



DEPARTMENT OF ARCHITECTURE

| COURSE PLAN – PART I                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                          |                                          |              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------|--------------|
| Name of the programme and specialization                                                                                                                                                                                                                                                                                                                                                                                                   | M. Arch. (Energy Efficient and Sustainable Architecture) |                                          |              |
| Course Title                                                                                                                                                                                                                                                                                                                                                                                                                               | Lighting Design                                          |                                          |              |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                | AR706                                                    | No. of Credits                           | 3            |
| Course Code of Pre-requisite subject(s)                                                                                                                                                                                                                                                                                                                                                                                                    | Nil                                                      |                                          |              |
| Session                                                                                                                                                                                                                                                                                                                                                                                                                                    | January 2020                                             | Section (if, applicable)                 | A / B        |
| Name of Faculty                                                                                                                                                                                                                                                                                                                                                                                                                            | Dr.G.Subbaiyan                                           | Department                               | Architecture |
| Official Email                                                                                                                                                                                                                                                                                                                                                                                                                             | <a href="mailto:subbaiah@nitt.edu">subbaiah@nitt.edu</a> | Telephone No.                            | 0431 2503557 |
| Name of Course Coordinator(s) (if, applicable)                                                                                                                                                                                                                                                                                                                                                                                             | -                                                        |                                          |              |
| Official E-mail                                                                                                                                                                                                                                                                                                                                                                                                                            | -                                                        | Telephone No.                            | -            |
| Course Type (please tick appropriately)                                                                                                                                                                                                                                                                                                                                                                                                    | <input checked="" type="checkbox"/> Core course          | <input type="checkbox"/> Elective course |              |
| <b>Syllabus (approved in BoS)</b>                                                                                                                                                                                                                                                                                                                                                                                                          |                                                          |                                          |              |
| Electromagnetic spectrum. Visual response visual acuity, Glare & visual comfort. Colour perception, Visual Task Requirements. Side lighting concepts, Top lighting concepts. Designing Atria / Light Courts. Daylight Controls. Daylighting Design, Daylighting Analysis. Electrical light sources and Luminaires. Task requirements, point-by-point method, Lumen method, Qualitative calculations and Supplementary Artificial Lighting. |                                                          |                                          |              |
| <b>COURSE OBJECTIVES</b>                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                          |                                          |              |
| i. To make an awareness about the benefits of day lighting in buildings.<br>ii. To understand about different daylighting concepts, day lighting analysis and design.<br>iii. To be knowledgeable about the salient features of various Artificial light sources and luminaires.<br>iv. To understand the Artificial lighting design methods.<br>v. To get introduced to the software used for lighting design of buildings.               |                                                          |                                          |              |
| <b>MAPPING OF COs with POs</b>                                                                                                                                                                                                                                                                                                                                                                                                             |                                                          |                                          |              |
| Course Outcomes                                                                                                                                                                                                                                                                                                                                                                                                                            | Programme Outcomes (PO)<br>(Enter Numbers only)          |                                          |              |
| 1. Assessment of day lighting availability in existing buildings (Analysis).                                                                                                                                                                                                                                                                                                                                                               |                                                          |                                          |              |
| 2. Design of Fenestration for Day lighting of interior spaces.                                                                                                                                                                                                                                                                                                                                                                             |                                                          |                                          |              |
| 3. Artificial lighting design for interior spaces of different types of buildings.                                                                                                                                                                                                                                                                                                                                                         |                                                          |                                          |              |



|                                                                                                              |  |
|--------------------------------------------------------------------------------------------------------------|--|
| 4. Integration of Day lighting and Artificial lighting – Permanent Supplementary Artificial Lighting Design. |  |
| 5. Make acquainted about the software used for lighting design of buildings.                                 |  |

| COURSE PLAN – PART II                                                                                                                                                                                                                                                                       |                                   |                                                                                                            |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------|
| COURSE OVERVIEW                                                                                                                                                                                                                                                                             |                                   |                                                                                                            |                          |
| This course focus on day lighting concepts, day lighting analysis and design of fenestration for day lighting of interior spaces, articial lighting design for interior spaces, permanent supplementary artificial lighting design and the software used for lighting design of buildings . |                                   |                                                                                                            |                          |
| COURSE TEACHING AND LEARNING ACTIVITIES                                                                                                                                                                                                                                                     |                                   |                                                                                                            | ( Add more rows)         |
| S.No.                                                                                                                                                                                                                                                                                       | Week/Contact Hours                | Topic                                                                                                      | Mode of Delivery         |
| 1                                                                                                                                                                                                                                                                                           | 1st                               | Lighting Fundamentals – Light and Optics, Measurement of light, Vision and Perception, Colour and Lighting | PPT                      |
| 2                                                                                                                                                                                                                                                                                           | 2 <sup>nd</sup>                   | Quality of the Visual Environment, Lighting requirements of different types of buildings                   | PPT/ Lecture/ Discussion |
| 3                                                                                                                                                                                                                                                                                           | 3 <sup>rd</sup> & 4 <sup>th</sup> | Day Lighting – Introduction and Concepts                                                                   | PPT/ Lecture             |
| 4                                                                                                                                                                                                                                                                                           | 5 <sup>th</sup> & 6 <sup>th</sup> | Day lighting – Analysis and Design                                                                         | PPT/ Lecture/ Tutorials  |
| 5                                                                                                                                                                                                                                                                                           | 7 <sup>th</sup>                   | Electrical light sources                                                                                   | PPT/ Lecture             |
| 6                                                                                                                                                                                                                                                                                           | 8 <sup>th</sup>                   | Luminaires and Interior lighting systems.                                                                  | PPT/ Lecture             |
| 7                                                                                                                                                                                                                                                                                           | 9 <sup>th</sup>                   | Artificial lighting design – Lumen Method                                                                  | PPT/ Lecture/ Tutorials  |
| 8                                                                                                                                                                                                                                                                                           | 10 <sup>th</sup>                  | Artificial lighting design – Point by point method                                                         | PPT/ Lecture/ Tutorials  |



|    |                                     |                                               |                         |
|----|-------------------------------------|-----------------------------------------------|-------------------------|
| 9  | 11 <sup>th</sup>                    | Supplementary Artificial Lighting Design      | PPT/ Lecture/ Tutorials |
| 10 | 12 <sup>th</sup> & 13 <sup>th</sup> | Lighting – Economics, Control and Maintenance | PPT/ Lecture            |
| 11 | 14 <sup>th</sup> & 15 <sup>th</sup> | Lighting design - software                    | PPT/ Lecture/ Tutorials |
| 12 | 16 <sup>th</sup>                    | Conclusion and Feedback                       | Discussion              |

**COURSE ASSESSMENT METHODS** (shall range from 4 to 6)

| S.No. | Mode of Assessment                            | Week/Date              | Duration | % Weightage |
|-------|-----------------------------------------------|------------------------|----------|-------------|
| 1     | Assignment/ Tutorial (Day Lighting)           | 6th week               | 10 Days  | 15          |
| 2     | Assignment/ Tutorial (Lumen Method)           | 8th week               | 1Hr.     | 10          |
| 3     | Assignment/ Tutorial (point by point Method)  | 10th week              | 10 Days  | 10          |
| 4     | Test                                          | 12 <sup>th</sup> week  | 1Hr.     | 15          |
| CPA   | Compensation Assessment*                      | 13 <sup>th</sup> week  |          | 10          |
| 5     | Assignment/ Tutorial (Simulaion)              | 14th & 15th week       | 10 Days  | 10          |
| 6     | Final Assessment * (End-semester examination) | Last week – April 2020 | 3 Hrs.   | 40          |

**\*mandatory; refer to guidelines on page 4**

**COURSE EXIT SURVEY** (mention the ways in which the feedback about the course shall be assessed)

- i. Feedback survey about course content and suggestions for any improvement/ modification - online
- ii. Assessment of the knowledge the students have gained through this subject - online
- iii. Feedback regarding the teaching-learning process - online

**COURSE POLICY** (including compensation assessment to be specified)

- i. If any student is absent on the day of tutorial session, he/ she shall forfeit the marks for that particular tutorial exercise.
- ii. If any candidate is absent in the test due to genuine reasons, he/ she can appear for retest.
- iii. Assignments are required to be prepared independently by each of the candidate. If any



student submits assignments directly copied from other students / books/ journals (cut and paste) he/ she shall forfeit the marks for that particular assignment.

**ATTENDANCE POLICY** (A uniform attendance policy as specified below shall be followed)

- At least 75% attendance in each course is mandatory.
- A maximum of 10% shall be allowed under On Duty (OD) category.
- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

**ACADEMIC DISHONESTY & PLAGIARISM**

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programmes.

**ADDITIONAL INFORMATION, IF ANY**

**FOR APPROVAL**

Course Faculty

CC- Chairperson

HOD



**Guidelines**

- a) The number of assessments for any theory course shall range from 4 to 6.
- b) Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.
- c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.
- d) The passing minimum shall be as per the regulations.

| B.Tech. Admitted in                               |      |                                                     |      | P.G. |
|---------------------------------------------------|------|-----------------------------------------------------|------|------|
| 2018                                              | 2017 | 2016                                                | 2015 |      |
| 35% or (Class average/2)<br>whichever is greater. |      | (Peak/3) or (Class Average/2)<br>whichever is lower |      | 40%  |

- e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.