



**I. COURSE DESCRIPTION:**

At the end of this course students will be well versed in lighting techniques for rendering both in-game and for their portfolios. Fundamental topics will include lighting theory, 3 point lighting, composition and layout, render quality, and pipeline techniques to optimize workflows and efficiency.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

Upon successful completion of this course, the student will demonstrate the ability to:

1. Demonstrate the ability to effectively research, analyze, critique and discuss lighting in existing games.

Potential Elements of the Performance:

Describe the foundational elements of traditional light theory

Identify the key differences between traditional lights and digital lights as it pertains to industry standard 3d content creation applications

Identify and analyze important light types

Describe how colour can help set tone and mood in lighting

Define and describe the use of the following terms:

3 point lighting, key light, fill light, rim light, global illumination, radiosity, fall off, shadows

2. Demonstrate the ability to use digital lights and lightmaps for game art assets effectively.

Potential Elements of the Performance:

Describe the importance and uses of lights and lighting in video game art

Describe the importance and uses of light maps in video game art

Use an industry standard 3d content creation application to generate a 2nd UV channel for light maps

Define and describe the meaning of the following terms:

Lightmap, UV, resolution, baking, ambient occlusion, shadow map, emissive map, per-vertex lighting, per-pixel lighting

Demonstrate the ability to fully light and light map a 3d game asset in an industry standard 3d content creation application

3. Design, produce and light 3d game assets using an industry standard 3d game development applications.

Potential Elements of the Performance:

Develop and write a lighting plan

Demonstrate the ability to use all major identified light types in practice

Demonstrate the ability to integrate and light existing real-time game assets in an industry standard 3d game development application

4. Demonstrate the ability to effectively compose, light, render, apply light maps and apply and use post process effects to real-time 3d assets inside an industry standard 3d game development application.

Potential Elements of the Performance:

Demonstrate the ability to use light maps from within an industry standard game development application

Demonstrate the ability to bake lighting information from within an industry standard 3d game development application

Demonstrate the ability to add depth and effect to a game level using post process lighting effects

5. Render, export, and layout 3d game assets for a portfolio.

Potential Elements of the Performance:

Demonstrate the ability to use production proven pipeline techniques to assemble, produce render and export polished final portfolio pieces

Layout, publish and render a multi-page portfolio document

Present an initial portfolio and gain feedback for improvement.

Revise and finalize a multi-page portfolio document

### III. TOPICS:

1. The foundational elements of traditional light theory
2. The key differences between traditional lights and digital lights pertaining to industry standard 3d content creation and game development applications.
3. Creative exploration on how colour can help set tone and mood in lighting.
4. The importance and uses of lights and lighting in video game art.
5. The key differences and functions between industry standard 3d game development applications and 3d content creation applications pertaining to lighting video game art.
6. How to effectively render, export and publish polished game art for portfolios.

### IV. RECOMMENDED RESOURCES/TEXTS/MATERIALS:

**None**

Digital Lighting & Rendering 2nd Edition (2006)

**Paperback:** 432 pages

**Publisher:** New Riders Press; 2 edition (May 7 2006)

**Language:** English

**ISBN-10:** 0321316312

**ISBN-13:** 978-0321316318

### V. EVALUATION PROCESS/GRADING SYSTEM:

**Assignments/Projects = 100% of final grade**

Assignments/projects will constitute 100% of the student's final grade in this course. A missing assignment is equivalent to course objectives not achieved which results in an "F" (fail) grade for the assignment/project.

The following semester grades will be assigned to students:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 – 100%	4.00
A	80 – 89%	

B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

CR (Credit)	Credit for diploma requirements has been awarded.
S	Satisfactory achievement in field /clinical placement or non-graded subject area.
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

## VI. SPECIAL NOTES:

### Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

### **COURSE OUTLINE ADDENDUM**

1. Course Outline Amendments:  
The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.
2. Retention of Course Outlines:  
It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

3. Prior Learning Assessment:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

Substitute course information is available in the Registrar's office.

4. Accessibility Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Accessibility Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

5. Communication:

The College considers ***Desire2Learn (D2L)*** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of this Learning Management System (LMS) communication tool.

6. Plagiarism:

Students should refer to the definition of "academic dishonesty" in *Student Code of Conduct*. Students who engage in academic dishonesty will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

7. Tuition Default:

Students who have defaulted on the payment of tuition (tuition has not been paid in full, payments were not deferred or payment plan not honoured) as of the first week of November, will be removed from placement and clinical activities due to liability issues. This may result in loss of mandatory hours or incomplete course work. Sault College will not be responsible for incomplete hours or outcomes that are not achieved or any other academic requirement not met as of the result of tuition default. Students are encouraged to communicate with Financial Services with regard to the status of their tuition prior to this deadline to ensure that their financial status does not interfere with academic progress.

8. Student Portal:

The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations, in addition to announcements, news, academic calendar of events, class cancellations, your learning management system (LMS), and much more. Go to <https://my.saultcollege.ca>.