

## **DC 274 IMAGE, OPTICS & CINEMATIC MOTION**

Section 601/601L; Spring 2013-2014

**Lecture Location:** CDM Center Room #214

**Day/Time:** M, 1:30-4:45 PM

**Lab Location:** CDM Center Room #634

**Day/Time:** W, 9:00-11:00 AM

**Instructor:** B. Rich

**E-mail:** brich3@cdm.depaul.edu

**Office Hours:** M, 5:00-6:30 and by appointment

**Prerequisites:** None

### **Course Description:**

Cinematography is the scientifically grounded discipline of making lighting and camera choices in order to record moving images. This course deals with the basic mathematics, physics, and photochemistry that underlies cinematography and motivates camera design and construction. While we have adopted motion images into our daily lives, most people are unaware of the complexities involved in its creation and distribution - the "language of motion" so to speak.

As opposed to photography where the story is one still image, cinematography must deal with objects in motion and the consequential time based considerations of shutter speed vs. frame rate, image resolution, camera motion, motion perception of the viewer and the display of the image(s) on large screens.

A student who masters the foundations of cinematography through a mixture of lectures, readings, exercises, and labs will be able to evaluate and understand how motion based recording choices affect perception of moving images they see everyday.

### **Course objectives:**

- To control the depiction of 3D space on a 2D surface through the use of optics
- To understand the nature of light and film/video latitude
- To control exposure
- To determine a visual "look" and achieve it through photochemical and/or digital means
- To understand how the relationship of resolution, frame rate, shutter speed and camera movement influence the viewer

### **Goals and Learning Outcomes:**

#### **Learning Domain Description:**

DC 274 – Image, Optics, and Cinematic Motion is included in the Liberal Studies program as a course with credit in the Scientific Inquiry domain. Courses in the Scientific Inquiry domain are designed to provide students with an opportunity to learn the methods of modern science and its impact on the world around us. Courses are designed to help students develop a more complete perspective about science and the scientific process, including: an understanding of the major principles guiding modern scientific thought; a comprehension of the varying approaches and aspects of science; an appreciation of the connection among the sciences; the fundamental role of mathematics in practicing science; an awareness of the roles and limitations of theories and models in interpreting, understanding, and predicting natural phenomena; and a realization of how these theories and models change or are supplanted as our knowledge increases.

## Goals and Learning Outcomes:

Below are listed the learning goals and outcomes for the Science Inquiry Domain. Most of this document conforms to the National Science Education Standards.

1. Students will understand the major principles guiding modern scientific thought. Students will demonstrate a mastery of the science content knowledge of their SID courses.
2. Students will know that science, technology, and math serve as mechanisms for inquiry into the nature of the universe. Students will:
  - a. Identify questions that can be answered through scientific investigations
  - b. Design and conduct a scientific investigation to test a scientific hypothesis
  - c. Use appropriate tools and techniques to gather, analyze, and interpret data to support or refute a scientific hypothesis
  - d. Develop descriptions, explanations, predictions, and models using evidence
  - e. Describe relationships between evidence and explanations using critical and logical thinking
  - f. Recognize and analyze alternative explanations and predictions
  - g. Communicate scientific procedures and explanations
  - h. Use mathematics in all aspects of scientific inquiry
3. Students will understand and appreciate the interrelationships among science, technology and math. Students will:
  - a. Use technology and mathematics to identify a problem or design a solution to a problem
  - b. Give examples of how science and technology inform and influence each other
4. Students will understand and appreciate the role of science in society and in their lives. Students will:
  - a. Provide examples of how science and technology impact our lives, and how social needs and concerns impact our development of technology and scientific investigation
  - b. Develop positive attitudes towards science, technology, and mathematics
  - c. Establish an ongoing experiential/service-learning interest in science, technology, and mathematics
5. Students will understand the nature of science, technology, and mathematics. Students will:
  - a. Provide examples of the abuse of science, including the representation of unfalsifiable claims as science and other forms of pseudoscience
  - b. Explain the strengths and limits of scientific inquiry
  - c. Explain the difference between evidence and inference, and the provisional nature of scientific explanations by providing examples of how our understanding of the workings of the world has changed in the past
  - d. Explain the difference between probability and certainty, and describe what is meant by uncertainty in the context of science, technology, and mathematics

## How Learning Outcomes will be met:

A mixture of Lectures and Lab work will allow the student to meet the desired learning outcomes. Assessment of learning will be made through a combination of quizzes (on lectures and reading material) and exams (midterm and final).

## Writing Expectations

Writing is integral for communicating ideas and progress in science, mathematics and technology. The form of writing in these disciplines is different from most other fields and includes, for example, mathematical equations, computer code, figures and graphs, lab reports and journals. Courses in the SI domain must include a writing component where that component takes on the form appropriate for that course (eg, *lab reports*, *technical reports*, etc.)

## How Writing Expectations Will Be Met

Each Lab will have a lab report in which students will document their findings. Several take-home quizzes will be given throughout the quarter. The quizzes require concise, accurate and clear written demonstrations of the students' knowledge and understanding of materials covered in class and the supplemental readings.

## Required Texts and Software:

Hand-outs as supplied by instructor  
Software will be provided as needed in the Lab  
Cinematography, Theory and Practice, 2nd edition\*  
Brown, Focal Press/Taylor & Francis Group, 2011  
ISBN: 978-0240812090 (\*recommended)  
Course Management System – D2L

## Changes to Syllabus:

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

## Grading:

Participation	10%
Reading Quizzes	10% (Q1: due Wk4, Q2: due Wk6, Q3: due Wk10)
Midterm	20% (Week 6 in Lab)
Assignments & in-class Labs	30%
Final Exam	30% (Week 11 in the Lecture Classroom)
Total	100%

All grading is final (assignments may not be resubmitted for new grades). All assignments are due the date they are assigned. Late assignments will be penalized 10% per week late. If an assignment is more than two weeks late, it is worth a maximum of 50% of its original point value. If you anticipate you will miss class, the assignment must be submitted the day it is due, unless the absence for the class is excused (documented illness, death in the family, etc.). Labs are due one week after they are assigned. If you miss a lab you must make it up on your time. Equipment is supplied during lab times for appropriate labs. You have the option to make up a single lab by writing a one and a half page paper about the subject the lab covered. Must be arranged with your instructor.

**Weekly Schedule** (subject to change):

Readings and handouts will be assigned throughout the quarter

**Class 1**

Lecture - A history of moving images & cameras

Lab – Intro to Lab, Procedures, D2L and ColWeb

**Class 2**

Lecture - The technical transformation of reality

Lab - Stop Motion Animation, connecting photography and cinematography

**Class 3**

Lecture - Exposure and Photography

Lab - Exposure lab, learning how to use a light meter

**Class 4**

Lecture - Lighting and Depth of Field

Lab – Depth of Field Lab, Explore Depth of Field Calculator and Simulator

**Class 5**

Lecture - Introducing Optics, Positive vs. Negative lenses

Lab – Lens Lab, Measuring Focal Length of Individual Lenses

**Class 6**

Review for Midterm and watch cinematography documentary

Lab – MIDTERM in Lab

**Class 7**

Lecture – Color Theory

Lab – Color Theory lab, experimenting with Additive and Subtractive Color Systems

**Class 8**

Lecture – Understanding the nature of light and lighting

Lab – Light Painting, creating pictures with slow shutter and light effects

**Class 9**

Lecture – Future of Cinematography and Review for Final Exam

Lab – Time Lapse Photography, Manipulating time with photography

**Class 10**

Review and Discuss the Future of Cinematography

Lab – Catch up lab, last chance to turn in assignments

Week 11 - FINAL EXAM

**Course Policies:**

In addition to DePaul University course policies (see student handbook), the following special policies will apply to this course:

**Attendance:** Classes will consist of lectures, screenings, discussion, and creative exercises. Attendance is mandatory. An absence is defined as not showing up for class, or showing up after class has started. Any absences will result in a reduction of the attendance/participation grade. Two absences result in the reduction of the final grade by one letter. Three absences result in an automatic F for the course.

**Assignments and Exercises:** Assignments and exercises must be completed by the due date as indicated in the syllabus. Late work will not be accepted without prior consent of the instructor.

**Examinations:** Students who do not take exams during the regularly scheduled time will receive a failing grade for the exam unless they have contacted the instructor in advance to arrange for a make-up exam. Make-up exams will be administered by the College according to its make-up exam schedule.

**Email:** Email is the primary means of communication between faculty and students enrolled in this course outside of class time. Students should be sure their email listed under "demographic information" at <http://campusconnect.depaul.edu> is correct. All emails to the instructor must contain a heading specific to the subject of the email.

**Course Lectures/Reading Assignments:** The assigned readings offer an opportunity for independent learning that supplements the lectures. Lectures will introduce material not available in the readings, and the readings will explore concepts not mentioned in class. The exam will cover both lecture and reading materials as specified by the instructor.

**College Policies:****Online Course Evaluations:**

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in [CampusConnect](#).

**Academic Integrity and Plagiarism:**

This course will be subject to the university's academic integrity policy. More information can be found at <http://academicintegrity.depaul.edu/>. If you have any questions be sure to consult with your professor.

**Academic Policies:**

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the [University Academic Calendar](#). Information on enrollment, withdrawal, grading and incompletes can be found at: [cdm.depaul.edu/enrollment](http://cdm.depaul.edu/enrollment).

**Students with Disabilities:**

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential.

To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at: [csd@depaul.edu](mailto:csd@depaul.edu).

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