptual BIM models using massing- Detailed modeling using design elements- Rapid energy modeling and simulation with software. Conceptual Energy Analysis features to simulate performance. To produce energy consumption, carbon neutrality and renewable potential reports.

UNIT IV BIM FOR COST ESTIMATING, PROJECT PHASING AND ADMINISTRATION

Introduction and theoretical information on the following topics- Model based Cost Estimating - Challenges in cost estimating with BIM- Cad geometrics vs BIM element description- Visual data models

1. Material substitutions and value engineering- detailed estimates and take off sheets- XML and automated cost estimate- project phasing and management- 4D modeling - BIM for project lifecycles.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Each student must produce individual work for evaluation.

| I | Sessional evaluation | Weightage |
|---|-----------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Mini Project / | 30% |
| | Quiz/Tutorial/Class Test | 30% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Eastman, C.; Teicholz, P.; Sacks, R.; Liston, K. BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors. New York: Wiley, (2008).
2. Ray Crotty The Impact of Building Information Modeling: Transforming Construction. Spons Architecture Price Book; (2011)

AR424 C**ADVANCED STRUCTURAL DESIGN VIII**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

To appreciate the numerous possibilities of structural systems through various case studies across world for various structural systems.

CONTENT:

UNIT I: TALL BUILDINGS - Load action in high rise buildings- structural systems for tall buildings - Brief outline of their behaviour and their applicability for various heights of buildings - Approximate analysis and design of frames for gravity and lateral loadings.

UNIT II: TENSILE STRUCTURES - Concepts, Development, Laws of formation, Merits and demerits of Pneumatic Structures - Basic principles, various forms, Merits and Demerits of cable structures.

UNIT III: SHELLS - Shells of translation - Shells of revolution - Cylindrical barrel vaults - Multiple barrels - Corrugated curves, Northlight shells - Butterfly shells - Intersection shells - Groined vaults - Warped surface - Conoidal shells - Hyperbolic parabolic shells - Umbrella shells – Trumpet shells - Their merits.

UNIT IV: DOMES AND FOLDED PLATES

Domes of revolution, spheres, translatory domes, multiple domes, Folded plate domes - Tapered elements, multifaceted Domes – Types – Classification as per BIS – Stress resultants – Relative merits and applicability. Folded plates – Types – Comparison with shells – Applicability. Arches – Basic concepts -grids- Definitions - various forms - Geodesic domes.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Appropriate Standards and codes must be explained and used

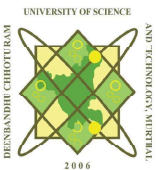
| I | Sessional evaluation | Weightage |
|----|--------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Exercises | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks: 20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subpart

READING LIST: (to be amplified by the subject teacher)

1. Sinha, S. N. (2002) Reinforced Concrete Design, Tata Mc-Graw Hill publishing company Ltd. New Delhi.
2. Punmia, B. C., Jain, A. K., Jain, A. K. (2005) Reinforced concrete structures, Vol. I, Laxmi Publications Pvt. Ltd., New Delhi.
3. Singh, H. and Kapoor, S. (2008) Structure Systems in Architecture, Abhishek Publications, Chandigarh.
4. Thandavamoorthy T S. Advanced Structures of Architecture, Eswar Press, 2008.
5. N. Subramanian, Principles of Space Structures – Wheeler and Co., Allahabad, 1983.
6. Milo.S.Ketchem and Mark.A. Ketchem, Types and Forms of Shell Structures, 1997

|  | | | DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT | | | | | | | | |
|---|------------|----------|---|-------------------|--------|---------------------|------------|-----------|-------------|--------|------------------|
| SCHEME OF STUDIES & EXAMINATIONS | | | | | | | | | | | |
| Choice Based Credit Scheme w.e.f. 2018-19 | | | | | | | | | | | |
| BACHELOR OF ARCHITECTURE IX SEMESTER (FIVE YEAR FULL TIME) | | | | | | | | | | | |
| S.No. | Course No. | Category | Course Title | Teaching Schedule | | Marks of Class work | Exam Marks | | Total marks | Credit | Duration of Exam |
| | | | | L | Studio | | Theory | Portfolio | | | |
| 1 | AR – 501 C | PC | Architectural Design IX | 0 | 9 | 150 | - | 150 | 300 | 9 | 3 |
| 2 | AR – 503 C | PAEC | Project Management IX | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| 3 | AR – 505 C | PAEC | Dissertation IX | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| 4 | AR – 507C | BS & AE | Building Construction IX | 0 | 6 | 100 | 100 | - | 200 | 6 | 3 |
| | AR - | PE | Programme Elective IV | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| | AR - | PE | Programme Elective V | 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |
| | | OE | Open Elective II* | 3 | 0 | 25 | 75 | - | 100 | 3 | 3 |
| Total | | | | 15 | 16 | 475 | 375 | 150 | 1000 | 30 | |

* Course No. will be decided at University level

Programme Elective IV

AR – 509 C Landscape Design –IX

AR – 511 C Traffic & Transportation –IX

AR – 513 C Tall Building & Façade Architecture – IX

Programme Elective V

AR – 515 C Cost Effective Architecture -IX

AR – 517 C Sustainable Architecture-IX

AR – 519 C Architectural photography and Journalism-IX

AR – 521 C Road Safety and Civic Sense – IX

Note:

- The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronics gadgets including Cellular phones are not allowed in the examination.
- Theory Exam shall be conducted for the studio subjects of Building Construction & Materials-IX (AR507-C) in the drawing Hall having the provision of Drawing boards.
- Following stationery shall be required for the conduct of Building Construction & Materials-IX (AR507-C) exams for each candidate:
 - Cartridge sheet – 4 nos.
- Portfolio exam (as Practical exam) shall be conducted through viva-voce in the subject of Architectural Design-IX (AR501-C) by an External and an Internal Examiner.
- The choice of students for any elective shall not be binding on the department to offer, if the department does not have expertise. The minimum strength of the students should be five to run an elective.

7. For Dissertation, B. Arch. Coordinator will be assigned a load of three periods per week excluding his/ her own guiding load. Dissertation supervisor (guiding teacher) will be assigned a load of maximum two contact period per week for a group all students allotted. Work load allocated for the joint supervision within the department will be treated as half for each supervisor.

AR 501-C**ARCHITECTURAL DESIGN – IX**

| Teaching Schedule | Marks of Sessional work | Marks of Examination | Total marks | Credits | Duration of Examination (h) |
|-------------------|-------------------------|----------------------|-------------|---------|-----------------------------|
| L | Studio | Theory | Portfolio | | |
| - | 9 | 150 | - | 150 | 300 |
| | | | | 9 | - |

INTENT:

To explore design parameters that relate to the larger urban context (Urban Design) as well as extra-architectural issues that has a bearing on how the built-environment is designed and perceived.

CONTENT:

The students are expected to engage in a process of collation and assimilation of what they have so far learnt over the preceding semesters in the resolution of an architectural situation at the urban level.

Design issues should address the following:

The built-environment is to be appreciated through buildings, their settings, the larger landscape, social and economic processes.

At the urban level this would entail making a design intervention in a complex urban context; investigating and proposing an architectural language appropriate to image, context and use and exploring and understanding zoning and spatial organisation of spaces that constitute the precinct.

At the building level this would entail developing skills to integrate form, function, space, structure, service and user behaviour sensitively into a coherent whole and demonstrating a good understanding of materials, detailing, composition and assembly and the way they determine the character of an architectural composition.

Macro and micro climate

Site Planning and Landscape detailing

Circulation: horizontal and vertical.

Design detailing considering the barrier free environment

Parking details and standards

Design of District Centres, Institutional Campus Planning; Revitalization of Historic Areas; Urban Renewal of Precincts / Streets, recreational and commercial mixed use development, Waterfront development, transit-hubs, market squares, densification along transit corridors etc. The design project would be conducted as follows:

First Part: Study of the given urban context and support study of critical issues (6 weeks)

Time Problem (6-12 hours)

Portfolio Problem: Resolution of the architectural problem identified in the study (7 weeks)

All portfolio to include two drawings showing landscape construction and services and provision of barrier free environment.

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

Site visits and proto type study visits to be conducted.

These shall be one major design problem as a part of sessional partially evaluated upto Pre- Final stage. Final design will be meant for portfolio evaluation.

| I | Sessional evaluation | Weightage |
|----|---|-----------|
| | Minor Test | 20% |
| | Programme formulation (site, case & literature studies) | 20% |
| | Concept | 20% |
| | Pre-final stage | 40% |
| II | Portfolio evaluation | |
| | Portfolio exercises | 100% |

READING LIST: (to be amplified by the subject teacher)

- Chiara Joseph de et al (1990) Time Savers Standards of Building Types. McGraw – Hill.

- Cullen, Gordon (1986) The Concise Townscape. Architectural Press, London.
- Dober, R. D. (1996) Campus Architecture: Building in the Groves of Academy. McGraw Hill, New York.
- Krier, Rob (1979) Urban Space. Academy Editions, London.

AR 503-C**PROJECT MANAGEMENT-IX**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3* | 3 |

INTENT:

To introduce understanding of construction project management principles relevant to building.

CONTENT:**UNIT I: Fundamentals of project management**

Historical evolution of project management. Construction industry and its role in development in India. Definition of Project and taxonomy of construction projects. Stakeholders, Construction Project Life Cycle, Construction Project Delivery methods and payment schemes, Project organization - responsibilities and authorities of team members. Project Management cycle: planning, scheduling, monitoring and controlling. Construction project management function. Construction project procurement, tender action and contract award.

UNIT II: Time Management

Holistic view of time management: time, cost and quality integration. Methods and process for time management: planning, monitoring and control. Work Break Down Structure, Activity identification, Productivity standards, Resource availability and duration estimation, Logical sequencing. Scheduling techniques- bar chart, milestone chart, networks and types (AOA and AON), rules for drawing a network, Critical Path Method (CPM), Programme Evaluation and Review Technique (PERT). Application of Project Management Software.

UNIT III: Resource Management

Definition of resource, types of resources, resource efficiency, resource loading diagram, Critical Path Method and resource scheduling: constrained based resource allocation and resource leveling using heuristic algorithms. Resource optimization for repetitive projects using Line of Balance (LOB) techniques. Definition of direct and indirect cost of project. Time-cost tradeoff analysis for expediting projects.

UNIT IV: Safety, Risk and Environmental management

Construction Safety Management: Importance of safety and management of consideration. Causes of accidents, classification of construction accidents, safety measures for personnel. Safety measures for storage and handling of building materials as prescribed in IS codes. Safety measures for excavation, demolition, bituminous works, scaffolding, ladders, formwork and other equipment as prescribed in IS codes.

Definition of risk, types of risk, Risk management cycle, risk analysis techniques (qualitative and quantitative), risk response methods.

Environmental Management: water drainage and runoff, air pollution, waste disposal, worker sanitation, noise.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Mini Project / Term paper | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Bennett, L F (2003) The Management of construction a project life cycle approach. Butterworth Heinemann, Amsterdam.
- BIS (2009) Construction Project Management – guidelines, Part 1 - General, Bureau of Indian Standards, New Delhi.
- BIS (2013) Construction Project Management – guidelines, Part 2- Time, Bureau of Indian Standards, New Delhi.
- Chitkara, K K (1999) Construction project management: planning, scheduling and controlling. Tata McGraw Hill, Delhi.
- Gould, F & Nancy, EJ (2000) Construction Project Management. Prentice Hall, New Jersey.
- Halpin, D W & Senior, BA (2010) Construction Management, Page 2 VP & Executive Publisher.
- Harris, F & McCaffer, R (2006) Modern Construction Management, Blackwell Publishing.

AR 505-C**DISSERTATION**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 3 | 50 | - | 50 | 100 | 3 | - |

INTENT:

To undertake the process of study and research on the topic preferably related to thesis project of tenth semester with sufficient background and references.

CONTENT:

Students are required to select architectural topics of individual interest reflecting social and technological needs of the day. The topics so chosen are required to be subjected to discussions and criticisms by the department. Students are required to explore and furnish reference work on related topics, availability of case studies and other data sources to help in an objective decision making process.

The dissertation shall entail the following:

Formulate synopsis including objectives, scope of work, methodology of work, case studies to be undertaken, site selection culminating in broad functional requirements.

An investigation of the topic using an analysis of existing literature, case studies and other data sources To develop understanding of the research topic.

Drawing informed and scientific conclusions from the research

2. The dissertation shall be based on empirical study, field work, and textual analysis in the field of architecture. It should demonstrate candidate's capacity for analysis and judgment as also her/his ability to carry out independent viewpoint in interpretation. A dissertation may be supplemented by published work, if any.

3. The dissertation shall present an orderly & critical exposition of existing knowledge of the subject or shall embody results of original interpretation and analysis & demonstrate the capacity of the candidate to do independent research work. While writing the dissertation, the candidate shall lay out clearly the work done by her/him independently and the sources from which she/he has obtained other information.

4. The dissertation shall be prepared as per guidelines given in the dissertation manual. Nevertheless, the typing shall be done on both sides of the paper, the font size should be 12 point Times New Roman in 1.5 (one and a half) space but the reference and bibliography should be typed in single space in Harvard style. The paper to be used should be A-4 size and orientation should be portrait.

The dissertation shall be well structured document of not more than 10000 words with clear objectives and well-argued and appropriate conclusions indicating an appropriate level of expertise. The submission format for all stages shall be print and digital. Seminars in related areas to the dissertation topic (activities and functions to be handled, building typologies, technology applied) are required to be presented at all stages during the entire semester.

At the end of the semester, each student would be required to make a formal presentation on the chosen and approved subject of dissertation along with the anticipated scope of work and schedule for the next semester.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

| I | Sessional evaluation | Weightage |
|----|----------------------|-----------|
| | Synopsis | 10% |
| | Midterm submission | 50% |
| | Pre-final submission | 40 % |
| II | Portfolio evaluation | 100% |

READING LIST: (to be amplified by the subject teacher)

- McMillan, K. & Weyers, J. (2007) How to write dissertations and project reports. Pearson Prentice Hall.
- Watson, G. (1987) Writing a thesis: a guide to long essays and dissertations, London: Longman. Specialist bibliography according to the project.

AR 507-C**BUILDING CONSTRUCTION - IX**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| - | 6 | 100 | 100 | | 200 | 6 | 3 |

INTENT:

To learn advance construction technology and its application, advance building materials and typical construction details of multi-storeyed building and areas requiring special detailing.

CONTENT:**UNIT I:**

Deep Foundation and other types of advanced foundations– Pile foundation – types – methods of construction and bearing – friction – sheet piles.

Modern Formwork techniques in steel lift slab construction and slip form formwork and formwork of special profiles, patented formwork.

UNIT II:

Prefabrication of RC using pre-stressed, post-stressed, pre-tensioning, post tensioning

Construction details of typical RC building element in prefab mode.

Construction system of large span structures

UNIT III:

Curtain walls, different materials and their detailing.

UNIT IV:

Construction details of terrace gardens, swimming pool

Advance building material and their properties

NOTE:

Detailed teaching programme to be made before the commencement of the semester and circulated to the students at the commencement of the semester.

In each class teacher will deliver lecture on the subject to be followed by drawing.

Market survey/ site visits are to be conducted

Minimum 10 sheets must be prepared in the studio under supervision of the teacher.

| I | Sessional evaluation | Weightage |
|----|--------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignments | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam. shall be conducted in the drawing hall/studio having provision of drawing boards.
- Following Stationery shall be provided to each of the student - Cartridge Sheet (White)
- Total FIVE questions are to be set, out of which FIRST question shall be compulsory (from the entire syllabus) of theory of 40 marks, (due consideration has to be given to building materials) and rest of the FOUR QUESTIONS shall be from four units (one question from each of the unit, candidate have to attempt any TWO questions (drawing based) out of four of 30 marks each.
- Exam. shall be of 3 hours duration and of Maximum marks: 100. (minimum passing marks 40)

READING LIST: (to be amplified by the subject teacher)

- Barry, R (1986) Construction of Buildings, London, vol. 1 to 5.
- BIS (2011) National Building Code, SP 7, Bureau of Indian Standards.
- Foster, Stroud (1963) Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay.
- IS codes
- McKay, W. B. (1972) Building Construction (Metric), Longman, London, vol. 1 to 5.
- Prabhu, Balagopal T. S. (1987) Building Drawing and Detailing, Spades Publishers Pvt. Ltd., Calicut.
- Punmia, B. C. (2005) Building Construction, Firewell Media, Delhi.
- Singh, Gurucharan (1981) Building Construction Engineering, Standard Book House, New Delhi.

AR 509-C**LANDSCAPE DESIGN**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3* | 3 |

INTENT:

To give an exposure into the breadth of landscape architecture as a profession and to understand the complexities involved in urban landscape design.

To appreciate the potential of use of landscape in architecture

CONTENT:**UNIT I: Landscape design**

Review of landscape design, history and evolution of landscape design, Landscape Design of Gardens: French, Chinese, Japanese, Italian, Mughal, English. Landscape conservation and environmental landscapes. Types of landscape: natural, manmade landscape, urban and rural landscape. Factors effecting landscape design. The role of landscape components in modifying micro climate with respect to temperature, humidity, precipitation and percolation.

UNIT II: Urban landscape

Introduction to Urban landscape design and its influence on our physical and visual environment. Hierarchy of Urban open spaces, elements of urban landscape, recent trends in concepts and approaches to urban landscape design. Water as an element of Landscape, Vegetation and landscape, plants, trees, ground cover, hedges etc, planting pattern and design, landscape furniture, garden lighting, pathways,

UNIT III: Landscape Construction and Services:

Study of landform its technical expression through site grading plan, sections and earthwork computations.

Irrigation systems – sprinkler trickle irrigation, drip irrigation and laying irrigation networks, site drainage, introduction to working drawings of landscape

UNIT IV: Contemporary concepts and concerns:

Study and analysis of contemporary landscape designs by noted landscape architects and their concepts and theories. Role of professional institutes in the landscape architecture.

Application of landscape design principles - master planning for large developments like Technology parks,

Mixed Use developments, Institutional and Industrial campuses, urban avenues, residential, commercial

premises, highways, gardens, green belts, farm houses, etc.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Exercises | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Aldous, Tony and Clouston, Brian (1979) Landscape by design, Heinemann, London.
- Birlested, Jan (1998) Relating Architecture to Landscape, E and F N Spon, London
- Booth, Norman K. and Hiss, James E (1991) Residential Landscape Architecture, Prentice Hall, New Jersey.
- Cerver, F A (1997) International landscape architecture, F A Cerver, Spain.
- Laurie, Michael (1976) Introduction to landscape architecture, London.
- Lynch, Kevin and Hack, Gary (1988) Site planning, MIT Press, Cambridge
- Motloch, John L (2001) Introduction to Landscape Design, John Wiley & Sons, New York.
- Shunsaku, Miyagi and Makoto, Yokohari (1990) Contemporary landscapes in the world. Process architecture, Japan.

9. Simonds, John O (1983) Landscape Architecture: A manual of site planning and design, McGraw Hill, New York.
10. Tandy, Cliff (1975) Handbook of Urban Landscape, Architectural Press, London.
11. Ward, Harris Charles & Dines, Nicholas T (1988) Time saver standards for landscape architecture design and construction data, McGraw Hill, New York.

AR 511-C**TRAFFIC & TRANSPORTATION**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

To appreciate the role of traffic and transportation in the planning and success of human habitat.

CONTENT:**UNIT I:**

Urbanization and transport problem
 Traffic surveys studies
 Land use transportation interaction
 Road Network Planning

UNIT II:

Geometric design of roads and inter sections, road graphics,
 Transport system characteristics planning for public transport
 Urban transport planning process and policies.

UNIT III:

Transport planning in small and medium cities
 Transport economics
 Planning norms and space ,

UNIT IV:

Parking characteristics space requirements.
 Traffic management and regulations scope
 Traffic and environment , traffic safety, intelligent transport systems

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--------------------------|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Exercises | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Coleman A. O'Flaherty (1996) Transport Planning and Traffic Engineering, A Butterworth-Heinemann.
- Kadiyali L. R. (1983) Traffic Engineering and Transport Planning, Khanna Publishers, New Delhi.
- Meyer, M. D. (2009) Transportation Planning Handbook, Inst. of Trans. Eng

AR 513-C**TALL BUILDING DESIGN &
FACADE ARCHITECTURE-IX**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

To appreciate the needs, constraints, complexities of tall buildings and to understand design and construction process

CONTENT:**UNIT I : Introduction**

Definition – International & Indian concepts, need and criteria for development of tall buildings, Impact of tall buildings on urban development in terms of increased density, accessibility, transportation and parking. Design Philosophies, Materials Used for Construction – High Strength Concrete, High Performance Concrete, Self Compacting Concrete, Glass, High Strength Steel, Pre-fabrication in the design of a high-rise building.

UNIT II : Behaviour of various structural Systems

Structural systems and concepts: effects of openings, large panel construction, foundation superstructure interaction , Gravity and lateral load resisting structural systems: high rise behavior, rigid frames, braced frames, in-filled frames, shear walls, coupled shear walls, wall-frames, tubular, cores, steel-concrete composite floor systems, Stability of tall buildings: overall bulking analysis of frames, wall frames, approximate methods .

UNIT III: Building codes

Legislation aspects of tall buildings:, municipal codes, Buildings Services for tall buildings, Landscaping in tall buildings, Fire prevention and fire lighting systems for tall buildings , Disaster management in tall buildings , Intelligent building automation , Energy efficiency / Green Building Concepts: green skyscrapers.

UNIT IV: Façade Design in Architecture:

Introduction to facade design , features on the building facade that add visual interest to the environment, Relationship of Urban Design and Façade Design Role of different textures, colours, materials, and distinctive architectural features, Role of scale to the building facade by articulated massing. Different types of Façade Design and treatment, double skin facade, curtain wall, shading devices for facades, Climate based Façade Design, Façade Embellishment, Green retrofitting in Façade Design.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Mini Project / Term paper | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Beedle, Lynn S (1986) Advances in Tall Buildings, Van Nostrand Reinhold, NY.
- C T B U H (1981) Planning and Environmental Criteria for Tall Buildings, American Society of Civil Engineers, NY.

3. Gupta, Y. K. (ed) (1995) High Rise Structures- Design and construction Practices for Middle level cities, New Age International Publications (P) Limited, New Delhi
4. Kowalezyk, Ryszard M. (1995) Structural systems for tall buildings, Mc Graw Hill, New York.
5. Monograph on Planning and Design of Tall Buildings (Council on Tall Buildings and Urban Habitat).
6. Proceedings of the International conference on Planning and Design of Tall buildings Vol.1a-Systems and Concepts.

AR 515-C

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|--------|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | Studio | | Theory | Portfolio | | | |
| 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

To appreciate the relevance and need of principles and practices pertaining to cost effective building techniques and practices in India and worldwide.

CONTENT:**UNIT I:**

Definition and overview of cost effective building in rural and urban sectors
Establishing the relevance of cost effective building practices in present times Cost effective building and sustainability

UNIT II:

Spatial norms for cost effective buildings
Usage patterns
Cost analysis – material, labour, percentage breakup of various building components Cost effectiveness through planning, construction management
Minimizing wastage and recycling

UNIT III:

Choice of building materials – indigenous, organic, alternative materials
Building techniques – standardization, modular co- ordination, mass production, pre fabrication
Traditional technology, alternative technology, adaptation and innovation
Comparative cost analysis of building materials and technologies

UNIT IV:

Evolution of the cost effective architecture movement – India and world wide
Major advocates of cost effective practices – Laurie Baker, U.C. Jain, Hasan Fathy, Anil Lal, Rewathi Kamanth, Anupama Kundoo, Pramod Adhlakha, Geoffrey Bawa
Role R & D Organizations, self help community participation, cooperative and individuals in promoting cost effective practices – viz. CBRI, SERC, BMPTC, Development Alternatives, ASTRA, HUDCO, COSTFORD, Auroville etc.
Survey and detailed study of exemplars of low cost study of low cost buildings

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.
Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Mini Project / Term paper | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

- Bansal, N. K. & Minke, G. (eds) (1995) *Climatic Zones and Rural Housing in India*, Forschungszentrum Julich, Julich (Germany).
- CBRI (1990) Building materials & components technology for developing countries, Central Building Research Institute.
- Jagdish KS & Nangunda KS (2002) Proceedings of the national workshop on alternative building methods.
- Mathur, G. C. (1993) Low Cost Housing in Developing Countries, South Asia Books.
- Publication of CBRI, SERC, RRL, NBO, COSTFORD etc
- Watson Donald (2000) Time saver standards for building materials and systems. McGraw Hill, NY.

AR 517-C**SUSTAINABLE ARCHITECTURE – IX**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3* | 3 |

INTENT:

To appreciate the role of natural resources in building construction and maintenance

CONTENT:**UNIT I: Sustainability Issues**

Need for sustainable development: population growth, carbon emissions, global warming, climate change, ecological balance, ecological foot prints, Historical background, philosophical basis, social implications Manifestoes: Brundtland report, Agenda 21, Kyoto Protocol, IPCC, Forum for Future, complex rating systems Role of architects: sustainable site, energy (operational and embodied), materials, water and wastes

Green, eco, ecological, sustainable, bio-climatic, cradle-to-cradle, bio mimicry, restorative, regenerative design

Systems Approach: definition of system, types, characteristics, components, behaviour, integrated design

UNIT II: Sustainable Site Planning

Site assessment and selection: topography, vegetation, built form, water, access to natural light, local wind patterns and micro climate; Site planning: layout, shape, spacing, orientation, mutual relationship, solar studies, pollution prevention and ecology, heat island effect

Design for environment: Greenfield development, smart growth, brownfield redevelopment strategies and infill development, sustainable urbanism

Socially responsible design: user-centered design, design education/ethics and sustainability,

UNIT III: Energy

Forms of energy, energy sources: renewable and non-renewable, energy conversion: cogeneration and fuel cells Solar Energy: low temperature thermal systems (active & passive systems, solar air conditioning, solar water heating), high temperature thermal systems (solar thermal electricity system), photovoltaic systems, BPVs

Wind Energy: traditional wind mills, wind turbines – HAWT and VAWT (SWOC analysis),

Other renewable energy: methane gas (waste), energy crops (biomass conversion), sea and earth (geo-thermal) Energy

Storage: reversible chemical reactions, phase change materials

UNIT IV: Alternate Building Materials:

Building Materials: embodied energy of materials, renewable materials, reuse of materials

Water efficiency: water use/ demand, quality of water, water conservation, ground water recharge Waste management: gaseous wastes, liquid wastes, solid wastes, recycling systems Contemporary exemplars of sustainable architecture.

Major advocates of cost effective practices – Laurie Baker, U.C. Jain, Hasan Fathy, Anil Lau, Rewathi Kamanth, Anupama Kundoo, Pramod Adhlakha, Geoffrey Bawa

Role of R & D Organizations, self help community participation, cooperative and individuals in promoting cost effective practices – CBRI, SERC, BMPTC, Development Alternatives, ASTRA, HUDCO, COSTFORD, Auroville etc.

Survey and detailed study of exemplars of low cost study of low cost buildings

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Mini Project / Term paper | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 75. (minimum passing marks:30)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Edwards, B. (2010) Green: Rough Guide to Sustainability, RIBA Publications.
2. Kwok, AG & Grondzik, WT (2007) The green studio handbook: environmental strategies for schematic design, Architectural Press, Oxford.
3. Owen Lewis, J (1999) A Green Vitruvius - Principles and Practice of Sustainable Architectural Design, James & James.
4. Szokolay, S. V. (2008) Introduction to Architectural Science, Architectural Press.
5. TERI (2005) Sustainable design manual, Vols 1 & 2, The Energy and Resource Institute (TERI), New Delhi.

| AR 519-C | | Architectural photography and Journalism-IX | | | | | |
|-------------------|---|---|----------------------|-----------|-------------|---------|-----------------------------|
| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 4* | 3 |

INTENT:

To develop the techniques of observing, recording, reporting, analyzing architecture for the purpose of publication.

CONTENT:

UNIT I:

Definition of journalism, theories of journalism, techniques and processes.

Appreciation of journalism in architecture, mediums, techniques. Historical architectural writing

Contemporary architectural journalism – real and virtual

Digital journalism, architecture, arts and journalism / media.

UNIT II:

Emphasis on the usage of language and vocabulary Methodology

of writing essays, compositions, précis, articles

Listening comprehension, analyzing talks, interviews and conversations

Collating and editing gathered information to build an article Paraphrasing and summarizing

Analysis of works of Indian and overseas writers

UNIT III:

Writing original reports on design projects/buildings/complexes etc.

Thesis or research report writing

Organizing material for publication in newspapers, magazines, research journals etc.

Reporting editorials for magazines and journals, book reviews

Reporting activities like seminars, panel discussions, conference etc.

Subbing like condensing, connecting, titling, etc. of reports/write-ups submitted for publication.

Examining Case Studies of published works. Ethics and legal issues in journalism, Copy right issues, plagiarism

UNIT IV:

Introduction to professional photography, Types of lens, camera, filters. Use of lighting and speed, timing, angle and composition in camera. Different types of photography techniques. Photography of interiors, exteriors, urban environment, Landscape, and moving objects. Architectural model photography and archives. Digital photography. Photography portfolio.

Photojournalism and layout. Image format, resolution, aspect ratio, Pixels, DPI and PPI; composition. ARCHITECTURAL

PHOTOGRAPHY 3/E: Composition, Capture, and Digital Image Processing

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Mini Project / Term paper | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

- Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
- Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
- The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Al-Asad, Mohammad and Musa Majd, Eds. (2006) *Architectural Criticism and Journalism: Global Perspectives*, Umberto Allemandi & Company,
2. Louise Huxtable, Ada (2010) *On Architecture - Collected Reflections on a Century of Change*, Bloomsbury Publishing, USA
3. Parkinson, C N (1986) *What journalism is about*, I B H, Bombay.
4. Schmuhi, Robert (1989) *Responsibilities of journalism*, Affiliated East West Press, Delhi.
5. *Professional Architectural Photography Book by Michael Harris*

ROAD SAFETY AND CIVIC SENSE-IX

AR 521-C

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|---|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | P | | Theory | Portfolio | | | |
| 3 | - | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

To acquaint them with the design and safety standards for roads. Also inculcate the practice of safe road behaviour and civic sense among them.

CONTENT:

UNIT I : Introduction to Road Safety

Road as an active space, Types of Users, User Behaviour, Sensory Factors like Vision and Hearing in User Behaviour. Types of Vehicles: Heavy Vehicles, Light Motor Vehicle, Two Wheelers, Auto-Rickshaw, Bicycles and Cycle Rickshaw, Non-Motorised Vehicles. Vehicle Characteristics: Dimensions, Weight, Turning Radii, Braking Distance, Lighting System, Tyres, etc. Type of Hazards: Conflicts and Accidents.

Typology of Roads: Components and Design

Road Classification: National Highways, State Highways, District Roads (MDR and ODR), Village Roads Urban Road Classification: Expressways, Arterial, Sub-Arterial, Collector, Local, Service Roads, One-Way, Two-Way etc. Mountainous Roads. Speed Limits of the Road types.

Design of Roads: Cross-Sectional Elements- Right of Way, Carriageway, Median, Shoulders, Sidewalk, Lanes, Cycling Track, Green Strip, Curbs, Camber, etc. Spatial Standards for the Cross-Section Design. Relationship between Road Design and Road Safety.

Intersections

Types of Road Intersections: Basic Forms of at-grade Junctions (T, Y, Staggered, Skewed, Cross, Scissors, Rotary, etc. Grade Separated Junctions (with or without interchange): Three-Leg, Four-Leg, Multi-Leg, etc. Design of Intersections: Design and Spatial Standards for Traffic Islands, Turns, Turning Radii, Directional Lanes, Pedestrian Crossings, Median Openings, Traffic Calming Components like Speed Breakers and Table-Top Crossings etc.

Design Considerations for Diverging, Merging, and Weaving Traffic. Location and Design for Traffic Signals.

UNIT II : Pedestrian Circulation and Barrier Free Design

Requirement of Pedestrian Infrastructure: Sidewalks and Footpaths, Recommended Sidewalk Widths, Pedestrian Crossings, Pedestrian Bridges, Subways, Cycle Tracks, etc.

Barrier Free Design: Location and Design Standards for Ramps for Wheel Chair Access, Other Provisions like Tactile for Visually Challenged etc.

Safety Provisions: Pedestrian Railings, Anti-skid Flooring, Pedestrian Signal, Walk Button, etc.

Traffic Signs and Road Markings

Type for Traffic Signs: Principles and Types of Traffic Signs, Danger Signs, Prohibitory Signs, Mandatory Signs, Informatory Signs, Indication Signs, Direction Signs, Place Identification Signs, Route Marker Signs, etc.

Reflective Signs, LED Signs. Static and Dynamic Signs.

Standards for Traffic Signs: Location, Height and Maintenance of Traffic Signs

Types of Road Markings: Centre Lines, Traffic Lane Lines, Pavement Edge Lines, No Overtaking Zone Markings, Speed Markings, Hazard Markings, Stop Lines, Pedestrian Crossings, Cyclist Crossings, Route Direction Arrows, Word Messages, Marking at Intersections, etc. Material, Colour and Typography of the Markings.

UNIT III : Traffic Signals, Traffic Control Aids, Street Lighting

Traffic Signals: Introduction, Advantages, and Disadvantages

Signal Indications: Vehicular, Pedestrian and Location of the Signals.

Signal Face, Illustration of the Signals. Red, Amber, Green Signal and its Significance, Flashing Signals, Coordinated control of signals.

Traffic Control Aids: Roadway Delineators (Curved and Straight Sections), Hazard Markers, Object Markers, Speed Breakers, Table Top Crossings, Rumble Strips, Guard Rails, Crash Barriers etc. Street Lighting: Need for Street Lighting, Type of Lighting, Illumination Standard, Location and Intermediate Distance.

Road Accidents

Nature and Types of Road Accidents (Grievously Injured, Slightly Injured, Minor Injury, Non-Injury, etc.) The situation of Road Accidents in India (Yearly), Fatality Rates, etc.

factors (and Violations) that cause accidents, Prevention and First Aid to Victims, Collision Diagrams and Condition Diagrams exercises. Traffic Management Measures and their influence in Accident Prevention.

UNIT IV : Road Safety and Civic Sense

Need for Road Safety, Category of Road Users and Road Safety Suggestions.

Precautions for Driving in Difficult Conditions (Night, Rain, Fog, Skidding Conditions, Non-Functional Traffic Lights, etc.).

Types of Breakdowns and Mechanical Failures. Accident Sign (Warning Light, Warning Triangle, etc.)

Introduction to Concept of Civic Sense and its relationship to Road Safety: Importance of Civic Sense, Road Etiquettes and Road User Behaviour, Rules of Road, Right of the Way. Providing Assistance to Accident Victim. Sensitisation against Road Rage.

Traffic Regulations, Laws & Legislations

Indian Motor Vehicles Act (Chapter VIII: Control of Traffic to be discussed in detail)

Regulations Concerning Traffic: Cycles, Motor Cycles and Scooters, Rules for Pedestrian Traffic, Keep to the Left Rule, Overtaking Rules, Turning Rules, Priority Rules, Hand Signals, etc.

Speed and Hazard Management, Penal Provisions.

National Road Safety Policy, Central Motor Vehicle Rules, State Motor Vehicle Rules Introduction to Good Practices.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

Appropriate Standards must be explained and used

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Mini Project / Term paper | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Introduction to Traffic Engineering, R Srinivasa Kumar
2. Traffic Engineering and Transport Planning, L R Kadiyali
3. Book on Road Safety Signage and Signs, Ministry of Road Transport and Highways, Government of India
4. MORT&H Pocketbook for Highway Engineers, 2019 (Third Revision)
5. Publications by UTTIPEC namely, Street Design Guidelines, UTTIPEC Guideline for Road Markings, UTTIPEC Guideline and Specification for Crash Barriers, Pedestrian Railing and dividers, UTTIPEC Standard Typical Crossing Design
6. Street Design Standards as provided in Times Saver Standards, Neuferts etc.
7. Publications by Indian Road Congress

AR 502-C**ARCHITECTURAL THESIS – X**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|--------|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | Studio | | Theory | Portfolio | | | |
| - | 32 | 300 | - | 300 | 600 | 32 | - |

INTENT:

The B. Arch. Thesis aims to provide students the opportunity to prove that they have acquired adequate ability to handle in totality all stages and phases of an architectural project thereby giving proof of their preparedness to take on the responsibilities of a professional architect. The Thesis is expected to demonstrate:

- Understanding of research methods appropriate to the field of study
- Critical investigation of the subject of research
- Independent and original contribution to existing body of knowledge

CONTENT:

The Thesis project will be independent personal endeavour under the supervision of an academic supervisor. Thesis subject, therefore, usually embodies a candidate's interest and showcase of his / her academic and professional strengths. While students can identify a number of topics that interest them, the final topic must be approved after consultation with their respective Thesis Supervisors.

The thesis project shall entail the following

- Articulate thesis topic, aim and objectives, scope, methodology, validity within the following framework:
 - i) The subject must meet the Department's academic standards
 - ii) It must have a critical mass of research activity within its fold
 - iii) The subject must entail access to all pertinent data for the purpose of pre-design study and analysis
 - iv) Subjects where the data is classified or beyond the immediate reach of the student are not to be considered
 - v) The subject must be of a manageable scope & within the self-assessed capability of the student
 - vi) It must have relevance to the contemporary context
- Formulate detailed Architectural Programme of the thesis topic using an analysis of existing literature, exemplar study (primary and secondary sources), relevant standards etc.
- Analyze site attributes, site zoning, develop alternative design concepts of the thesis topic
- Develop architectural design interventions as solution to the thesis to fulfil thesis objectives.

The Supervisor will be drawn from the core faculty of the Department. A group of students will be allocated to each Supervisor whose consent for their respective Thesis subjects is necessary. The Supervisor is expected to guide the student during the course of the thesis project through scheduled meetings on a weekly basis. The Thesis Co-coordinator will co-ordinate the Thesis Programme and will also participate in all stages of Internal Evaluation of the Thesis.

Broadly speaking, the Thesis shall entail the submission and presentation of the student's work through a report (including relevant drawings to appropriate scale), presentation drawings and models. The thesis report shall be well structured document of not more than 10000 words with clear objectives and well-argued and appropriate conclusions and design intervention indicating an appropriate level of expertise.

NOTE:

Detailed teaching programme and Thesis manual will be prepared by the Thesis co-coordinator and circulated to the students at the commencement of the semester.

| I | Sessional | Weightage |
|----|-----------------------|-----------|
| 1. | Synopsis | 10% |
| 2. | Programme formulation | 30% |
| 3. | Concept | 20% |
| 4. | Preliminary Design | 40% |
| II | Portfolio | 100% |

READING LIST: (to be amplified by the respective guide)

1. Evans, D & Gruba, P (2002) How to write a better thesis. 2nd Edition, Melbourne University Press.
2. As appropriate for each individual thesis.

AR 504-C**PROFESSIONAL PRACTICE – X**

| Teaching Schedule | | Marks of Sessional work | Marks of Examination | | Total marks | Credits | Duration of Examination (h) |
|-------------------|--------|-------------------------|----------------------|-----------|-------------|---------|-----------------------------|
| L | Studio | | Theory | Portfolio | | | |
| 3 | 0 | 50 | 50 | - | 100 | 3 | 3 |

INTENT:

To understand the professional responsibilities, ethics & liabilities of the Architectural Profession. To understand the process of Contract management in architectural projects.

CONTENT:**UNIT I: Scope and responsibilities of Architectural Profession**

An overview of architectural practice in building industry- the participants, the transactions, the webs of relationships -- considered from the primary relationship of the individual to the collective

Taxonomy of building project delivery: Traditional, Design build, construction/project manager, turnkey; Team working and leadership role of architect in conceptualizing, designing until the commissioning

The profession's future as it responds to its changing socio-economic context, including the challenges of globalization and environmental sustainability.

UNIT II: Models for procurement of Architectural services

Architectural firm organization and legal/financial structures: proprietorship, partnership, associateship and private limited concerns, institutional consultancy practice.

Public relations and marketing strategies for building client base and gaining projects.

Procurement procedures for Architectural services: non-competitive and competitive, qualification based selection (QBS), Architectural competitions, guidelines of the Council of Architecture,

Taxes and implications of service tax. Implication of GATS on the profession in India.

UNIT III: Standard consultancy agreement forms, fee structure, code of professional practice and ethics

The Architect's Act 1972 and registration of architects.

Role of the Council of Architecture and other professional bodies in architectural profession. Architects (Professional Conduct) Regulations, 1989, Professional Ethics

Standard CoA Owner/Architect agreement forms and Architects relation with other parties connected with works such as contractor, subcontractors, consultants, municipal and public authorities

Managing the legal risks and responsibilities associated with design and construction

Basic financial concepts such as fee determinations and project budgeting. Types and extent of services offered by architects, Scale of remuneration for architectural services, stages of payment and mode of payments

UNIT IV: Contract Management

General principles of Indian Contract Act 1872 and Arbitration and Conciliation Act 1996

Building contracts, taxonomy of contracts: lumpsum, unit price, cost plus fixed fee, cost plus percentage, GMP. Taxonomy of tenders: public, private and negotiated, tendering process, pre-qualification and post-qualification Standard forms of contract, general and specific conditions, administration of contract and role of architect

Mode of measurements - clerk of work and his duties; Inspection of work during construction; certificate of payment to contractor

Preliminary knowledge of Building and other construction workers (Regulation of Employment and Conditions of Service) Act, 1996, the Indian Easement Act 1882, Transfer of property Act 1882; The Indian Stamp Act 1892, Land Acquisition Act 1894 and procedures of land acquisition

Valuation of property, income tax, wealth tax and property tax. Insurance and settlement of claims.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

| I | Sessional evaluation | Weightage |
|----|--|-----------|
| | Minor Test – I | 20% |
| | Minor Test – II | 20% |
| | Assignment / Mini Project / Term paper | 30% |
| | Quiz/Tutorial/Class Test | 30% |
| II | Theory examination | 100% |

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.
3. The question paper should at least have one question with 3 subparts and three questions with 2 subparts.

READING LIST: (to be amplified by the subject teacher)

1. Apte, V. S. (2008) Architectural Practice and procedure, Pillai College of Architecture, Mumbai.
2. Banerjee, D. N. (1998) Principles and Practice of Valuation, 5th ed. Eastern Law House, Calcutta.
3. Council of Architecture (2013) Directory of Architects and Architectural Firm, Council of Architecture, New Delhi.
4. Council of Architecture (2013) Handbook of Professional Practice, Council of Architecture, New Delhi.
5. Greenstreet, R., Chappell, D. and Dunn, M. (2002) Legal and Contractual Procedures for Architects, Architectural Press, London.
6. Krishnamurthy, K G and Ravindra, S V (2014) Professional Practice, PHI Learning Pvt. Ltd.
7. Namavati, Roshan (1991) Theory and Practice of Valuation, Laxmi Book Depot, Mumbai.
8. Namavati, Roshan (1993) Professional Practice, Laxmi Book Depot, Mumbai.
9. The Indian Institute of Architect (1988) Handbook of Professional Practice, Architects Publishing Corporation, Bombay
10. Wills, Arthur (1974) The Architect in Practice, Crossby Lockwood Staples, London.

