



# PHYS 101 Light and Visual Phenomena

The Combination *PHYS 101/121* has no prerequisites.  
You can use this combination as a lab science or science perspectives. Pick One.

Instructor: Michael Ruiz, Ph.D.; Text: Online. **You need Internet access with Google Chrome.**  
The textbook is free and at our website (a \$250+ Savings). ruiz@unca.edu

## January 2021

Monday	Tuesday	Wednesday	Thursday	Friday
				1
4	5	6	7	8
11	12 A. Reflection	13	14 B. Refraction	15 Last Day to Drop/Add
18 	19 C. E&M Waves	20	21 D. Light and Matter	22
25	26 E. EM Spectrum	27	28 F. Light and Life	29




Website: <https://www.opus.unca.edu/light/>

Faster to just Google: **light unca** (We should be the first search result).

Our online course website was a top science/technology news story on *CNN* in 2002.



## February 2021

Monday	Tuesday	Wednesday	Thursday	Friday
1 	2 G. Color	3	4 H. Color Mixing	5
8	9 I. Shadows	10	11 J. Plane Mirrors	12
15 Exam 1 (A-G) Taken in Lab	16 K. Spherical Mirrors	17	18 L. Lenses	19
22	23 M. Dispersion and Aberrations	24	25 N. Atmospheric Effects	26




### Class Responsibilities and Resources

1. **Online Text:** <http://www.uncalight.com> Assignments are done online. Note the due dates.
2. **Notes:** You get access to “Power Notes,” guided sheets you can fill in class.
3. **Homework:** Due 11:59 pm Friday night. You are on your own if you do it after 12 pm Thurs.
4. **Projects:** There are two projects you work on over a period of weeks. Know these due dates.
5. **Office Hours:** RRO 114 or 124D: T & R 11:15-11:45, W 10:45-11:45, 1:00-2:00 until April 27.
6. **The Forum:** Help your peers out with assignments on our 24/7 online discussion forum.
7. **Attendance (50):** You can miss 2 classes, but there is a bonus (10) for attending all classes.  
**You may see me to make up the bonus classes immediately after missing a class.**
8. **Official UNCA Travel:** See me 2 weeks prior to make arrangements for a missed class.
9. **Religious Observances:** See me 2 weeks prior to make arrangements for the Observance.
10. **Extra Credit:** Do questions in the text up until April 27. See Bonus on page March.



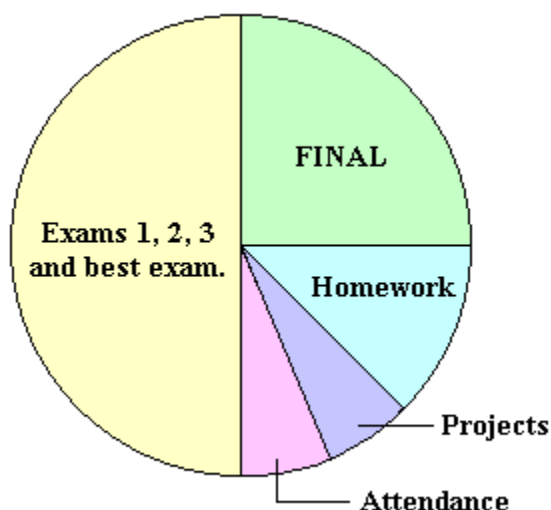
## March 2021

Monday	Tuesday	Wednesday	Thursday	Friday
1	2 O. Cameras	3 Last Day to Withdraw is March 5*	4 P. Stops and Exposure	5 First Web Project Due
8 Spring Break	9 Spring Break	10 Spring Break	11 Spring Break	12 Spring Break
15	16 Q. Camera Lenses	17 	18 R1. Film	19
22 Exam 2 (H-N) Taken in Lab	23 R2. Film and Sensors	24	25 S1. The Eye	26
29	30 S2. Eye Glasses	31		



**\*Always check the Registrar Website as this date is set by the Registrar!**

**Grading** (This course typically has a class grade point average in the 2.6 to 2.8 range).






100	Exam 1 aka E1
100	Exam 2 aka E2
100	Exam 3 aka E3
200	Final aka FN
100	Best Exam Percentage
100	Web Homework (Due Weekly)
50	Two Web Projects (25 points each)
50	Minus 5 per miss after 2 free misses
<b>800</b>	<b>Total</b> (No ± Grades, See Below)

- A (740-800) - apply knowledge in new areas
- B (660-739) - apply knowledge in familiar areas
- C (580-659) - apply knowledge in easy areas
- D (500-579) - misconceptions in principles
- F (0-499) - serious gaps in understanding

**Bonus and Borderline:** If you attend all classes you get a 10-point bonus. If your grade is borderline, I will consider helping you if you come to class, pay attention, put in effort with homework and extra credit. For very close cases I will also look for a strong Final.

## April 2021

Monday	Tuesday	Wednesday	Thursday	Friday
			1 T. Perception	2
5 	6 U. Color Perception	7	8 V. Cognitive Illusions	9
12 Exam 3 (O-U) Taken in Lab	13 W. Optical Instruments	14	15 X. Lumines- cence	16
19	20 UGR Symposium No Day Class	21 	22 Y. Einstein and Light	23 Second Web Project Due
26 Last Day for Extra Credit	27 Z. Quantum Optics	28 Reading Day	29 FN (A-Z), LE2 Open Time 11:30 - 4:30	30 FN (A-Z), LE2 Open Time 11:30 - 4:30

### How to Succeed in Light

**1. Time.** Reserve at least 2 hours (reading, study, web apps, multimedia, assignments, etc.) for every hour of class. This time is at least 6 hours per week in addition to class time. If you are a full-time student and have a job, you should NOT work more than 15-20 hours per week.

**2. Instructor.** Drop by weekly during office hours. If you have any problems, come talk to me.

**3. Peers.** Ask your classmates for help, e.g., at the peer *Forum* on our website and offer help to others. You master the material when you are challenged to explain it to someone else.

Come to every class and take notes. Do not fall behind! Science classes build on previous classes. Use our “Exam Practice”, where you see actual exam questions. If you spend lots of time with “Exam Practice” you will virtually see all the possible questions that can be on your exams. But the best advice is to first carefully study the solutions to old exams.

UNCA is committed to making courses accessible to persons with documented special learning needs. To apply, register with the Office of Academic Accessibility and then see me ASAP.

**Make-Up Classes.** See me within a week if you would like to make up a missed class.

**The Friday Rule:** If you wait until the due date (Friday), you are completely on your own, no matter what problems arise, including computer difficulties.

## May 2021



Monday	Tuesday	Wednesday	Thursday	Friday
3 FN (A-Z), LE2 Open Time 8:00 - 2:30	4 FN (A-Z), LE2 Open Time 8:00 - 11:00	5 FN (A-Z), LE2 Open Time 11:30 - 4:30	6	7 FN (A-Z), LE2 Open Time 11:30 - 4:30
10	11	12 	13	14
17	18	19	20	21
24	25 	26	27	28
31 				

**RRO 125:** T-R 1:20-2:35 pm.

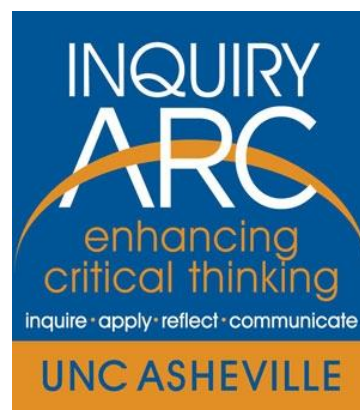
For adverse weather consult your email, the UNCA Home Page, or the radio.

### Art in PHYS 101, I-ARC, and CNN



We have chosen a featured artist for the course: Élisabeth Louise Vigée Le Brun (1755-1842). Our website includes a special gallery of 60 of her portraits.

The objective of *Light and Visual Phenomena* is a liberal-arts science course for non-majors. It includes the biology of the eye, medical prescription of eyeglasses, psychology of perception, optical illusions, photography, magic, color in art, and inventions. You will appreciate light and its many applications and expressions in the world.



We follow the UNCA I-ARC model: Inquiry (understanding the question or problem at hand), Apply (using the appropriate principle, law, or formula), Reflect (reflecting on the answer to verify its validity), and Communicate (finally giving the answer with confidence with proper units and significant figures).

Our course was a top science/technology news story on CNN: *E-Book Learning*, which aired on *NEXT@CNN*, August 31, 2002. You can bookmark <http://www.opus.unca.edu/light/>

## UNCA-WIDE Important Information

**Title IX and Sexual Misconduct.** [Note that the legal term “Responsible Employee” appearing below means “Mandatory Reporter.”] Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds. The act is intended to eliminate sex discrimination in education. Title IX covers discrimination in programs, admissions, activities, and student-to-student sexual harassment, sexual exploitation, interpersonal violence, non-consensual touching, and sexual assault. UNC Asheville’s policy against sexual misconduct extends not only to employees of the university but to students as well. If you encounter unlawful sexual misconduct behavior or gender based discrimination, please talk to any University Responsible Employee (Mandatory Reporter). **All University employees (except Health and Counseling center employees and employed Campus Ministers are considered Responsible Employees (Mandatory Reporters) and are mandated to report incidents to the Title IX Office.**

The Title IX office consists of [Dr. Jill Moffitt](#), UNC Asheville’s Title IX Administrator, who can be reached at [\(828\)232-5658](tel:8282325658). Individuals may also report anonymously at <https://police.unca.edu/anonymous-report>. For more information regarding Title IX and resources please visit <https://titleix.unca.edu/>.

**UNCA Chief of Police:** [Chief Eric Boyce](#).

**Accommodations and Academic Accessibility.** UNC Asheville values the diversity of our student body as a strength as a critical component of our dynamics community. Students with documented special needs may require accommodations due to facilities, course design, technology used, or other campus resources. Students who experience a barrier to full access to this class should let the professor know and/or make an appointment to at the [Office of Academic Accessibility](#) as soon as possible at the beginning of the semester. All information will remain confidential. For more specific information please contact the Office of Academic Accessibility at [\(828\)232-5050](tel:8282325050) or [academicaccess@unca.edu](mailto:academicaccess@unca.edu), visit them in the [OneStop Student Services Center](#) or at their website <https://oaa.unca.edu/>.

**Early Alerts.** Faculty at UNCA are encouraged to use the university's Early Alert system to communicate with students about their progress in courses. When a faculty member submits an early alert that expresses a concern, the student receives an email from OneStop, completing a form as part of the process. It is in the student's best interest to complete the EA process quickly, as students who do so are more likely to earn credit for the course. Failure to complete the EA process (including meeting with the professor and submitting the required form to OneStop) will result in a registration hold; the student won't be able to register for the next semester's classes until they have met with the faculty member and turned in the required form. Questions about the EA system can be directed to [Anne Marie Roberts](#) ([amrober1@unca.edu](mailto:amrober1@unca.edu)) in OneStop.

**Team to Help Students Stuggling:** <https://dos.unca.edu/concerned-about-student>

**Academic Dishonesty.** Note that any violations of academic dishonesty (cheating, signing someone else's quiz sheet, etc.) must be reported to the Provost's Office.