



THE UNIVERSITY OF
ALABAMA AT BIRMINGHAM

School of Optometry – Vision Science Graduate Program

COURSE NUMBER and TITLE, SEMESTER AND YEAR: COURSE DESCRIPTION:	<u>VIS 702 Techniques in Vision Science, Fall Semester 2022</u> This is an introductory course to the Vision Science Graduate program. The course is intended to supplement program curriculum by providing additional information that will help the student to integrate into the graduate program and to be successful in achieving their goals. The other main goal is to provide an overview of some of the fundamental technologies used in vision research laboratories.
COURSE OVERVIEW:	Course participation is essential as some aspects of this course will set the foundation for each students goals and needs as a graduate student. The Individual Development Plan that will be initiated in this course will help to set the path for your graduate studies and help to establish a successful career path beyond graduate school.
MEETING DAYS, TIMES: LOCATION: COURSE DIRECTOR:	August 19 through December 9, Fridays 10 am -12 pm VH-G073 and labs in VH 375 and VH370. Steven Pittler, PhD Professor of Optometry & Vision Science, Director, Vision Science Research Center, VH 375B, Phone: 934-6744, cell phone: 205-612-9720; Email: pittler@uab.edu
OFFICE HOURS: METHOD OF CONTACT TEACHING ASSISTANT REQUIRED TEXT/MATERIALS/ELECTRONICS: RECOMMENDED TEXT TEXT/MATERIALS/ELECTRONICS:	Open, however best to e-mail for appt. but drop by is OK E-mail Mai Nguyen (mnnguyen@uab.edu) A textbook is not required for this course There are no purchased materials requirement for this course. Basic biochemistry text if needed for remediation. Personal laptops will be helpful. Published works, lectures and links will be provided.
LEARNING OBJECTIVES:	Upon completion of this course, students will: 1) Be able to use their self-created IDPs to build a solid foundation for successful graduate studies. 2) Have an awareness of gaps in knowledge that need to be remediated. 3) Have knowledge of UAB resources and techniques used in vision sciences available to support their research.

ATTENDANCE: Attendance at each lecture is expected. If an absence is unavoidable, let Dr. Pittler know preferably 1 day before the planned absence. In an emergency, the only priority is your personal safety and health.

GRADING SYSTEM:

This course will be graded pass/fail. Determination of pass or fail will be based on participation in class and attendance.

REMEDICATION POLICIES:

If remediation is needed, the instructor will confer with the Director of Graduate Studies to determine the best course of action for effective remediation.

COURSE OUTLINE AND CALENDAR

Date	Topic	Assignment
Aug. 19	Introduction – Who are you and what do you want? (faculty list; library resources); What is an IDP and how do I generate one?	IDP
Aug. 26	PCR and related technologies (RT-PCR, product analysis)	
	PCR lab part 1: Set-up and Execution of PCR	
Sept. 2	Gene editing (crispr-Cas9, zinc-finger, meganuclease) and knock-in, knockout technology	
	PCR lab part 2: Verification of PCR product	
Sept. 9	Bioinformatics (transcriptome, whole genome, whole exome, RNAseq, NanoString, proteomics).	
Sept. 16	Protein analysis (PAGE, Western analysis, antibodies, HPLC)	
Sept. 23	Cell culture (live cells) and cell sorting.	
Sept. 30	Retinal whole mount (PNA, WGA, lectin, antibody) and section immunohistochemistry	Quiz 1
Oct. 7	ERG and focal ERG	
Oct. 14	Optical coherence tomography, fundus photography and instrument attachments	
	OCT lab: Use of Bioptigen OCT in the Ocular Phenotyping Core	
Oct. 21	Nucleic acid sequencing and post-translational modification	
Oct. 28	Microscopy and image analysis (TEM, SEM, Cryo-EM, colocalization)	
	Microscopy lab: Use of light, dissecting, Zeiss Axioplan 2, and Nikon AX-R Confocal microscopes in the Molecular & Cellular Analysis Core	
Nov. 4	UAB websites worth knowing and even visiting (AKA How do I find...?)	
Nov. 11	VSRC/P30 Core facilities (AKA Core resources and services that will help your research)	
Nov. 18	Course review, Q & A	Quiz 2
Nov. 25	No class for Thanksgiving break	
Dec. 2	Wrap up	
Dec. 9	No final exam.	

COVID 19 Update:

UAB is very concerned for your continued health and safety. Please consult the Students section of [UAB United](#) for up-to-date guidance, because the following information is subject to change as circumstances require. We strongly urge you to be fully vaccinated, however this is not medical advice and you should consult with your physician to make the most informed decision. [Here is information on the safety of vaccines and on how to get vaccinated at UAB.](#) Let's all stay safe.

ACADEMIC MISCONDUCT POLICY:

UABSO expects all members of its academic community to function according to the highest ethical and professional standards. Academic dishonesty and misconduct include, but is not limited to, acts of abetting, cheating, plagiarism, fabrication, and misrepresentation. Any violations of this policy will be reported to the graduate school and handled according to university and school policies. Academic dishonesty and misconduct will not be tolerated and will result in failure of the course.

DISABILITY SUPPORT SERVICES:

UAB is committed to providing an accessible learning experience for all students. If you are a student with a disability that qualifies under the Americans with Disabilities Act (ADA) and/or Section 504 of the Rehabilitation Act, and you require accommodations, please contact Disability Support Services for information on accommodations, registration and procedures. Requests for reasonable accommodations involve an interactive process and consist of a collaborative effort among the student, DSS, faculty and staff. If you are registered with Disability Support Services, please contact me to discuss accommodations that may be necessary in this course. If you have a disability but have not contacted Disability Support Services, please call 934-4205 or visit <http://www.uab.edu/dss>."

"If you are registered with Disability Support Services, **it is the student's responsibility to contact the course instructor** to discuss the accommodations that may be necessary in this course. Students with disabilities must be registered with DSS and provide an accommodation request letter before receiving academic adjustments. Reasonable and timely notification of accommodations for the course is encouraged and provided to the course instructor so that the accommodations can be arranged. Additional information about the process is available on the UAB [website](#)."

STUDENT EVALUATION OF TEACHING:

At the end of the course, students will be given the opportunity to offer constructive feedback on content, delivery, organization, and other aspects of this course. Instructors only receive de-identified feedback. The intent of the evaluation process is to improve the course for future students. The evaluation provides active student participation in the governance of UABSO and the improvement of the graduate curriculum.

WEATHER OR OTHER EMERGENCIES:

During an actual emergency or severe weather situation, this site www.uab.edu/emergency will be the official source of UAB information. In addition, the UAB Emergency Management Team will use B-ALERT, the university's emergency notification system, to communicate through voice calls, SMS text messages and e-mails to the entire campus.

If class is cancelled because of severe weather, class will be made up on an alternative day, and assignment due dates will be adjusted accordingly.

To register for B-ALERT or update your existing information in the system, go to www.uab.edu/balert. All registration is connected to your BlazerID.

TITLE IX:

“The University of Alabama at Birmingham is committed to providing an environment that is free of bias, discrimination, and harassment. If you have been the victim of Sexual discrimination, harassment, misconduct, or assault we encourage you to report the incident. UAB provides several avenues for reporting. For more information about Title IX, policy, reporting, protections, resources and supports, please visit [UAB’s Title IX Policy](#) and [UAB’s Equal Opportunity and Anti-Harassment Policy](#).”

UAB STUDENT COUNSELING SERVICES:

“Student Counseling Services offers students of all backgrounds, races, religious beliefs, sexual orientations, gender identities, abilities, ethnicities, and cultures a safe place to discuss and resolve issues that interfere with personal and academic goals. Student Counseling Services recognizes and honors the complex intersectionality of all aspects of a person’s identity and presenting concerns. All enrolled UAB students are eligible for counseling. Students can schedule an appointment by phone, (205) 934-5816, or inperson at the Student Health and Wellness Center at the LRC, 1714 9th Avenue South. Students should be prepared to tell the intake coordinator why they are seeking counseling.”
<https://www.uab.edu/students/counseling/>

Several UAB-wide policies apply to students. The following policies or policy summaries are included on the UAB Policies page of the graduate catalog. Students are expected to comply with the [UAB Student Policies](#) located with One Stop.

Intellectual Property:

Any material related to the course (slides, forms, tests, manuals, results, stats etc.) is restricted information owned by the School of Optometry and the instructors generating the material. Any posting, anywhere, of material related to the course even if modified as content or format, initiated by a student requires written permission from the instructor. Failure to obtain such permission will be considered a breach of the student academic conduct with possible disciplinary consequences.