

DC 274 IMAGE, OPTICS & CINEMATIC MOTION

Section 101/101L; Fall 2018-2019

Lecture Location: Lincoln Park Campus, Levan Hall 305
Day/Time: Tuesdays 1:00-4:15 PM

Instructor: John Klein
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Office Hours: Tuesdays 10:00-11:30AM at Student Center 332

Lab Location: Lincoln Park Campus, Student Center 363
Day/Time: Wednesdays 9:00-11:00 AM
Lab Instructor: Makaela Sage

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:
 1. Identify questions that can be answered through scientific investigations
 2. Design and conduct a scientific investigation to test a scientific hypothesis
 3. Use appropriate tools and techniques to gather, analyze, and interpret data to support or refute a scientific hypothesis
 4. Develop descriptions, explanations, predictions, and models using evidence
 5. Describe relationships between evidence and explanations using critical and logical thinking
 6. Recognize and analyze alternative explanations and predictions
 7. Communicate scientific procedures and explanations
 8. Use mathematics in all aspects of scientific inquiry
3. Students will understand and appreciate the interrelationships among science, technology and math. Students will:
 1. Use technology and mathematics to identify a problem or design a solution to a problem
 2. 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:
 1. Provide examples of how science and technology impact our lives, and how social needs and concerns impact our development of technology and scientific investigation
 2. Develop positive attitudes towards science, technology, and mathematics
 3. 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:
 1. Provide examples of the abuse of science, including the representation of unfalsifiable claims as science and other forms of pseudoscience
 2. Explain the strengths and limits of scientific inquiry
 3. 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
 4. 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 or assignment 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/Recommended Texts and Software:

- Hand-outs as supplied by instructor
- Software will be provided as needed in the Lab
- Course Management System – D2L
- Access to DSLR (or equivalent camera – ask instructor) for in-class exercises
The TA will have 4-5 cameras available for group use in labs
If anyone wishes to bring a camera for these labs, it will be helpful
- **There is no textbook for this class. These are *recommended* if you want to further your own knowledge:**

Cinematography: Theory and Practice, 3rd edition
Brown, Focal Press/Taylor & Francis Group, 2016
ISBN: 978-0240-812090

The Visual Story: Creating the Visual Structure of Film, TV and Digital Media, 2nd edition
Block, Focal Press/Taylor & Francis Group, 2008
ISBN: 978-0240-807799

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 in D2L and sent via email.

Grading: Scale – A: 100-93, A-: 92-90, B+: 89-87, B: 86-83, B-: 82-80,
C+: 79-77, C: 76-73, C-: 72-70, D+: 69-67, D: 66-60, F: 59-0

Class Attendance	10%
Lab Attendance	5%
Open-Note Quizzes	15%
Midterm	15%
Lab Assignments	30%
Final Exam	25%

All grading is final. Quizzes will not be accepted after the due date as we go over answers in class. All assignments are due the date they are assigned. Assignments may not be resubmitted for new grades. 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, instead of doing the actual lab on your own time, writing a three-page paper about the subject the lab covered and a film that discusses these topics. *In either case, this must be arranged with the lab instructor.*

Weekly Schedule (subject to change):

Readings, quizzes, and handouts will be assigned throughout the quarter.

Week 1

Wed 9/5 **NO LAB** – first class next Tuesday
Assignment: What's your favorite guilty pleasure movie?

Week 2

Tues 9/11 Lecture – History of Cinematography and Photography
Wed 9/12 Lab – Intro, D2L, Camera, Stop Motion Animation: photos & cinema

Week 3

Tues 9/18 Lecture – Semiotics, Perspective and Illusions
Wed 9/19 Lab – Stereoscopy/3D Video

Week 4

Tues 9/25 Lecture – Color Science and Theory
Wed 9/26 Lab – Color Science: analyzing the spectrum, additive/subtractive light
Assignment: Quiz #1 on D2L

Week 5

Tues 10/2 Lecture – The Exposure Triangle (*Quiz #1 DUE*)
Wed 10/3 Lab – Light Painting: Creating pictures with slow shutter and light FX

Week 6

Tues 10/9 Lecture – Exposure in Practice: Motion, Time Lapse – Midterm review
Wed 10/10 **MIDTERM** during lab session

Week 7

Tues 10/16 Lecture – Lighting and Contrast Curves
Wed 10/17 Lab – Three-Point Lighting, White Balance, and Light Metering
Assignment: Quiz #2 on D2L

Week 8

Tues 10/23 Lecture – Optics: Positive and Negative Lenses (*Quiz #2 DUE*)
Wed 10/24 Lab – Lenses: Measuring Focal Length and F-stop

Week 9

Tues 10/30 Lecture – Depth of Field
Wed 10/31 Lab – Depth of Field Calculator and Photography Tests

Week 10

Tues 11/6 Lecture – Digital Sensors, Resolution, and Color Space (*Quiz #3 Assigned*)
Wed 11/7 Lab – Time Lapses and Special Motion Options
Assignment: Quiz #3 on D2L, Watch *Side By Side* (Vimeo)

Week 11

Tues 11/13 Lecture – Visual Design: Rules, Ratios, and Continuity; Final Exam Review (*Quiz #3 DUE*)
Wed 11/14 **NO LAB** – may schedule makeups with TA if needed
Assignment: STUDY!

FINAL EXAM – Tuesday 11/20 from 2:30-4:45pm – ATTENDANCE IS MANDATORY!

Course Policies:

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

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. Some guidelines for your emails:

- Always include the course # in your subject line: DC274-101
- Be clear and concise in your subject line; ex: "DC274-101 question about assignment X"
- Don't reply to class-wide email unless it pertains specifically to the subject of that email
- To that end, begin a new email thread for any new question, notification, etc.
- If you don't get a response within 1 business day, please resend as there may be an email issue

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. Three absences can result in an automatic F for the course.

Assignments and Exercises: See criteria under Grading.

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.

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. Exams/Quizzes will cover both lecture and reading materials as specified by the instructor.

Class Participation: Student participation will be measured in several ways. Students are encouraged to ask questions and offer comments relevant to the class topics. Questions will be posed to the class; students are encouraged to offer answers, insights and best guesses.

Attitude: A professional and academic attitude is expected throughout this course. Measurable examples of non-academic or unprofessional attitude include: talking to others when someone is speaking, mocking another's opinion, cell phones ringing/vibrating, emailing, etc. Out of respect to fellow students and the professor, texting and other forms of technological socializing is not allowable in class. If any issues arise a student may be asked to leave the classroom.

Cell Phones/On Call: If you bring a cell phone to class, it must be off or set to a silent mode. Should you need to answer a call during class, leave the room in an undistruptive manner. If you are required to be on call as part of your job, please advise me at the start of the course.

Civil Discourse: DePaul University is a community that thrives on open discourse that challenges students, both intellectually and personally, to be [Socially Responsible Leaders](#). It is the expectation that all dialogue in this course is civil and respectful of the dignity of each student. Any instances of disrespect or hostility can jeopardize a student's ability to be successful in the course.

DePaul University 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](#) on computers and/or mobile devices. There will be time set aside during class to complete these evaluations.

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 under [Enrollment Policies](#).

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.

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THANK YOU!