

 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>NEW COURSE PROPOSAL</b> <b>Undergraduate Programs</b>		UUPC Approval <u>11/7/2022</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department Biological Science/Psychology College CESCOS and WHC (To obtain a course number, contact <a href="mailto:erudolph@fau.edu">erudolph@fau.edu</a> )		
Prefix <b>PSB</b> Number <b>4114</b>	(L = Lab Course; C = Combined Lecture/Lab; add if appropriate) <b>Lab Code</b>	<b>Type of Course</b> <input type="text" value="Lecture"/>	<b>Course Title</b> Honors Advanced Life Science Technologies
<b>Credits</b> (Review Provost Memorandum) <b>1</b>	<b>Grading</b> (Select One Option) Regular <input type="radio"/> Sat/UnSat <input checked="" type="radio"/>	<b>Course Description</b> (Syllabus must be attached; see <a href="#">Template</a> and <a href="#">Guidelines</a> ) Students are exposed to current and historic research technologies using specialized instrumentation, including advanced light microscopy, electron microscopy, CRISPR-Cas9, etc. Students will learn how data are collected and analyzed using the various techniques.	
<b>Effective Date</b> (TERM & YEAR) Spring 2023	<b>Prerequisites, with minimum grade*</b> Instructor Permission		<b>Corequisites</b> None
		<b>Registration Controls</b> (Major, College, Level) None	
<b>*Default minimum passing grade is D-. Prereqs., Coreqs. &amp; Reg. Controls are enforced for all sections of course</b>			
<b>WAC/Gordon Rule Course</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to proposal. See <a href="#">WAC Guidelines</a> .		<b>Intellectual Foundations Program (General Education) Requirement</b> (Select One Option) None General Education criteria must be indicated in the syllabus and approval attached to the proposal. See <a href="#">GE Guidelines</a> .	
<b>Minimum qualifications to teach course</b> Terminal degree in biology, psychology, neuroscience or in a related cognate			
<b>Faculty Contact/Email/Phone</b> Bolton/Merritt/jmerritt@fau.edu/9-8815		<b>List/Attach comments from departments affected by new course</b> COS: Bio, Psych, Neuro/Behavior; WHC: Bio, Bio/Chem, Neuro, Psych	
<b>Approved by</b> Department Chair <u>Robin Vallacher</u> <u>Sarah L. Patton</u> College Curriculum Chair <u>[Signature]</u> College Dean <u>[Signature]</u> UUPC Chair <u>Thlynn Williams</u> Undergraduate Studies Dean <u>Dan Meeroff</u> UFS President _____ Provost _____		<b>Date</b> 9-21-22 9/27/22 10/20/22 11/7/2022 11/7/2022	

Email this form and syllabus to [mianning@fau.edu](mailto:mianning@fau.edu) seven business days before the UUPC meeting.



**PSB 4114**  
**Honors Advanced Life Science Technologies**

W 16:00– 17:30  
1 credit

Spring 2023  
Drs. Schumacher, Bolton, and Merritt  
Office: Zoom

Office hours: by request  
Telephone: 561-799-8815 (Merritt)  
Email: [jmerrit8@fau.edu](mailto:jmerrit8@fau.edu)  
[ice.schumacher@mpfi.org](mailto:ice.schumacher@mpfi.org)

## **Course Link/Location**

<https://mpfi.zoom.us/j/91561106944>

Password: 676270

## **Course Description**

Overall, the goal of this class is to introduce incoming FAU Max Planck Honors Program (MPHP) participants to the MPHP Program. The three major components of this are to introduce students to a variety of neuroscience faculty members, to create an intellectual community among the students, and to emphasize specific (research and related) responsibilities that undergraduates typically will not encounter. It is expected that program participants will enroll in this course during their second semester as participants within the MPHP.

## **Honors Statement**

This course is conceived as part of the University Upper-Division Honors Program curriculum servicing both College of Science and Wilkes Honors College students. As such, it is part of the required honors credits needed to complete the Honors in the Major requirements. This course is designed to provide Upper-Division Honors students with exposure and training on advanced technologies within neuroscience that are integral to the cutting-edge science being conducted in the tri-institute area.

## **Instructional Method**

Class sessions will be recorded live, and students will view class sessions remotely in Zoom (link provided in Canvas). Attendance is mandatory.

## **Prerequisites/Corequisites**

Permission of instructor

## Course Objectives/Student Learning Outcomes

- Engage in 11-13 didactic neuroscience lectures to teach fundamentals of modern neuroscience in the context of advanced scientific technologies.
- Engage with members of the local scientific community who visit class and lecture on their areas of expertise
- Engage with faculty and trainees on new techniques used in research.
- Each class may have an impromptu individual speaker, or a tour of a different laboratory facility to expand the experience of the student broadening their access.
- Classes may have recommended reading material to promote better comprehension of the lecture material

## Course Evaluation Method

This course is a Max Planck Honors Program (MPHP) course. Max Planck Honors Program courses have been designed as part of a unique collaborative effort between the Schmidt College of Science, the Wilkes Honors College, and the Max Planck Florida Institute for Neuroscience. They offer its students an exclusive and enriching opportunity to develop neuroscientific knowledge, formulate questions, and communicate their research via oral and written deliveries while learning and engaging with a community of cutting-edge research scholars and Nobel laureates.

Attendance and class participation will determine the final grade. Attendance is mandatory. Students are permitted to miss two classes. Starting with the third absence, students will be required to provide a doctor's note to receive a satisfactory completion of the course.

## Course Grading Scale

*Satisfactory*: adequate attendance and participation; *Unsatisfactory*: insufficient attendance and participation

## Policy on Makeup Tests, Late Work, and Incompletes (if applicable)

Reasonable accommodation will be made for students participating in a religious observance. Also, note that grades of Incomplete ("I") are reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances.

## Attendance Policy

*Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.*

## Counseling and Psychological Services (CAPS) Center

*Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>*

## Disability Policy

*In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at [www.fau.edu/sas/](http://www.fau.edu/sas/).*

## Code of Academic Integrity

*Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).*

## Course Topical Outline

FAU MPHP Honors Advanced Life Science Technologies - Schedule for Spring 2022		
Schedule	Topics	Assignment/Readings
Jan 13	Introduction: overview of syllabus and Max Planck Academy	Optics problem set 1
Jan 20	<i>Imaging Systems I: Optics: technical and physical considerations for imaging. (Drs. Long Yan, and Nicolai Urban)</i>	Optics problem set 1 (cont.)
Jan 27	<i>Imaging II: Principles of Confocal and 2P (Dr. Long Yan)</i>	Handouts and selected articles
Feb 3	<i>Imaging III: Advanced Light Microscopy Applications: confocal to super-resolution microscopy (Dr. Nicolai Urban)</i>	Handouts and selected articles
Feb 10	<i>Imaging IV: Functional Imaging (Dr. Joe Schumacher)</i>	Handouts and selected articles
Feb 17	<i>Imaging V: Principles of Electron Microscopy (Dr. Naomi Kamasawa)</i>	Handouts and selected articles
Feb 24	<i>Imaging VI: CLEM journal club</i>	Scholl, Thomas, et al. (2021)

March 3	<i>Virology I: viruses, transduction, and viral engineering (Nicole Shultz)</i>	Handouts and selected articles
March 10	<i>Special Lecture: Dr. Stefan Hell</i>	Handouts and selected articles
March 17	<i>Virology II: constructs and applications (Joe Schumacher)</i>	Handouts and selected articles
March 24	<i>Machine Learning for Image Analysis II: behavioral tracking (Dr. Misha Smirnov)</i>	Handouts and selected articles
March 31	<i>Physiology of Behavior (Dr. Joe Schumacher)</i>	Handouts and selected articles
April 7	<i>Gene Editing with CRISPR-Cas9 (Andre Steineke)</i>	Handouts and selected articles
April 14	<i>The future of life science technologies: class discussion (Drs. Joe Schumacher/Ken Dawson-Scully)</i>	Handouts and selected articles