Department of Architecture

Course: **MSAR114 - Daylight and Lighting Design**	**Class:** I Yr M. Arch (SA) I Sem A.Y. 2023-24
Instructors: Dr. Janmejoy Gupta	**Internal Assessment:** 50
	End JURY: 50
Contact Periods/ week: 03 periods (1L+2T)	**Total Marks:** 100
Time Table: 09:00-11:45 AM	**Credits:** 3
Attendance: Min 75%	**Min. Passing Marks:** 40% each in Internal & External Assessment, 40% in Aggregate

Objective: To impart the scientific aspects of daylight and environmental lighting.

LECTURE PLAN

WEEK	DATE	TOPIC OF CLASS LECTURE & DISCUSSION	TOPIC OF STUDIO WORK& ASSIGNMENTS / REMARKS
1	Week-1	Electromagnetic spectrum. Visual response visual acquity, Glare & visual comfort.	Lecture/Discussion/Tutorial
2	Week-2	Colour perception, Visual Task Requirements.	Lecture/Discussion/Tutorial
3	Week-3	Side lighting concepts, Top lighting concepts. Designing Atria / Light Courts.	Lecture/Discussion/Tutorial
4	Week-4	Daylight Controls. Daylighting Design, Daylighting Analysis Electrical light sources and Luminaires.	Lecture/Discussion/Tutorial
5	Week-5	Daylight metrics for Task requirements such as point-by-point method, Lumen method, simulation tools. Qualitative calculations and Supplementary Artificial Lighting.	Lecture/Discussion/Demonstration of Daylight Assessment Tool - Ecotect
6	Week-6	Assessment I	**Internal Assessment 1**
7	Week-7	Lighting Design – Effect of light on user orientation, room comprehension, form, structure and materials.	Lecture/Discussion/Tutorial
8	Week-8	Impressions of visual clarity, spaciousness, relaxation, privacy etc. Interior lighting design requirements for offices, factories, commercial interiors, museums and galleries, etc.	Lecture/Discussion/Demonstration of Daylight Assessment Tool (2) - Dailux Lighting Design
9	Week-9	**Mid Term Internal Assessment**	**Mid Term Internal Assesment 2**
10	Week-10	Exterior lighting: Functional requirements, buildings and facades, pedestrian routes and surrounding areas, parking areas and landscape lighting.	Lecture/Discussion/Demonstration of Daylight Assessment Tool (3) - Design Builder - Introduction
11	Week-11	Emergency lighting	Lecture/Discussion/Tutorial
12	Week-12	Cost-effective daylighting design, energy efficiency and maintenance.	Lecture/Discussion/Tutorial
13	Week-13	Lighting cost, performance of lamps and luminaries. Estimating energy use. Energy saving developments.	Lecture/Discussion/Tutorial
14	Week-14	Assessment of Daylight in Buildings	Presentation from students and discussion
15	Week-15	Assessment of Daylight in Buildings	Presentation from students and discussion
16	Week-16	Pending presentations and points to be discussed/clarified.	Discussion

S. No.	Stages of Evaluation	Weightage
1	First stage: Assessment –1	15
2	Second stage: Mid-semester Examination	20
3	Third stage: Assessment –3	15
	Total	50

Suggested Readings:

1. Susan M. Winchip (2017)., 'Fundamentals of Lighting'., Fair Child Books, Bloomsbury., 2nd Edition.

2. Mark DeKay , G. Z. Brown (2014)., 'Sun, Wind & Light'., Wiley., Third Edition.

3. Michael Wilson and Peter Tregenza (2011)., 'Daylighting: Architecture and Lighting Design'., Routledge.

4. Norbert Lechner (2009)., 'Heating, Cooling, Lighting: Sustainable Design Methods for Architects'., Wiley.

5. Hopkinson, R. G (1963)., 'Architectural Physics – Lighting', HMS Office, London.

6. MEBc Schiler (1992)., 'Simplified Design of Building Lighting'., John Wiley & Sons, Inc., New York.

7. Nick V. Baker, A. Fanchiotti, K. Steemers (2017)., 'Daylighting in Architecture: A European Reference Book', Earthson from Routledge.   8. Day Lighting, architecture and Health-Building design Startegies, Mohamed Boubekri, Architectural Press, Elsevier.   9. Building Innovation, A Guide for High-Performance Energy Effcicient Buildings in India, Singh et al, Lawrence Berkley National Laboratory, 2018.

Cource Instructors: **Head of Department :**

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Dr J Gupta