

**VFX 200****Visual Effects Lighting and Rendering**

Digital Visual Effects Outline - Term Fall 2012

Credits	3.0
Course Format	15 weeks, 4 lecture hours per week
Prerequisites	27 credits of Digital Visual Effects

**School of Motion Picture Arts Vision Statement**

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The School of Motion Picture Arts is dedicated to inspiring a new generation of independent Canadian filmmakers through the fostering and mentoring of emerging talent utilizing progressive learning environments and authentic production experiences, such that graduates make valued contributions to the global media culture.

**Digital Visual Effects Mission Statement**

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The program's primary mission is to provide a comprehensive artistic and technical education, preparing students in the art and science of visual effects production and encouraging critical reflection, collaboration and professionalism. Through innovative teaching, local and international partnerships and the highest standards of academic excellence, the visual effects program strives to ensure long-term student success within the film and television industries.

**General Course Objectives**

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In this course, students will learn advanced techniques for creating 3D elements for a visual effect shot; how to create complex materials, match on set lighting and how to utilize advanced rendering technology effectively in the creation of visual effects shots.

**Student Learning Outcomes**

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Upon successful completion of this course students will be able to

- identify and describe the key roles of lighting in a visual effects shot;
- identify and describe traditional and digital lighting terms;
- analyze lighting from source footage to reproduce digitally;
- plan, organize and light a 3D scene matching real world lighting conditions;
- identify and implement strategies for efficient lighting and rendering in a production;
- work collaboratively on group projects in a production hierarchy.

**Required Texts**

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Lanier, Lee. *Advanced Maya Texturing and Lighting Second Edition*, USA: Sybex, 2008.

Birn, Jeremy. *Digital Lighting and Rendering Second Edition*, USA: New Riders, 2006.

**Course Content****Week 1**

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- Defining visual effects lighting principles - physical set vs. virtual lighting
- Identifying light types and throw patterns
- Overview of real world lighting terminology and equipment
- Studio lighting terminology - key, fill, rim and kicker lights
- Lighting setups - one, two and three point lighting

**Week 2**

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- The importance of shadows and their effect on form and placement
- Creating a 3-point light rig in a digital environment

- Digital lighting terminology and use - point, spot, directional and area lights
- Modeling for lighting effects - curves, bevels
- *Assignment 1: 3-point lighting and rendering*

#### Week 3

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- Qualities of light
- Physical properties of light - direct, indirect and bounce
- Using light to create mood and visual interest
- Advanced lighting models - final gathering
- Using objects and shaders as lights
- *Assignment 1: 3-point lighting and rendering*

#### Week 4

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- Advanced lighting models - HDR lighting, physical sun and sky
- Creating HDR images from on-set photography
- The physics of light colour and temperature
- *Assignment 2: Advanced lighting models*

#### Week 5

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- Advanced lighting models - global illumination and caustics
- Advantages and disadvantages of global illumination renderers
- Choosing a lighting model based on production needs and time
- *Assignment 2: Advanced lighting models*

#### Week 6

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- The importance of shaders when lighting a scene
- Controlling lights - decay, specular and light linking
- Controlling reflections for studio renders
- The relationship between specular highlights and reflections
- Ambient occlusion
- *Assignment 3: Still life lighting and rendering*

#### Week 7

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- Lighting using gobos and masks
- Creating dynamic tonal range
- Using negative lights to control depth
- Raytrace shadows vs. depthmap shadows
- Controlling shadow colour and pattern
- *Assignment 3: Still life lighting and rendering*

#### Week 8

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- Creating atmosphere in lighting
- Lighting effects - volumetric lights, fog and glows
- *Assignment 4: Environment lighting and rendering*

#### Week 9

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- Lighting for time of day - nighttime, daytime and sun rise and sunset
- Colour temperature and time
- Light pools and shadows - creating depth in a scene
- Creating mood through lighting and effects
- *Assignment 4: Environment lighting and rendering*

## Week 10

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- Lighting a subject and background
- Catching the light - eyes and contours
- The effect of lighting on our perception of an individual
- *Final Assignment: Lighting a complex visual effects shot*

## Week 11

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- Baking light maps
- Breaking light into layers and passes for quality control
- Techniques to speed up render times
- *Final Assignment: Project review and critique for week 1*

## Week 12

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- Specialize lighting - Science fiction, fantasy, underwater
- *Final Assignment: Project review and critique for week 2*

## Week 13

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- *Final Assignment: Project review and critique for week 3*

## Week 14

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- *Final Assignment: Project review and critique for week 4*

## Week 15

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- *Final Assignment: Project presentation and review*

### Evaluation Profile

### Grading Profile

Participation/Attendance	10%	<i>Excellent</i>	<b>A+</b> 95-100	<b>A</b> 90-94	<b>A-</b> 85-89
Assignment 1	10%	<i>Good</i>	<b>B+</b> 80-84	<b>B</b> 75-79	<b>B-</b> 70-74
Assignment 2	10%	<i>Satisfactory</i>	<b>C+</b> 65-69	<b>C</b> 60-64	<b>C-</b> 55-59
Assignment 3	20%	<i>Minimal Pass</i>	<b>D</b> 50-54		
Assignment 4	20%	<i>Fail</i>	<b>F</b> 0-49		
<i>Final Assignment</i>	30%				
<b>Total</b>	<b>100%</b>				

*Note: Where applicable assignments have been divided into weekly tasks.*

### Operational Details

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Capilano University has policies on Academic Appeals (including appeal of final grades), Student Conduct, Cheating and Plagiarism, Academic Probation and other educational issues. These and other policies are available on the University website.

#### **Attendance**

Attendance will be taken daily and will form part of the final grade (See Evaluation Profile). When students are absent from class, they are still responsible for the material covered during their absence, including announcements, assigned readings and hand-outs.

#### **Punctuality**

Punctuality is essential. Students more than 15 minutes late for class, or who leave before the end of class, will be marked absent.

#### **Late Assignments**

All assignments must be delivered at the place and time specified by the instructor. Late assignments will only be accepted if prior approval for a late submission date has been given by the instructor.

### ***Missed Exams and Quizzes***

Missed exams and quizzes will be assigned a grade of zero. Students will be allowed to make up exams and quizzes only under the following conditions: if a doctor's certificate of illness is provided; if, in the case of the death of a close family member, a death certificate is provided; if prior approval of the instructor has been obtained.

### ***Cheating / Plagiarism***

Plagiarism is the presentation of another person's work or ideas as if they were one's own. Plagiarism is both dishonest and a rejection of the principles of scholarship. All students should familiarize themselves with the University Policy on Cheating and Plagiarism (See the University Calendar) as such behaviour can result in suspension from the University.

### ***Incomplete Grades***

Grades of incomplete (I) will be given if a doctor's certificate of illness (or death certificate in the case of the death of a close family member) is provided, or at the discretion of the instructor prior to the last class in the course. If the date for submission of an incomplete assignment is not met, the grade will automatically revert to the grade based on the student's achievement at that time.

### ***Failed courses***

Students who fail a visual effects course will not be permitted to register for visual effects courses in the following terms.

### ***English Usage***

All written work submitted must use good academic English and follow the guidelines provided in the Capilano University Guide to Writing Assignments (available from the University Bookstore). It is the responsibility of students to proof-read all their writing for any grammatical, spelling and stylistic errors. If students anticipate difficulties, help is available through the Writing Centre (details available from the Visual Effects Department).

### ***Studio / Filming Discipline***

Students must be dressed appropriately. Wet and cold weather requires waterproof and warm clothing. Students are required to wear work clothes for technical and production sessions. Clothing may be subjected to dirt, paint and dust. Sturdy shoes are a must. No food or beverages are allowed on set during production activities and during technical classes. Disruptive students will be asked to leave.

### ***Computer Course Requirements / Responsibilities***

You are expected to abide by the Statement of Appropriate Use of Information Technology Facilities and Services in any use of computers at the University. This statement can be obtained from your department, the Library, Computer Services or on the University website.

### ***Electronic Devices / Laptops***

Use of electronic devices is not allowed during class time, except at the discretion of the instructor.

### ***Computer Lab Usage***

No food or beverages are allowed in the University's computer labs at any time. At no time may students download any form of data from the Internet. Students must not abuse internet privileges by visiting inappropriate or illegal websites. Students are expected to abide by the Statement of Appropriate Use of Information Technology Facilities and Services in any use of computers at the University. This statement can be obtained from the department, the Library, Computer Services, or on the University website. Intentionally opening and/or altering other students' projects will not be tolerated. Respect for other students' work is of utmost importance. Offences regarding the above will result in the "0" mark in the participation grade, and restricted access to facilities.

### ***Participation***

Students will be evaluated on the quality, frequency and relevance of their comments, questions, observations and discussions of weekly course content; on their active engagement in in-class assignments; on their completion of required lab hours (if any) and on their work-in-progress.

## Visual Effects Standards for Professional Behaviour

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Professional behaviour is essential in employment situations in the film and television industry. Professional behaviour, combined with professional artistic and technical skills are the essential components that directors, producers, writers, actors, cinematographers, editors, agents, funders, broadcasters and distributors consider when deciding to build a team, hire, cast or green light a project. By acknowledging this, the Digital Visual Effects program fosters professional behaviour by evaluating each student according to these standards.

In all student group projects, professional behaviour forms part of the mark. Students will be given interim reports in order to adjust behaviour that needs improvement. These standards reflect the values of professionalism in the film and television industry and represent the expected standard of behaviour required for employment in the field.

Students are expected to demonstrate a professional attitude and behaviour towards their work, fellow-students, and their instructors. Students should demonstrate reliability, respect for and co-operation with colleagues. A willingness to work calmly and courteously under difficult conditions as well as a determination to achieve first-class work while meeting deadlines is necessary in this course. Students should have respect for equipment and systems, and a constructive response to criticism.

The desired behaviours are described below as “outcomes” which are followed by a list of criteria against which the student’s behaviour will be measured.

### Professional Behavioural Outcomes and Measurement Criteria

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#### 1. *Ability to work in peer groups.*

Measurement criteria - The student demonstrates:

- leadership by proposing goals and tasks, initiating discussion and keeping peers focused
- reinforcement of others by, verbally or non-verbally, encouraging and supporting others and giving recognition for contribution
- openness and acceptance of others’ ideas
- mediating by persuading members to analyze constructively differences of opinion, by searching for common ground and compromising one’s own opinion to completion of the task
- challenging by seeking information or elaboration from others to clarify their ideas
- summarizing, evaluating and closing by restating major points, helping to assess group process and decisions and by defining completion

#### 2. *Self-awareness, self-care, self-learning (self-motivation).*

Measurement criteria - The student demonstrates:

- a reflective practice which allows the student to be aware of his/her own competence in his/her position in a production
- an awareness of internal and external factors in one’s personal life and how they can affect professional performance
- the ability to identify, research and develop gaps in one’s own knowledge, skills and abilities
- the ability to accept, evaluate and respond appropriately to professional criticism

#### 3. *Ethical standards*

Measurement criteria - The student demonstrates:

- honesty
- sense of duty
- accountability
- integrity
- commitment
- respect for colleagues’ dignity
- respect for University property
- respect for the School of Motion Picture Arts

#### 4. *Good work habits*

- Measurement criteria - The student:

- shows up on time for meetings, presentations or shoots
- does not miss meetings, presentations or shoots
- dresses appropriately for on-location shooting
- creates effective and legible notes or paperwork
- shows appropriate adherence to the hierarchy on the set

#### *5. Time management*

Measurement criteria - The student:

- meets project deadlines
- is prepared for presentations and on-set shoots
- completes tasks on time

#### *6. Critical thinking and problem solving*

Measurement criteria - The student:

- applies an appropriate model to assess problems facing the task at hand
- clearly (and collaboratively if necessary) recommends appropriate choice of action
- can clearly defend outcomes in a professional and ethical manner

#### *7. Communication*

Measurement criteria - The student demonstrates:

- appropriate oral communication and presentation skills within the group
- written communication skills that are appropriate for the position
- professionalism with project presentations, critiques and reviews