# Winter 2024

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Architectural Lighting Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre/Co-Requisites</td>
<td>Dr. Chi Dara</td>
</tr>
<tr>
<td>Instructor Email</td>
<td><a href="mailto:chinyere.dara1@ucalgary.ca">chinyere.dara1@ucalgary.ca</a></td>
</tr>
<tr>
<td>Class Dates</td>
<td>Mandatory real-time Zoom classes: Tuesday to Saturday, January 02 – 06, 9:00am to 1:00pm</td>
</tr>
<tr>
<td>Instructor Email Policy</td>
<td>Please note that all course communications must occur through your @ucalgary email, and I will respond to emails sent via student’s @ucalgary emails within 12 hours.</td>
</tr>
<tr>
<td>Name and Email of Teaching Assistant(s)</td>
<td>Bita Hatami</td>
</tr>
</tbody>
</table>

**Course Description:**
Understanding the principles of architectural lighting is a basic step towards achieving comfortable, healthy, and environmentally responsible designs. This course explores how lighting design can significantly affect the architectural perception of a space. In this course, lighting design will be addressed as part of the broader process of designing the visual experience in architecture. Both daylighting and artificial electric lighting design and application will be covered.

The course consists of the following components, each described in their own subsequent section in the course outline: lectures, required readings, in-class discussion sessions, project tutorials, student presentations, quizzes, and lighting design term project.

**Course Hours:** 1.5 units; (lecture/tutorial – hybrid Zoom/in-person).

**Online Delivery:**
The course will be presented in half day Zoom lectures with workshops breakout sessions in afternoon. The workshop will include lighting exercises and will cover development of lighting
designs using lighting maps sketches and redline layouts. The final project is a complete lighting
design for a commercial space.

This course will take place mostly online via Desire2Learn (D2L) and Zoom. Students are
required to participate in the asynchronous learning tasks using the D2L learning environment
and synchronous Zoom sessions. The last two days of the course will be in-person designed for
one-on-one lab tutorials on lighting design and tool needed to successfully complete the term
project. If unable to participate live due to unforeseen circumstances, inform the instructor in
advance to work out an alternative participation activity (e.g., watch the recordings, submit a
brief reflection, and actively contribute to the follow-up online discussion).

**Course Learning Outcomes:**
Upon completion of this course, students will know and be able to:
1. Apply fundamental principles of the light design process, incorporating lighting metrics and
   layering approach.
2. Develop illumination schemes that elevate architectural designs.
3. Demonstrate comprehensive understanding of electric illumination systems, task
   illuminance, lamps, lighting equipment, and design techniques.
4. Demonstrate an understanding of daylight applications, lighting controls, and sustainable
   lighting design principles.
5. Perform manual lighting calculations and simulations using software tools, and develop
   finalized lighting maps and controls tailored for varying clients needs, seasons and special
   task requirements.

**Learning Resources:**
Recommended readings, textbooks and learning materials:
- IES DG-18-08; A Guide to Designing Quality Lighting for People and Buildings
- Sage Russel; The Architecture of Light
- Gary Steffy; Architectural Lighting Design

Additional readings:
- Kazimee Bashir, Sustainable Urban Forms: Theory, Design and Application, First edition,
- Barton, H., Grant, M., Guise, R., Shaping Neighbourhoods: For Local Health and Global
- Alison Cotgrave; Mike Riley Total Sustainability in the Built Environment, Palgrave

In addition, list of readings related to selected topics will be posted regularly on D2L.
Technology requirements (D2L etc.):
In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Broadband internet connection

Most current laptops will have a built-in webcam, speaker and microphone

Workshop Safety Training Requirement: NA

Additional Classroom Conduct and Related Information
Guidelines for Zoom Sessions in Online Classes
Students are expected to participate actively in all Zoom sessions and to turn on their webcam. Please join our class in a quiet space that will allow you to be fully present and engaged in the Zoom sessions. Students must behave in a professional manner during the session. Students, employees, and academic staff are also expected to demonstrate behaviour in class that promotes and maintains a positive and productive learning environment.

Assessment Components:

<table>
<thead>
<tr>
<th>Assessment Method</th>
<th>Description</th>
<th>Weight</th>
<th>Aligned Course Learning Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written Report</td>
<td>Lighting Design Project</td>
<td>70%</td>
<td>1, 2, 3, 4, and 5</td>
</tr>
<tr>
<td>Quizzes</td>
<td>Multiple Choice Questions</td>
<td>20%</td>
<td>1, 2, and 3</td>
</tr>
<tr>
<td>Class Attendance</td>
<td>Participation</td>
<td>10%</td>
<td></td>
</tr>
</tbody>
</table>

Assessment and Evaluation Information
The course consists of various topics that are explored through lectures conducted by the course instructor. These lectures focus on investigating technical topics relating to architectural lighting design. Students are assigned lighting tutorial sessions for an AGI software tool, along with class discussions and quizzes to reinforce their understanding of the subject matter. In addition to these activities, each student is required to complete a term report on proposed lighting design case study project.
Means of Evaluation
Evaluation will be based on:

Lighting Design Project: 70%
- Project part A - 25%: This part of the project deals with the conceptual design of architectural lighting, and will rely on knowledge gained in Day 1&2 (outcomes 1 and 2)
- Project part B - 45%: This part deals with the analytical aspect of a lighting project, including calculation, developing of final lighting maps, selecting lighting equipment, etc. It covers all material learned in the course (Outcomes 3 to 5).

Quizzes: 20%

Attendance and Participation Expectations:
Participation: 10%
Students are required to attend all lectures and tutorials. Daily attendance will account for course participation and engagement grade.

Guidelines for Submitting Assignments:
Written and verbal assignments will be marked for grammatical accuracy, stylistic clarity, and organization as well as for demonstrated understanding of the topic, logical argumentation, and originality of critical comments. Students must undertake research that demonstrates an ability to appropriately select and interpret sources – the extensive use of web-based research is discouraged. Papers should include supporting imagery (architectural drawings, lighting maps, cut sheets, simulation results, photographs, etc).

Expectations for Writing (https://www.ucalgary.ca/pubs/calendar/current/e-2.html):

Late Assignments:
Must be 100% complete to be considered.
Criteria that must be met to pass: (e.g. whether or not a passing grade on any particular component of a course is essential if the student is to pass the course as a whole).

Grading Scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade Point Value</th>
<th>4-Point Range</th>
<th>Percent</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.00</td>
<td>4.00</td>
<td>95-100</td>
<td>Outstanding - evaluated by instructor</td>
</tr>
<tr>
<td>A</td>
<td>4.00</td>
<td>3.85-4.00</td>
<td>90-94.99</td>
<td>Excellent - superior performance showing comprehensive understanding of the subject matter</td>
</tr>
<tr>
<td>A-</td>
<td>3.70</td>
<td>3.50-3.84</td>
<td>85-89.99</td>
<td>Very good performance</td>
</tr>
<tr>
<td>B+</td>
<td>3.30</td>
<td>3.15-3.49</td>
<td>80-84.99</td>
<td>Good performance</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
<td>2.85-3.14</td>
<td>75-79.99</td>
<td>Satisfactory performance</td>
</tr>
<tr>
<td>B-</td>
<td>2.70</td>
<td>2.50-2.84</td>
<td>70-74.99</td>
<td>Minimum pass for students in the Faculty of Graduate Studies</td>
</tr>
<tr>
<td>Grade</td>
<td>Lower Bound</td>
<td>Upper Bound</td>
<td>GPA Range</td>
<td></td>
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<tr>
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<td></td>
</tr>
<tr>
<td>C+</td>
<td>2.15</td>
<td>2.49</td>
<td>65-69.99</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>1.85</td>
<td>2.14</td>
<td>60-64.99</td>
<td></td>
</tr>
<tr>
<td>C-</td>
<td>1.50</td>
<td>1.84</td>
<td>55-59.99</td>
<td></td>
</tr>
<tr>
<td>D+</td>
<td>1.15</td>
<td>1.49</td>
<td>50-54.99</td>
<td></td>
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<tr>
<td>D</td>
<td>0.50</td>
<td>1.14</td>
<td>45-49.99</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td>0.49</td>
<td>0-44.99</td>
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</tbody>
</table>

All final grades below B- are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements.

A student who receives a "C+" or lower in any one course will be required to withdraw regardless of their grade point average (GPA) unless the program recommends otherwise. If the program permits the student to retake a failed course, the second grade will replace the initial grade in the calculation of the GPA, and both grades will appear on the transcript.

The School of Architecture, Planning and Landscape will not permit the Flexible Grade Option (CG Grade) for any course offered by the School.

https://www.ucalgary.ca/pubs/calendar/current/f-1-3.html

**CACB Student Performance Criteria (for Architecture courses only)**

The following CACB Student Performance Criteria will be covered in this course at a primary level (other criteria will be covered at a secondary level): A1. Critical Thinking Skills; A6. Human Behaviour, B3. Site Design, and B4. Sustainable Design.

**Topic Areas & Detailed Class Schedule**

<table>
<thead>
<tr>
<th>Course Schedule Date</th>
<th>Topic</th>
<th>Assignments /Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td></td>
<td></td>
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<tr>
<td>Jan 2nd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00am – 1:00pm</td>
<td>Introduction to Lighting Design; Lighting perception; Physical characteristics of light; Lighting metrics; Design process: layering approach.</td>
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<tr>
<td></td>
<td><strong>Term Project: Assigned</strong></td>
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</tr>
<tr>
<td>Day 2</td>
<td>Quiz 1 (10 mins)</td>
<td>Quiz 1</td>
</tr>
<tr>
<td>Jan 3rd</td>
<td>5 layers approach (ctd); Task Illuminance; Lamps and Lighting equipment.</td>
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</tr>
<tr>
<td>9:00am – 1:00pm</td>
<td>Lighting calculations; [1hour] Exercise of lighting calculations (lumen method, point by point method.</td>
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</tr>
<tr>
<td>Day 3</td>
<td>Quiz 2 +3 (15 mins)</td>
<td>Quiz 2 +3</td>
</tr>
<tr>
<td>Jan 4th</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Activity</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>9:00am – 1:00pm</td>
<td>Lighting map process; Lighting specs and cutsheets; Lighting control and sustainability. Project tutorial: calculation + lighting maps Introduction to Daylighting (definition and benefits)</td>
<td></td>
</tr>
<tr>
<td>Day 4</td>
<td>Daylighting (Daylighting surfaces, Daylighting design); Shading devices (1 hour) Tutorial/computer lab using AGi32 (in-person, CBDL)</td>
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<tr>
<td>Jan 5&lt;sup&gt;th&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00am – 1:00pm</td>
<td></td>
<td></td>
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<tr>
<td>Day 5</td>
<td>AGi32 tutorial + assistance in class (in-person, CBDL)</td>
<td></td>
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<tr>
<td>Jan 6&lt;sup&gt;th&lt;/sup&gt;</td>
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<tr>
<td>9:00am – 1:00pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan 26&lt;sup&gt;th&lt;/sup&gt; Due – 11:59pm</td>
<td>Project Submission Term Project 70%</td>
<td></td>
</tr>
</tbody>
</table>

Indicate the following dates:
- If applicable, dates, times and locations of all approved class activities scheduled outside of regular course hours

**Students can continue after official class time**

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### Guidelines for Zoom Sessions

Zoom is a video conferencing program that will allow us to meet at specific times for a “live” video conference, so that we can have the opportunity to meet each other virtually and discuss relevant course topics as a learning community.

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor’s permission.

The use of video conferencing programs relies on participants to act ethically, honestly and with integrity; and in accordance with the principles of fairness, good faith, and respect (as per the Code of Conduct). When entering Zoom or other video conferencing sessions (such as MS Teams), you play a role in helping create an effective, safe and respectful learning environment. Please be mindful of how your behaviour in these sessions may affect others. Participants are required to use names officially associated with their UCID (legal or preferred names listed in the Student Centre) when engaging in these activities. Instructors/moderators can remove those whose names do not appear on class rosters. Non-
compliance may be investigated under relevant University of Calgary conduct policies (e.g Student Non-Academic Misconduct Policy). If participants have difficulties complying with this requirement, they should email the instructor of the class explaining why, so the instructor may consider whether to grant an exception, and on what terms. For more information on how to get the most out of your zoom sessions visit: https://elearn.ucalgary.ca/guidelines-for-zoom/

If you are unable to attend a Zoom session, please contact your instructor in advance to arrange an alternative activity for the missed session (e.g., to review the recorded session). Please be prepared, as best as you are able, to join class in a quiet space that will allow you to be fully present and engaged in Zoom sessions. Students will be advised by their instructor when they are expected to turn on their webcam (for group work, presentations, etc.).

The instructor may record online Zoom class sessions for the purposes of supporting student learning in this class – such as making the recording available for review of the session or for students who miss a session. Students will be advised before the instructor initiates a recording of a Zoom session. These recordings will be used to support student learning only and will not be shared or used for any other purpose.

University of Calgary Policies and Supports

ACADEMIC ACCOMMODATION

It is the student’s responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: https://www.ucalgary.ca/legal-services/university-policies-procedures/student-accommodation-policy

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf. Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to their instructor (contact information on first page above).

SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/.

ACADEMIC MISCONDUCT

Academic Misconduct refers to student behavior which compromises proper assessment of a student’s academic activities and includes: cheating; fabrication; falsification; plagiarism;
unauthorized assistance; failure to comply with an instructor’s expectations regarding conduct required of students completing academic assessments in their courses; and failure to comply with exam regulations applied by the Registrar.

For information on the Student Academic Misconduct Policy and Procedure please visit: https://www.ucalgary.ca/legal-services/university-policies-procedures/student-academic-misconduct-policy
Additional information is available on the Academic Integrity Website at https://ucalgary.ca/student-services/student-success/learning/academic-integrity.

COPYRIGHT LEGISLATION:
All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy) and requirements of the copyright act (https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html) to ensure they are aware of the consequences of unauthorised sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy (https://www.ucalgary.ca/pubs/calendar/current/k.html).

INSTRUCTOR INTELLECTUAL PROPERTY
Course materials created by instructors (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the instructor. These materials may NOT be reproduced, redistributed or copied without the explicit consent of the instructor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of extracts of these course materials with other students enrolled in the course at the same time may be allowed under fair dealing.

FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY
Student information will be collected in accordance with typical (or usual) classroom practice. Students’ assignments will be accessible only by the authorized course faculty. Private information related to the individual student is treated with the utmost regard by the faculty at the University of Calgary.

SEXUAL AND GENDER-BASED VIOLENCE POLICY
The University recognizes that all members of the University Community should be able to learn, work, teach and live in an environment where they are free from harassment, discrimination, and violence. The University of Calgary’s sexual violence policy guides us in how we respond to incidents of sexual violence, including supports available to those who have experienced or witnessed sexual violence, or those who are alleged to have committed sexual violence. It provides clear response procedures and timelines, defines complex concepts, and addresses incidents that occur off-campus in certain circumstances. Please see the policy available at
UNIVERSITY STUDENT APPEALS OFFICE
If a student has a concern about a grade that they have received, they should refer to Section I of the Undergraduate Calendar (https://www.ucalgary.ca/pubs/calendar/current/i-3.html) which describes how to have a grade reappraised. In addition, the student should refer to the SAPL’s Procedure for reappraisal of grades

OTHER IMPORTANT INFORMATION
Please visit the Registrar’s website at: https://www.ucalgary.ca/registrar/registration/course-outlines for additional important information on the following:

- Wellness and Mental Health Resources
- Student Success
- Student Ombuds Office
- Student Union (SU) Information
- Graduate Students’ Association (GSA) Information
- Emergency Evacuation/Assembly Points
- Safewalk