FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED NEW COURSE or MODIFICATION OF AN EXISTING COURSE

Department/School African and African American Studies **Date** 9/26/2024

Course No. or Level 300 **Title** Applied African and African American Studies

Semester hours 3 Clock hours: Lecture 3 Laboratory 0

Prerequisites AAAS 200 and SOCI 201

Enrollment expectation 15

Indicate any course for which this course is a (an)

modification
(proposed change in course title, course description, course content or method of instruction)

substitute
(The proposed new course replaces a deleted course as a General Education or program
requirement.)

alternate
(The proposed new course can be taken as an alternate to an existing course.)

Name of person preparing course description Todd Couch

Department Chairperson's/Dean's Signature

Provost's Signature

Date of Implementation Fall 2025

Date of School/Department approval

Catalog description:

This course provides an exploration of the practical application of the African American Studies theorical and methodological framework in the workplace. Students will examine how the African and African American Studies program provides them with a unique perspective that is valuable to not only to their community, but also to employers. Students will discuss how Black studies may aid in creating, maintaining, and reproducing cultural competencies within organizations.

Purpose:
1. For Whom (generally?)

For students in the African and African American Studies program.

2. What should the course do for the student?

This course will help students understand the fundamentals of the applied Black studies framework, articulate the connections between the AAAS curriculum and the practical needs facing the modern workplace as well as the communities they serve, and learn to demonstrate the practical value of the skillset they have learned within the AAAS curriculum across a variety of mediums.

Teaching method planned:

Lecture, discussion

Textbook and/or materials planned (including electronic/multimedia):

Texts

Alkalimat, Abdul. 2022. *The Future of Black Studies*. London: Pluto Press. 9780745347004

Course Content: (Please explain the content of the course in enough detail so that the Academic Affairs Committee can make an informed judgment. Include a syllabus for the course.)

This course will address the following topics:

1. The Applied Black Studies Framework (Roughly half of the course)
    a. Origins of the framework
    b. Historical application
    c. Contemporary application
    d. Future application
    e. Critiques (Historic and Contemporary)
2. Review of Case Studies (Roughly half of the course)
    a. The Medical Sector
    b. The Non-Profit Sector
    c. The Business Sector
    d. The Education Sector
    e. The Public Sector

AAAS 300: Applied African and African American Studies

Course Description

This course provides an exploration of the practical application of the African American Studies theorical and methodological framework in the workplace. Drawing on the applied Black studies framework developed by Alkalimat (2021, 2022), students will examine how the African and African American Studies program provides them with a unique perspective that is valuable to not only to their community, but also to employers. Students will discuss how Black studies may aid in creating, maintaining, and reproducing cultural competencies

within organizations. Special attention will be given to the creation and maintenance of an equitable organizational culture. After completing this course, students will better understand the value of their skillset to employers and be able to clearly articulate said value.

Course Objectives
After completing this course, students will:

1. Understand the fundamentals of the applied Black studies framework
2. Articulate the connections between the AAAS curriculum and the practical needs facing the modern workplace as well as the communities they serve.
3. Demonstrate the practical value of the skillset they have learned within the AAAS curriculum across a variety of mediums.

Required Text and Materials
Alkalimat, Abdul. 2022. *The Future of Black Studies*. London: Pluto Press. 9780745347004

ASSIGNMENTS
Participation
(15% of Final Course Grade)
Students will attend class regularly, have completed the assigned reading before class, and be prepared to offer thoughtful commentary and/or questions.

Cultural Experiences/Professional Development
(20% of Final Course Grade)
The student will complete 3 hours of cultural experiences/professional development over the course of the semester in which they are completing AAAS 300. They cannot complete all three hours in just one of the categories. The AAAS director will provide a list of each, but the student can also seek approval for cultural experiences or professional development they identify. The student will have to provide evidence of their participation and/or a brief reflection.

Exams
(30% of Final Course Grade)
Students will take two exams in this course. Each exam will test you on the material covered directly prior to the exam. These will not be cumulative exams. Each exams will consist of an essay covering the assigned readings, lectures, and class discussion. There will be no make-up exams except in the case of documented, excused absences. In non-emergency cases, you will need to contact me no later than one week prior to the expected absence to make alternative arrangements.

Applied Knowledge Project (AKP)
(35% of Final Course Grade)
Students will develop an original project that requires them to meaningfully apply content/skills obtained in the AAAS curriculum. The exact form this project takes is completely up to the student(s). Groups of two are permitted.

This assignment consists of a series of smaller projects that will aid in developing the final product. The following mini-assignments will be added together for the total AKP grade:

Proposal

(10% of AKP Grade)
Students must construct a 1+ page proposal that clearly outlines the objective(s) of their applied knowledge project. The proposal should consist of a basic literature review detailing the grounding for the project, the nature of the project, and the significance of each of its components.

Consultations
(15% of AKP Grade)
Students are expected to schedule two meetings with the instructor to review the progress of the project. During this meeting, students must have something to show for their work. "Still thinking" will not be acceptable for consultations.

Presentation
(25% of AKP Grade)
Each student/group will need to present their final project to the class. Presentations should be 15 minutes in length and demonstrate the significance of the project.

Final Product
(50% of AKP Grade)
At the conclusion of the course, each student/group must turn in their completed project. It will be assessed based on its ability to fulfill the objectives outlined in the student/group's proposal. This project should also demonstrate a serious investment of time and scholarly standards.

COMMUNICATION
Notices and announcements are often sent by e-mail. Students are advised to check their FMU email daily (if not more often). Likewise, email is the best way to contact me. Effort is made to offer a same day response to all emails. However, emails received after 4:00pm will be responded to the next business day.

ABSENCES
For the purposes of this course, an absence is defined as missing an entire class session or arriving after lecture has started.

Class periods are comprised of both lecture and discussion. Thus, attendance is essential to success in the course. However, unexpected events do arise which may prevent a student from attending class. For this reason, students are allowed 3 absences. If additional absences must occur, it is critical that the student inform the instructor as soon as possible. The instructor will then meet with the student and review possible options.

Each absence in excess of the allowed limit will result in 1 point being deducted from the final course grade. Should a student accumulate 7 total absences, they will be withdrawn from the course by the instructor.

TECHNOLOGY STATEMENT
Cell phone use is not permitted during this course. This includes, but is not limited to, texting, making/receiving video calls, and using social media. Thus, all headphones/ buds should be removed before entering the classroom. A student observed on their phone, will be asked to leave the class. If this occurs again, the student will receive a 50% penalty on their class

participation grade. On a third offence, the student will receive an automatic 0 for their class participation grade. If a fourth offence occurs, the student will be dropped from the course.

Students using laptops or tablets for any purpose other than taking notes will also face the penalties mentioned above.

ADA STATEMENT

Reasonable accommodations will be provided for qualified students with documented physical, sensory, learning or psychiatric disabilities that require assistance to fully participate in this class. If a student has a documented disability that will need some accommodation, they should contact William Hunter in the Counseling and Testing Center. He may be contacted at 843-661-1841 or will.hunter@fmarion.edu. The student is solely responsible for contacting Mr. Hunter. No accommodations can be made without documentation.

FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED NEW COURSE or MODIFICATION OF AN EXISTING COURSE

Department/School African and African American Studies **Date** 10/1/2024

Course No. or Level 301 **Title** African and African American Studies Internship

Semester hours 3 Clock hours: Lecture 3 Laboratory 0

Prerequisites AAAS 200

Enrollment expectation 15

Name of person preparing course description Erica Johnson

Department Chairperson's/Dean's Signature

Provost's Signature

Date of Implementation Fall 2025

Date of School/Department approval

Catalog description:

The African and African American Studies Internship provides an opportunity for the practical application of skills and cultural competencies learned through the AAAS program through a supervised work experience. Students will work for a public agency, non-profit organization, or private company in their field of study. At least 35% of the work completed during the internship will be specific to African and African American Studies. A student must have approval from a director of African and African American Studies at two weeks before the start of the semester in which the credit is to be received. The African and African American Studies Internship cannot be repeated.

Purpose: 1. For Whom (generally?)

For students who are minors or collaterals in African and African Americans Studies and would like to pursue hands-on experience in their field related to AAAS.

2. What should the course do for the student?

The African and African American Studies Internship provides an opportunity for the practical application of skills and cultural competencies learned through the AAAS program through a supervised work experience. Students will be exposed to and develop and understanding of the accepted standards and practices of their field of study as they relate to African and African American Studies. They will foster their ability and willingness to work independently as well develop a greater ability to organize their time better, follow directions, and complete tasks in an effective manner. Students will develop their writing skills.

Teaching method planned: Hands-on internship experience with an on-site supervisor

This course will address the following topics:

1. Learn important skills performed by professionals in a field of study in a work environment.
2. Integrate and apply concepts and skills learned in AAAS courses to on-the-job practices and procedures
3. Cultivate future employment opportunities and professional connections while gaining a greater understanding and vision of career options.
4. Prepare for professional level employment or a graduate school experience.

AAAS 301: African and African American Studies Internship

Professor: Dr. Erica Johnson
On-site Supervisor: TBA

Course Description: The African and African American Studies Internship provides an opportunity for the practical application of skills and cultural competencies learned through the AAAS program through a supervised work experience. Students will work for a public agency, non-profit organization, or private company in their field of study. At least 35% of the work completed during the internship will be specific to African and African American Studies. A student must have approval from a director of African and African American Studies at two weeks before the start of the semester in which the credit is to be received. The African and African American Studies Internship cannot be repeated.

Course Objectives:

5. Learn important skills performed by professionals in a field of study in a work environment.
6. Integrate and apply concepts and skills learned in AAAS courses to on-the-job practices and procedures
7. Cultivate future employment opportunities and professional connections while gaining a greater understanding and vision of career options.
8. Prepare for professional level employment or a graduate school experience.

Internship Behavior and Professionalism: The student intern will review and sign an internship code of conduct agreement before beginning the internship. If at any time, the on-site supervisor reports unacceptable behavior or a lack of professionalism on the part of the intern, the student must appear before the AAAS director for an emergency meeting before returning to the site. The student may be given a warning and allowed to return to the site. However, depending upon the severity, the student may be removed from the site and required to complete their hours directly under an AAAS director. The student may also be reported to the Dean of Students Office to consider any violations of the Student Conduct Code.

Academic Dishonesty: The student expected to complete their own academic work for the internship. The AAAS director will not tolerate any forms of academic dishonesty (cheating, plagiarism, etc.). The use of AI (such as ChatGPT) is not acceptable for this class and will be

considered plagiarism. There will be consequences for violating the Academic Conduct Code in the Student Handbook. The student will receive a zero on the assessment for the first offense. The student will fail the course for a second offense and may face university sanctions.

Note on Grading: The internship will be graded by an AAAS director in consultation with the on-site internship supervisor. Together, they will assess the intern's work performance and goals achieved taking into consideration the evaluations submitted by the student and on-site supervisor.

Grading and Evaluation:

Internship Expectations and Procedures Quiz	25 points
Attendance	100 points
Midterm Report	50 points
Cultural Experiences/Professional Development (3 x 25 points each)	75 points
On-Site Supervisor Midterm Evaluation	25 points
On-Site Supervisor Final Evaluation	25 points
Self-Evaluation Form	25 points
Final Report	100 points
Presentation	50 points
Total Points	***450 points***

Quiz: There will be one quiz administered via Blackboard. The quiz will cover the expectations and procedures of the internship. The student will need to review the syllabus and all the internship materials before completing the quiz. The student will have 15 minutes to complete the quiz. The quiz will be due by 11:59pm on the Friday of the first week of classes.

Attendance: The student should be on time and present for each scheduled date at the internship site. The on-site internship supervisor will account for your attendance in their midterm and final reports. If you must miss a day for a documentable, excused absence (illness, death in the family, car accident, etc.), you must contact the on-site supervisor and AAAS director as soon as possible. You will need to schedule time(s) to make up any missed hours.

Cultural Experiences/Professional Development: The student will complete 3 hours of cultural experiences/professional development over the course of the semester in which they are completing the internship. They cannot complete all three hours in just one of the categories. The AAAS director will provide a list of each, but the student can also seek approval for cultural experiences or professional development they identify. The student will have to provide evidence of their participation and/or a brief reflection.

On-Site Supervisor Evaluations: The on-site supervisor will complete two written reports: midterm and final. The on-site supervisor will rate the intern's performance in five categories (attendance, attitude, teamwork, professionalism, and quality of work) using a scale of 1 to 5. The on-site supervisor will also address the intern's strengths and weaknesses. The AAAS director will provide feedback to the student after reviewing the midterm report to help the student successfully complete the rest of the internship. The on-

site supervisor will make a recommendation for a grade, but the AAAS director will ultimately assign an overall course grade based on all the assessments materials.

Intern Reports: The student will complete two written reports: midterm and final. These will be scored on following instructions, content, and written communication ability.

- FIRST STUDENT REPORT - **Due at least one week before midterm**. The report should be 2-4 pages of double-spaced, typed copy which contains:
    1. A log of hours worked, signed by on-site manager (one page).
    2. A detailed list and explanation of all duties.
    3. A detailed explanation of the work completed.
    4. A review/explanation of the challenges faced.
    5. Expectations for the remainder of the internship.
- FINAL STUDENT REPORT – **Due at Final exam period**. The report is to be 3-5 pages of typed, double spaced, copy which contains:
    1. A log of hours worked, signed by on-site manager (one page).
    2. A summary of work completed during the internship.
    3. An explanation of any professional advancements and accomplishments.
    4. An analysis of differences between the internship and classroom experiences.
    5. A reflection on the value of the internship program and your experiences as part of it in relation to your career goals.

Self-Evaluation Form: At the end of the internship, the student will complete a self-evaluation form. This will allow the student to reflect on their performance in five categories (attendance, attitude, teamwork, professionalism, and quality of work) using a scale of 1 to 5. They will also assess their own strengths and weaknesses, an exercise that will be very valuable for future job interviews. The AAAS director will compare the student self-evaluation with the on-site supervisor evaluations and provide feedback to the student on areas of delineation.

Presentation: At the end of the semester, the intern will make a 10-minute presentation on their experiences before relevant stakeholders (such as the AAAS director, members of the AAAS committee, other AAAS minors and collaterals, faculty from their field, and the on-site supervisor).

FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED NEW COURSE or MODIFICATION OF AN EXISTING COURSE

Department/School Biology **Date** September 3, 2024

Course No. or Level 218 **Title** Biostatitics and Research Methods

Semester hours 3 Clock hours: Lecture 3 Laboratory 0

Prerequisites Completed Biol 105/115 or 107 and Completed 106 or 108 and Math 111 OR permission of department

Enrollment expectation 24

Indicate any course for which this course is a (an)

Modification Change course number: BIOL413 Biostatistics and Research Methods TO BIOL218 Biostatistics and Research Methods
(proposed change in course title, course description, course content or method of instruction)

substitute None
(The proposed new course replaces a deleted course as a General Education or program requirement.)

alternate None
(The proposed new course can be taken as an alternate to an existing course.)

Name of person preparing course description Jason Doll

Department Chairperson's/Dean's Signature Vernon W. Bauer

Provost's Signature T. Elissa Nafziger

Date of Implementation Fall 2025

Date of School/Department approval 9/30/2024

Catalog description: The study of fish with emphasis on identification, classification, evolution, anatomy and physiology, and ecology. Emphasis will be on South Carolina species but other important species will be included.

Purpose:

1. **For Whom (generally?)** Biology Majors

2. **What should the course do for the student?**

Upon successful completion of this course, students should be able to:

- Understand the best way to design an experiment based on the hypothesis of interest
- Understand proper sampling procedures

- Understand basic rules of probability and the normal, binomial and Poisson distributions
- Be able to use basic descriptive statistics
- Be able to calculate and use t-tests, ANOVAs, correlation, regression, and frequency tests
- Be able to understand and use power analysis and effect size
- Be able to construct and interpret graphical data
- Be able to write about and graphically display data and statistical results
- Be able to read and interpret basic statistical results in scientific journals

Teaching method planned: Three hours of lecture each week. Lectures will be a combination of PowerPoint and classroom activities. Classroom activities will include discussion about sampling design, probability distributions, descriptive statistics, and various statistical tests.

Textbook and/or materials planned (including electronic/multimedia):

Havel, J.E., R.E. Hampton, and S.J. Meiners. 2019. Introductory Biological Statistics, 4th Ed. Waveland Press, Inc. Long Grove, IL. ISBN: 9781478638186

Course Content: (Please explain the content of the course in enough detail so that the Academic Affairs Committee can make an informed judgement. Include a syllabus for the course.)

Please see attached syllabi

When completed, forward to the Office of the Provost.

Biostatistics & Research Methods - Biology 218

Spring 2024
Lecture Room: MSB 220

Instructor: Dr. Jason Doll
Office: LSF 204I
1:00pm
Phone: 843-661-1481
Email: jason.doll@fmarion.edu

Office Hours
M 8-10am & T 10:00am-11:00am & 12:00-

* by appointment or whenever I'm in my office and the office door is open.

Texts:
Havel, J.E., R.E. Hampton, and S.J. Meiners. 2019. Introductory Biological Statistics, 4th Ed. Waveland Press, Inc. Long Grove, IL. ISBN: 9781478638186

Course Info: Lecture: T/TH, 8:30-9:45, MSB 220

Requirements:			**Grading Scale:**	
	Homework:	40%		A=90
	Exam 1:	10%		B+=87
	Exam 2:	10%		B=80
	Exam 3:	10%		C+=77
	Exam 4:	10%		C=70
	Exam 5:	10%		D+=67
	Final Exam:	15%		D=60
	Participation	5%		F≤50
		100.0%*		

*Note: Lowest of the 5 regular exams is dropped and lowest homework score is dropped
** The Blackboard **Gradebook** is set up to only include items in the weighted grade when taken. Therefore, your grade is based upon only completed exams, quizzes, homework, and labs.
*** To estimate your grade = (Regular Exams AVG * 0.40) + (Final Exam * 0.15) + (Homework AVG * 0.40) + (Participation AVG * 0.05)

Course description:

All scientists must have a basic understanding of experimental design and statistics. Some scientists actively use these concepts and skills in their professional career. Others, such as doctors, vets, dentists, etc., may not use them every day but are expected to keep up with the latest developments in their field. This will mean reading medical and scientific journals and being able to understand the results in such a way that they can make informed decisions and on new medicines, procedures, etc. This class is designed to give you the skills that you will need to be successful in this part of your career.

Student Learning Objectives:

- Understand the best way to design an experiment based on the hypothesis of interest
- Understand proper sampling procedures
- Understand basic rules of probability and the normal, binomial and Poisson distributions
- Be able to use basic descriptive statistics
- Be able to calculate and use t-tests, ANOVAs, correlation, regression, and frequency tests
- Be able to understand and use power analysis and effect size
- Be able to construct and interpret graphical data

- Be able to write about and graphically display data and statistical results
- Be able to read and interpret basic statistical results in scientific journals
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Tentative Schedule *updated 1/22/2023

Week	Date	Tentative Topic	Read/Due	Homework
1	Jan 9	NO CLASS		
	Jan 11	Intro to Course, R and RStudio		
2	Jan 16	Statistics and sampling	Chap 1	1.3, 1.4
	Jan 18	Variables	Chap 2	2.7-2.12
3	Jan 23	Experimental Design & Graphing	Chap 16&3	3.6-3.10
	Jan 25	Descriptive Statistics	Chap 4	4.6-4.9
4	Jan 30	Probabilities	Chap 5	5.21-5.23, 5.26, 5.27
	Feb 1	Probabilities	Chap 5	5.24, 5.30
5	Feb 6	Probabilities	Chap 5	5.33-5.36
	Feb 8	**Test 1: Descriptive Stats, Exp. Des., Graphing, Probabilities**		
6	Feb 13	Statistical Inference/Testing hypotheses about Frequencies	Chap 6 & 7	7.15,7.16 7.20,7.21, & 7.23
	Feb 15	The Normal Distribution	Chap 8	
7	Feb 20	The Normal Distribution	Chap 8	8.9, 8.10, 8.12
	Feb 22	**Test 2: Hypothesis testing; Normal Distribution; Inference**		
8	Feb 27	Inference about a single population	Chap 9	9.11, 9.13, 9.14, 9.16-9.18
	Feb 29	Inference with two population means	Chap 10	10.10,10.11, 10.13, (by hand) & 10.15,10.16 (R)
9	Mar 5	Ch 9 & 10 Applications in R		
	Mar 7	**Test 3: Inference about a single and two populations; Power and Effect Size**		
10	**Mar 12**	**Spring Break NO CLASS**		
	Mar 14	**Spring Break NO CLASS**		
11	Mar 19	Comparing multiple populations: ANOVA	Chap 11	
	Mar 21	Comparing multiple populations: ANOVA	Chap 11	11.8-11.14
12	Mar 26	Other ANOVA sampling designs and ANOVA in R	Chap 12	12.10,12.13, 12.14,12.16,
	Mar 28	**Test 4: ANOVA**		
13	Apr 2	Association between continuous variables: Correlation	Chap 13	13.5-13.8
	Apr 4	Modeling the relationship between continuous variables: Regression	Chap 14	14.5-14.8
14	Apr 9	Bayesian inference activity	Supplement	Doll and Jacquemin 2018
	Apr 11	Bayesian inference	Supplement	Handout
15	Apr 16	Bayesian inference	Supplement	
	Apr 18	**Test 5: Correlation, Regression, Exp Design**	Supplement	

Apr 25 FINAL EXAM: 8:30am – 10:30am

Homework is due at the beginning of the following class from when it is assigned

Attendance Policy:

You are expected to attend class regularly and punctually. Arriving late is disruptive to your fellow classmates and your instructor. You will also miss important announcements if you arrive late. It is your responsibilities to get important announcements from your classmates, if you arrive late or do not attend. The instructor will not provide any announcements if they are missed due to late arrivals. You are responsible for obtaining, completing, and submitting missed assignment. Note that the lecture outlines are tentative. Should you miss class, check with a fellow classmate to see if there were any changes announced on the day you missed. If you must miss class due to illness or any other reason, notify me immediately. This does not guarantee an excused absence will be granted.

Note that attendance and arriving to class on time counts towards the participation portion of your grade. For each day that you have an unexcused absence, you will lose 6 participation points (out of 100). For each of the first three days that you are late, you will lose 3 participation point. If you are late more than three days, you will lose six participation points for each additional day late ***and it will be counted as an absence***. According to FMU policy, ***more than three unexcused lecture absences for M/W/F lectures or more than two unexcused lab absences, can result in dismissal from the course and a grade of an F or W.*** If you choose to withdraw from the course, you are responsible for filing the paperwork with the registrar. If you need to miss class or lab for legitimate reasons, it is your responsibility to provide documentation to avoid having an excused absence. For example, if you're sick, get an official doctor's excuse. It is impossible to have an absence excused without documentation.

From the FMU 2022-2023 Couse Handbook page 51

"It is the responsibility of the student to attend all scheduled meetings in the courses in which he/she is enrolled. If a student is absent more than twice the number of required class or laboratory sessions per week during regular semesters or more than 15 percent of required sessions during accelerated semesters, a grade of F or W will normally be assigned, unless absences have been excused for cause by the instructor."

Participation:

= attendance, speaking during discussions, being on time, paying attention to ideas being discussed, maintaining a good attitude in lecture and lab, being respectful of your classmates, etc., etc.

Classroom Behavior:

- No cell phones unless you are told to use one by your instructor. After one warning, 3 points will be deducted from your final course grade for every time you're caught using a cell phone. If you have an emergency situation where your phone needs to be on, set it to vibrate and inform me about your situation. If you absolutely need to take a call, step quietly outside the classroom to do so.
- Do not pack before the class officially ends (I will let you know)
- Do Not arrive late. Arriving late is disruptive and inconsiderate towards your classmates and instructors. Continued late arrivals will result in course dismissal.
- NO HEADPHONES. Please remove your headphones during class. Failure to remove headphones will result in 3 points being deducted from your participation grade for each instance.
- You are not permitted to leave during an exam for any reason. If you leave, you will not be allowed back in.

Academic Honesty and Plagiarism:
Students are encouraged to work together (NOT simply copying work) on regular homework assignments. Collaborative learning can be a great help for students who have trouble learning difficult concepts. However, exercises that appear too similar will be deemed plagiarism and all students involved will receive a ZERO grade for that exercise and a formal letter detailing your academic dishonesty will be filed for potential further action. If you are caught cheating on an examination, you will receive zero points for that exam and a formal notification will be filed.

Late Work:

- Exams must be completed on the assigned day. No make-up exams will be given; however, you do get to drop your lowest exam out of the 5 regular semester exams. So don't waste your dropped exam!
- Any written assignment turned in late will be penalized ***10% per day up to three days. After the assignment is three days l late, I will no longer accept it and you will receive a 0 for that assignment.*** Note that this ***INCLUDES*** weekends. Thus, if an assignment is due on Friday, Monday is considered three days late.

Emails:

- Include a subject and class number (e.g. Homework 10 in BIO413) in the "subject" line and any attached document.
- Start your email with Dr./Professor/Greeting and follow it with a courteous and polite text.
  YES: Hello Dr. Doll / Good morning / Professor Doll
  NO: What's up / Hey / "blank space"
- When you reply, include previous exchanges in the email reply.
- I will do my best to reply emails quickly but be ***reasonable***.

Exams:
Exams will consist of an in-class portion and take-home portion. The in-class exams will be given during regular class time. Thus, you will have the full class period to complete the exams. They will primarily be problems that you need to work out, though there may be short multiple choice or short answer sections if appropriate. You should bring a regular calculator to the exams (no cell phone, smartphones, tablets, etc.). The take-home exams will consist of problems and calculates. Most take-home exams will require writing R code that will be uploaded to Blackboard. Exams 1-5 will not be cumulative and will only cover material since the previous exam; however, the final exam will be cumulative. You may drop the lowest of the first five semester exams, but the final exam will NOT be one of the dropped exams.

Accommodations of Disabilities
I am happy to make accommodations for students with special needs; however, you first must provide proper documentation from the Office of Counseling and Testing (http://www.fmarion.edu/students/counseling , 843-661-1840). You must also notify me of your needs one week prior to an assignment/quiz/test/etc. to allow time to arrange for the appropriate accommodations.

Extra Credit Work:
If you're concerned about your grade you may complete up to a one-page, single spaced article summary and critique. This will count for ***up to*** an additional 2% of your grade. This is enough to push those on the edge of a higher grade up to the next level (e.g. a B+ to an A). These should be peer-

reviewed journal articles, but can be on any biology or statistic topic of your choice. They must be approved by me ahead of time for content and length. Include a summary of the article, including what their experimental design was and what statistical analysis they used. Attach the article to your critique. ***Extra credit must be completed by the BEGINNING of our last regular scheduled class period, Thursday, April 22nd.*** You have all semester to work on this assignment, so ***absolutely no exceptions***.

FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED NEW COURSE or MODIFICATION OF AN EXISTING COURSE

Department/School Biology **Date** September 3, 2024

Course No. or Level 299 **Title** Biology Sophomore Seminar

Semester hours 1 Clock hours: Lecture 1 Laboratory 0

Prerequisites 16 hours in biology or permission of the department

Enrollment expectation 48

Indicate any course for which this course is a (an)

Modification None
(proposed change in course title, course description, course content or method of instruction)

substitute None
(The proposed new course replaces a deleted course as a General Education or program requirement.)

alternate None
(The proposed new course can be taken as an alternate to an existing course.)

Name of person preparing course description Jason Doll

Department Chairperson's/Dean's Signature Vernon W. Bauer

Provost's Signature

Date of Implementation Fall 2025

Date of School/Department approval 9/30/2024

Catalog description:

299 Sophomore Seminar (1) (Prerequisite: 8 hours in biology or permission of the department). F, S. Seminar class for Biology majors. Topics will focus on preparation for careers after graduation in the biological sciences, including job application process, finding and applying for internships, MCATS, GRE, how to find and applying for graduate school.

Purpose: 1. **For Whom (generally?)** Biology Majors

2. **What should the course do for the student?**

This course will provide students with information that prepares students for a career or graduate school. Topics include Career readiness, job application preparation, internship information, MCATS,

and graduate school applications. Preparing sophomores with this information early in their academic career will improve their readiness for a career or graduate school after graduating FMU.

Teaching method planned: One hour of lecture each week.

Textbook and/or materials planned (including electronic/multimedia): None

Course Content: (Please explain the content of the course in enough detail so that the Academic Affairs Committee can make an informed judgement. Include a syllabus for the course.)

Please see attached syllabi

When completed, forward to the Office of the Provost.

Francis Marion University –Semester
BIOL 2xx-1: Sophomore Seminar
Day / time / location

Instructor: **Office:**
Phone: **Email:**
Office hours:

Course Description

The purpose of this seminar is to help students begin to prepare for a career in Biology. This course will focus on identifying internships, research opportunities, other employment and volunteer experiences that will give students knowledge and experience in areas of interest. Students will develop résumés/CVs in preparation for applying to these opportunities. Lastly, this course will review the application processes and requirements for various graduate programs and medical school, and the steps necessary to prepare for required exams (e.g. MCAT).

This is a required course for graduation, so you must earn a D or better to pass and therefore graduate.

Your course grade will depend on attendance and participation (25%), written assignments (75%), and completion of the Biology Exit Exam*. You cannot miss more than 2 meetings of this class: according to FMU policy, more than 2 unexcused absences from course can result in dismissal from the class and a grade of F or W.

Schedule:

Week 1	Introduction to Biology Capstone Seminar
Week 2	Overview of careers in Biology
Week 3	Industry, Government, Professional programs, Health careers
Week 4	FMU Career Center resources – Dr. Deon C. Evans
Week 5	How to find internship opportunities
Week 6	How to find research opportunities
Week 7	How to apply – Cover letter writing workshop
Week 8	How to apply – Résumé/CV writing workshop
Week 9	How to apply – Letters of reference
REQUIREMENT TO ATTEND	FMU Career Fair
Week 10	How to apply – Preparing for an interview
Week 11	Graduate School requirements
Week 12	Medical School requirements
Week 13	Completion of application for internship, research, or job
Week 14	Wrap up

FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED NEW COURSE or MODIFICATION OF AN EXISTING COURSE

Department/School PHYS **Date** 4/1/2024

Course No. or Level 330 **Title** Introduction to Astrophysics

Semester hours 3 Clock hours: Lecture 3 Laboratory 0

Prerequisites PHYS 202

Enrollment expectation 10

Indicate any course for which this course is a (an)

modification
(proposed change in course title, course description, course content or method of instruction)

substitute
(The proposed new course replaces a deleted course as a General Education or program requirement.)

alternate
(The proposed new course can be taken as an alternate to an existing course.)

Name of person preparing course description Ginger Bryngelson

Department Chairperson's/Dean's Signature

Provost's Signature

Date of Implementation Elective Rotation Beginning Spring 2026

Date of School/Department approval 4/11/24

Catalog description:

330 Introduction to Astrophysics (3) (Prerequisite: 202 or permission of the department). This course examines phenomena in the universe using the application of physics principles. Topics will be selected from: celestial mechanics, properties of light & particles, mathematical modeling of a stellar interior, stellar formation and evolution, degenerate remnants, black holes, galactic structure, interstellar and intergalactic medium, dark matter, the cosmic microwave background, the large-scale structure of the universe, dark energy, cosmology and the fate of the universe.

Purpose: 1. For Whom (generally?)

This course is designed to satisfy the elective requirement of Computational Physics Majors – typically in their sophomore, junior, or senior year, but it is also available to other interested science majors (including health physics and engineering majors) who have completed the calculus-based introductory physics sequence.

2. What should the course do for the student?

Introduces students to a one of the main areas of advanced study in physics: Astrophysics, which studies phenomena in the universe both on the biggest scales (stars, galaxies, universe) and smallest scales (fusion of atomic nuclei, particle and light interactions, and gas and degenerate material pressure).

Teaching method planned:

In-class lectures, problem solving, homework, tests, and projects that include computational components.

Textbook and/or materials planned (including electronic/multimedia):

An Introduction to Modern Astrophysics by Carroll & Ostlie

Course Content:

Introduction to modern Astrophysics takes students through the physics of the universe. This starts with lessons learned from early astronomers watching the movements of our sun and planets. An emphasis will be placed on the underlying physics principles as we look at how we know what we know (spectroscopy, optics, doppler shift, radio and high energy astronomy). Students will learn the fundamental physics of stars (atmospheres & interiors), star formation, stellar evolution, stellar explosions, and remnants (including white dwarfs, neutron stars, & black holes). This course will also examine galaxies, stellar populations, interstellar medium, and galactic radial velocities (clues for dark matter). The course will end with a look at the cosmological beginning, evolution, and predicted end of the universe.

Physics 330: Introduction to Astrophysics

T Th 2:10 – 3:25 pm in LSF L101

Spring 2025 Syllabus

Instructor: Dr. Ginger Bryngelson
Email: GBryngelson@fmarion.edu
Office: Leatherman Science Facility (LSF) 103A
Phone: (843) 661-1553

Student Hours: **MWF 10:30 – 11:20 am, Mon 1:30 – 4pm, Tues/Thurs 3:30 – 4:30 pm, & by appointment**

Course Description: This course examines phenomena in the universe using the application of physics principles. Topics will be selected from: celestial mechanics, properties of light & particles, mathematical modeling of a stellar interior, stellar formation and evolution, degenerate remnants, black holes, galactic structure, interstellar and intergalactic medium, dark matter, the cosmic microwave background, the large-scale structure of the universe, dark energy, cosmology and the fate of the universe.

Text Required for this course: An Introduction to Modern Astrophysics by Carroll & Ostlie

Course Content:

- Celestial Mechanics
  - Elliptical orbits
  - Newtonian Mechanics
  - Kepler's Laws (derivation)
- Continuous Spectrum of light
  - Stellar parallax
  - Wave nature of light
  - Blackbody Radiation
  - Color Index of stars
- Interaction of Light & Matter
  - Quantization of Energy
  - Compton Effect
- Spectroscopy
  - Continuous, emission, absorption
  - Spectral line profiles
  - Doppler shift
- Telescope Optics
  - Visible telescopes
  - Radio telescopes
  - IR, UV, x–ray, & γ-ray Astronomy
- Stellar Structure
  - Stellar atmospheres
  - Radiative Transfer
  - Stellar interiors
  - Hydrostatic Equilibrium
  - Energy Transport
  - Solar Cycle
- Stellar Evolution
  - Main Sequence
  - Red Giants
  - Nucleosynthesis
  - Core-collapse Supernovae
  - Black holes
  - Gamma-ray bursts
  - Cosmic rays
- Degenerate Remnants
  - White Dwarfs
  - Chandrasekhar Limit
  - Cooling of White Dwarfs
  - Neutron Stars
  - Pulsars
  - Type Ia supernovae

- Interstellar Objects
  - Interstellar Medium
  - Nebulae
  - Pre-main sequence evolution

- Galaxies
  - Milky way
  - Kinematics and galactic center
  - Dark Matter
  - Hubble sequence
  - Galactic evolution

- Cosmology
  - Newtonian cosmology
  - Cosmic microwave background
  - Dark Energy

Grading:

Homework	-	10%
Tests	-	30%
Projects	-	40%
Cumulative Final Exam	-	20%

Grading Scale

Numeric Value	Letter Grade
$90 \leq G \leq 100$	A
$85 \leq G < 90$	B+
$80 \leq G < 85$	B
$75 \leq G < 80$	C+
$70 \leq G < 75$	C
$65 \leq G < 70$	D+
$60 \leq G < 65$	D
$G < 60$	F

Class Absences

If you are absent from class, you are responsible for collecting class notes and assignment information, and learning the material. If no communication is made regarding these absences, you are still expected to turn in any homework by its due dates (preferably by electronically submitting in the appropriate spot on blackboard, or email if need be). Reasonable accommodations can be made if the absence is communicated ahead of time.

ADA

If you have a disability that qualifies you for academic accommodations, I am happy to accommodate you. The Office of Counseling and Testing will provide me a letter listing your needs, but please talk to me about how we can implement them in the context of this class. More information can be found in the Student handbook.

Academic Ethics:

Every member of the FMU community is expected to maintain the highest standards of academic integrity. The University may initiate disciplinary proceedings against a student accused of scholastic dishonesty. Scholastic dishonesty includes, but is not limited to, statements, acts, or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work material that is not one's own. Scholastic dishonesty may involve, but is not limited to, one or more of the following acts: cheating, plagiarism, collusion, use of annotated texts or teacher's editions, and/or falsifying academic records.

The first time a student is found responsible for scholastic dishonesty will receive a zero on their assignment and must attend a workshop on Plagiarism. Further incidents during the student's career at FMU will result in suspension and expulsion. See the student handbook for more information.

FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED NEW COURSE or MODIFICATION OF AN EXISTING COURSE

Check the appropriate box: __☑__ New Course __ Course Modification

Department/School Department of Physics and Engineering **Date** 03/25/2024

Course No. or Level PHYS 331 **Title** Introduction to Condensed Matter Physics

Semester hours 3 Clock hours: Lecture 3 Laboratory 0

Prerequisites PHYS 314

Enrollment expectation 10 students

Indicate any course for which this course is a (an)

modification _____
(proposed change in course title, course description, course content or method of instruction)

substitute _____
(The proposed new course replaces a deleted course as a General Education or program requirement.)

alternate _____
(The proposed new course can be taken as an alternate to an existing course.)

Name of person preparing course description Brittany Baker

Department Chairperson's/Dean's Signature _____

Provost's Signature _____

Date of Implementation Elective Rotation Beginning Spring 2026

Date of School/Department approval April 11, 2024

Catalog description:
331 Introduction to Condensed Matter Physics (3) (Prerequisite: 314). Introduction to the basic concepts of condensed matter physics. Topics include but are not limited to crystal structure; diffraction and reciprocal lattices; electronic, magnetic, and optical properties; energy band structure; superconductivity; phonons; and the relationship between microscopic structure and bulk properties in different materials. Concepts related to common experimental apparatus as well as analytical and/or computational tools will also be discussed.

Purpose:

1. For Whom (generally?)

   Computational Physics students in their junior or senior year as well as interested students in Health Physics and/or Engineering majors seeking a minor / additional enrichment in physics.

2. What should the course do for the student?

   Introduces students to the largest field in physics (by participants and research output), which studies the properties of liquids and solids (with much of the focus being placed on solids). Students will learn how the atomic-scale properties of matter affect its macroscopic properties.

Teaching method planned: In-class lecture, group problem solving activities, and quizzes. Post-class homework assignments. Midterm and Final Exams.

Textbook and/or materials planned (including electronic/multimedia):
Main Textbook: "The Oxford Solid State Basics" by Steve Simon

Course Content:
Students will learn about how the quantum mechanical properties of atoms and electrons give rise to emergent behavior like conductivity, magnetism, or tensile strength. In the prerequisite course (PHYS 314, Modern Physics) students will have already been introduced to quantum mechanics at a sufficient level to allow them to understand the material in the course. Students will learn about the crystal structure of solids and how band theory can be used to understand and explain electronic and optical properties in crystals. They will use simplified models such as the Drude model of conductivity, the Einstein model of lattice vibrations (phonons), and the tight-binding model for electronic structure to study solids at different levels of abstraction. Computational and/or lab tools will be used to demonstrate and/or explore these properties beyond what can be accomplished in written assignments.

PHYS 331 – Condensed Matter Physics
Course Syllabus

Course Description
Introduction to the basic concepts of condensed matter physics. Topics include but are not limited to crystal structure; diffraction and reciprocal lattices; electronic, magnetic, and optical properties; energy band structure; superconductivity; phonons; and the relationship between microscopic structure and bulk properties in different materials. Concepts related to common experimental apparatus as well as analytical and/or computational tools will also be discussed.

Required Materials
"The Oxford Solid State Basics" by Steve Simon

Learning Goals
By the end of this course, the student will be able to

- Describe and model behaviors of solid at different levels of abstraction.
- Identify the connection between atomic-scale and macro-scale properties.
- Compute the electronic, optical, and atomic structure of model condensed-matter systems.

ADA Statement
If you have a disability that qualifies you for academic accommodations, I am happy to accommodate you. The Office of Counseling and Testing will provide me with a letter listing your needs, but please come talk to me about how we can implement them in the context of this class. More information can be found in the Student handbook.

Academic Integrity
All work must be the sole product of each student's brain and effort (in other words, all cheating or plagiarism will be reported and handled as detailed in the Student Handbook). **The use of language models or other "AI" tools (unless explicitly allowed or assigned) is Academic Dishonesty and will be reported.** For my part, I will not discriminate against any student for any reason and will make any reasonable accommodation necessary to meet a student's needs. No discriminatory or hostile behavior toward fellow students will be tolerated. If you experience or witness discriminatory, abusive, or other unwanted behavior, you should contact me, the Title IX Coordinator, the Vice President of Student Affairs, or other appropriate authorities.

Tentative Schedule (subject to change)

1. Continuum Models of Solids
2. Atoms and Atomic Bonds
3. Toy Models: Vibrations, Compressibility, Thermal Expansion
4. Toy Models: Tight Binding
5. Crystal Structure of Solids
6. Reciprocal Space, the Brillouin Zone
7. Studying Crystal Structure with Diffraction
8. Electronic Structure: Free Electrons
9. Electronic Structure: Nearly Free Electrons
10. Electronic Structure: Tight-binding revisited
11. Metals, Insulators, Semiconductors
12. Magnetism in Atoms

13. Magnetism in Solids
14. Mean-field Theories
15. The Hubbard Model

Grade Information

A	90+
B+	86 - 89
B	80 - 85
C+	76 - 79
C	70 - 75
D+	66 - 69
D	60 - 65
F	<60

Attendance and Participation	5%
Homework	10%
Quizzes	20%
Tests	40%
Final Exam	25%

Attendance and Participation: Attendance of all sessions is expected. If you miss a class session, **you must contact me before 5:00 PM on the day of your absence to be excused.** Students who miss an exam due to an excused absence are expected to arrange a make-up date with the professor as soon as possible.

FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED NEW COURSE or MODIFICATION OF AN EXISTING COURSE

Check the appropriate box: __☑__ New Course __ Course Modification

Department/School Department of Physics and Engineering **Date** 03/25/2024

Course No. or Level PHYS 332 **Title** Introduction to High Energy Physics

Semester hours 3 Clock hours: Lecture 3 Laboratory 0

Prerequisites PHYS 314

Enrollment expectation 10 students

Indicate any course for which this course is a (an)

modification_____
(proposed change in course title, course description, course content or method of instruction)

substitute_____
(The proposed new course replaces a deleted course as a General Education or program requirement.)

alternate_____
(The proposed new course can be taken as an alternate to an existing course.)

Name of person preparing course description Larry Engelhardt

Department Chairperson's/Dean's Signature

Provost's Signature

Date of Implementation Elective Rotation Beginning Spring 2026

Date of School/Department approval April 11, 2024

Catalog description:

332 Introduction to High Energy Physics (3) (Prerequisite: 314) An introduction to the Standard Model of particle physics, including the properties of the fundamental particles. The strong, weak, and electromagnetic interactions will be studied, including QED and QCD. Topics will include relativistic kinematics, conservation laws, and symmetries; and how these relate to particle decays and scattering processes. Techniques used for calculating experimental observables will be emphasized, including the use of Feynman diagrams. The physics of particle accelerators and detectors will also be introduced.

Purpose:

1. For Whom (generally?)
   Computational Physics students in their junior or senior year.

2. What should the course do for the student?
   Introduces students to one of the main areas of advanced study in physics: High Energy Physics (also called Particle Physics), which deals with the study of the universe's most fundamental particles (more fundamental than atoms, protons, or neutrons).

Teaching method planned: Pre-class reading assignments. In-class lecture, group problem solving activities, and quizzes. Post-class homework assignments. Midterm and Final Exams.

Textbook and/or materials planned (including electronic/multimedia):
Main Textbook: "Introduction to Elementary Particles" (2nd Edition) by David Griffiths
Additional Book: "QED: The Strange Theory of Light and Matter" by Richard Feynman

Course Content:
Students will learn about both the history of High Energy Physics and the methods used in the field of High Energy Physics. In the prerequisite course (PHYS 314, Modern Physics) students will have already been introduced to relativity and quantum mechanics, and they will now apply these skills to study of the Standard Model of particles and their interactions. Students will learn how to use advanced tools including Feynman diagrams to analyze particles and their interactions. These tools come from Quantum Field Theory (QFT), which is an advanced graduate-level topic that they will not be expected to understand in detail; but students will gain a big-picture understanding of QFT, and learn how QFT applies to the Standard Model, specifically Quantum Electrodynamics (QED) and Quantum Chromodynamics (QCD).

PHYS 332 – Introduction to High Energy Physics
Course Syllabus

Course Description

An introduction to the Standard Model of particle physics, including the properties of the fundamental particles. The strong, weak, and electromagnetic interactions will be studied, including QED and QCD. Topics will include relativistic kinematics, conservation laws, and symmetries; and how these relate to particle decays, and scattering processes. Techniques used for calculating experimental observables will be emphasized, including the use of Feynman diagrams. Experimental tools, including particle accelerators and detectors, will also be introduced.

Required Materials

Main Textbook: "Introduction to Elementary Particles" (2nd Edition) by David Griffiths
Additional Book: "QED: The Strange Theory of Light and Matter" by Richard Feynman

Learning Goals

By the end of this course, the student will be able to:

- Describe the history of High Energy Physics, from the 1930s to today, including the Eightfold Way description of hadrons and the development of Quantum Field Theory.
- Describe recent development in High Energy Physics, including the discovery of the Higgs boson, and the need for new physics Beyond the Standard Model (BSM).
- Represent relativistic kinematics (mathematically) in terms of four-vectors and tensors.
- Compute the motion of a particle being accelerated within a particle accelerator.
- Describe the basics of how particle detectors work.
- Describe the fundamental interactions of the Standard Model, both using words and using Feynman diagrams.
- State the conservation laws for the Standard Model, and describe how these conservation laws apply to the various particles and their interactions.
- Describe the various symmetries that are relevant to the fundamental particles, including: Spin, Isospin, Parity, and CPT
- Use the Feynman rules to compute particle decay rates and scattering cross sections.
- Describe how the Feynman rules apply to both QED and QCD.

Assignments and grading:

10% – Reading Assignments
20% – Homework
20% – Weekly Quizzes
20% – Midterm Exam
30% – Final Exam

Final Grades:

Your final grade will be based on your total score as described above. If you earn one of the percentages shown below, you will receive the grade written on its right.

90%: A 85%: B+ 80%: B 75%: C+ 70%: C 65%: D+ 60%: D

Tentative Weekly Schedule

1. History of High Energy Physics
2. Relativistic Kinematics – Theory
3. Relativistic Kinematics – Computations
4. Particle Detectors
5. The Standard Model of Particle Physics
6. Conservation Laws and Symmetries
7. **Midterm Exam**
8. Overview of Quantum Field Theory
9. Feynman Diagrams
10. Feynman Rules
11. Quantum Electrodynamics (QED)
12. Quantum Chromodynamics (QCD)
13. Higgs Boson and Higgs Field
14. BSM Physics (Beyond Standard Model)

Final Exam

ADA Statement:

If you have a disability that qualifies you for academic accommodations, please provide a letter of verification from the Office of Counseling and Testing. If you would like to discuss your accommodations, please contact me as soon as possible. See the Student handbook for more information.

Academic Ethics:

Every member of the FMU community is expected to maintain the highest standards of academic integrity. The University may initiate disciplinary proceedings against a student accused of scholastic dishonesty. Scholastic dishonesty may involve, but is not limited to, one or more of the following acts: cheating, plagiarism, collusion, use of annotated texts or teacher's editions, and/or falsifying academic records. While specific examples are listed below, this is not an exhaustive list and scholastic dishonesty may encompass other conduct.

Plagiarism is the use of someone else's words or ideas as if they were your own without giving credit to the source, including, failure to acknowledge a direct quotation, and paraphrasing without crediting the original source.

Cheating is the willful giving or receiving of information in an unauthorized manner during a test or exam, illicitly obtaining questions in advance, copying computer or internet files, using someone else's work for assignments as if it were one's own, or any other dishonest means of attempting to fulfill the requirements of a course.

Collusion is intentionally aiding or attempting to aid another in an act of scholastic dishonesty, including but not limited to, providing a paper or project to another student; providing an inappropriate level of assistance; communicating answers to a classmate during a quiz/exam; removing tests or answer sheets from a test site, and allowing a classmate to copy answers.

The first time a student is found responsible for scholastic dishonesty will receive a zero on that assessment and the incident will be reported to the Office of the Provost. If any further incidents occur during the student's career at FMU, they will result in suspension and expulsion. See the student handbook for more information.

FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED NEW COURSE or MODIFICATION OF AN EXISTING COURSE

Check the appropriate box: __☑__ New Course __ Course Modification

Department/School Department of Physics and Engineering **Date** 03/25/2024

Course No. or Level PHYS 212 **Title** Survey of Physics Research

Semester hours 1 Clock hours: Lecture 1 Laboratory 0

Prerequisites 200 or co-requisite of 201 or permission of department

Enrollment expectation 10 students

Indicate any course for which this course is a (an)

modification_____
(proposed change in course title, course description, course content or method of instruction)

substitute_____
(The proposed new course replaces a deleted course as a General Education or program requirement.)

alternate_____
(The proposed new course can be taken as an alternate to an existing course.)

Name of person preparing course description Hunter Sims

Department Chairperson's/Dean's Signature

Provost's Signature

Date of Implementation Spring 2026

Date of School/Department approval April 11, 2024

Catalog description:
212 Survey of Physics Research (1) (Prerequisite: 200 or Corequisite: 201, or permission of the department) S. An introduction to current areas of active physics research, both in the department and in the broader community. Topics will vary but may include current research in Astronomy, Astrophysics, Atomic/Molecular/Optical Physics, Condensed Matter Physics, and High-Energy/Particle Physics as well as developments in the tools used to conduct this research. Students will hear research presentations by FMU students and faculty and will gain experience in finding and reading scientific articles. The course may include opportunities for off-campus experiential learning.

Purpose:

1. For Whom (generally?)
   Computational Physics students and others with an interest in physics

2. What should the course do for the student?

Students will have a better understanding of how they might use a physics degree, will have improved awareness of how they can participate in student research, and will gain experience finding, reading, and explaining scientific results. The course will further foster group / cohort identity among physics majors.

Teaching method planned:
Lecture / Seminar

Textbook and/or materials planned (including electronic/multimedia):
none

Course Content:
This course exposes students to topics of current interest in physics, including but not limited to topics that are the subject of current student and faculty research. Students will learn about methods for using and accessing academic journals and will encounter issues surrounding ethics in science. Students will write brief summaries and reflections on the week's topic and will produce a short report containing a more thorough discussion of one the presentations as well as further review of the relevant scientific literature. As opportunities arise, students may be invited to visit nearby companies / workplaces that employ physics graduates.

PHYS 212 – Survey of Physics Research
Course Syllabus

Course Description
An introduction to current areas of active physics research, both in the department and in the broader community. Topics will vary but may include current research in Astronomy, Astrophysics, Atomic/Molecular/Optical Physics, Condensed Matter Physics, and High-Energy/Particle Physics as well as developments in the tools used to conduct this research. Students will hear research presentations by FMU students and faculty and will gain experience in finding and reading scientific articles. The course may include opportunities for off-campus experiential learning.

Required Materials
None

Learning Goals
By the end of this course, the student will be able to

- Identify important topics in physics research
- Locate, understand, and properly cite scientific journal articles
- Identify fields and/or careers in physics / applied physics that they might pursue

ADA Statement
If you have a disability that qualifies you for academic accommodations, I am happy to accommodate you. The Office of Counseling and Testing will provide me with a letter listing your needs, but please come talk to me about how we can implement them in the context of this class. More information can be found in the Student handbook.

Academic Integrity
All work must be the sole product of each student's brain and effort (in other words, all cheating or plagiarism will be reported and handled as detailed in the Student Handbook). **The use of language models or other "AI" tools (unless explicitly allowed or assigned) is Academic Dishonesty and will be reported.** For my part, I will not discriminate against any student for any reason and will make any reasonable accommodation necessary to meet a student's needs. No discriminatory or hostile behavior toward fellow students will be tolerated. If you experience or witness discriminatory, abusive, or other unwanted behavior, you should contact me, the Title IX Coordinator, the Vice President of Student Affairs, or other appropriate authorities.

Tentative Schedule (subject to change)

1. Course Overview, Kinds of Research, Student Research Opportunities
2. Research Methods: Computational and Theoretical
3. Research Methods: Experimental
4. Student Research Showcase 1
5. What's new in Astronomy?
6. What's new in Astrophysics?
7. Student Research Showcase 2
8. What's new in AMO Physics?
9. What's new in Condensed Matter Physics?
10. Student Research Showcase 3
11. What's new in High Energy and Particle Physics?
12. Physics in other disciplines
13. Accessing and using journals, Proper citation, Reading scientific articles
    Report Draft Due
14. Research conduct and ethics
15. Physics outside of research
    Final Reports Due

Grade Information

A	90+
B+	86 - 89
B	80 - 85
C+	76 - 79
C	70 - 75
D+	66 - 69
D	60 - 65
F	<60

Attendance and Participation	20%
Weekly Summaries	40% (total)
Report Draft	10%
Final Report	30%

Attendance and Participation: Attendance of all sessions is expected.. If you must miss a class session, **you must contact me before 5:00 PM on the day of your absence to be excused.** Students

will receive one free excused absence, which also excuses the student from the corresponding Weekly Summary. Further excused absences may be granted at the instructor's discretion if appropriate. Students are also expected to participate in each week`s discussion and must ask a pertinent question in at least 50% of all sessions to receive full participation credit.

Weekly Summaries: At the end of each session, students will turn in a report sheet including the date of the session, the name of the speaker, the title of the talk, a brief summary of the content of the lecture or seminar, and any questions that the student asked the speaker (as well as a brief summary of the answer).

Final Report: Students will write a more detailed report of two – three pages on one of the research topics covered during the semester. As in the Summaries, Reports should include the date of the session, the name of the speaker, the title of the talk, and a summary of the presentation (up to one page of the report). The Final Report must also include your discussion of **at least 2 additional journal articles** on the same topic as the presentation (that may or may not have been referenced in the presentation itself). These articles must be found in peer-reviewed publications and must be properly cited and acknowledged within the report. Reports may optionally include properly cited figures, but these figures do not count toward the length requirement (at least two pages). The articles should provide some additional context or information that is relevant to the research presentation.

Students must submit a draft of their report as directed by the professor. Drafts will be graded based on adherence to the assignment guidelines.

FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED NEW COURSE or MODIFICATION OF AN EXISTING COURSE

Check the appropriate box: ____ **New Course** _☑_ **Course Modification**

Department/School Department of Physics and Engineering **Date** 03/25/2024

Course No. or Level PHYS 312 **Title** Lasers and Optics

Semester hours 3 Clock hours: Lecture 3 Laboratory 0

Prerequisites PHYS 202 or PHYS 216, Corequisite MATH 201, or permission of department

Enrollment expectation 10 students

Indicate any course for which this course is a (an)

modification PHYS 312
(proposed change in course title, course description, course content or method of instruction)

substitute _____
(The proposed new course replaces a deleted course as a General Education or program requirement.)

alternate _____
(The proposed new course can be taken as an alternate to an existing course.)

Name of person preparing course description Seth Smith

Department Chairperson's/Dean's Signature

Provost's Signature

Date of Implementation Elective Rotation Beginning Spring 2026

Date of School/Department approval April 11, 2024

Catalog description:
312 Lasers and Optics (3) (Prerequisite: 202 or 216. Corequisite: Mathematics 201, or permission of the department). Introduction to lasers and optics. Laser topics include laser emission, holography, fiber optics, laser spectroscopy, and laser applications. Optics topics include geometrical optics with an emphasis on reflection and refraction, as well as wave optics with an emphasis on diffraction, interference, and polarization. Additional topics will be covered as time permits, including optical spatial cloaking, optical microscopy, spatial light modulation, and other optics applications. The course will include both lab and lecture activities.

Purpose:

1. For Whom (generally?)
   Computational Physics, Health Physics, and Engineering students beyond their third semester.

2. What should the course do for the student?
   Introduces students to an important topic in fundamental and applied physics (the interactions between light and matter) and to the instruments that are used to study and utilize light-matter interactions in a variety of applications.

Teaching method planned: In-class lecture, in-class lab activities. Midterm and Final Exams.

Textbook and/or materials planned (including electronic/multimedia):
Main Textbook**:** "Introduction to Classical and Modern Optics" (4th Edition) by Jurgen R. Meyer-Arendt

Course Content:
Students will begin by reviewing topics from geometric optics that were encountered more briefly in the prerequisite PHYS 202 or PHYS 216 courses (calculus-based or algebra-based electricity and magnetism). Focus then moves to a more detailed treatment of optics and image formation and of diffraction and interference. The last portion of the course centers around important applications of light-matter interactions including lasing, holography, and optical data processing.

Physics 312 (Lasers and Optics) Syllabus

OBJECTIVES:

1. The student will be introduced to the basic concepts and principles of lasers and optics. Laser topics will include laser emission, holography, fiber optics, laser spectroscopy, and laser applications. Optics topics will include geometrical optics with an emphasis on reflection and refraction, as well as wave optics with an emphasis on diffraction, interference, and polarization. Additional topics will be covered as time permits, including optical spatial cloaking, optical microscopy, spatial light modulation, and other optics applications.

2. The student will gain a deeper understanding of these concepts and principles through a broad range of problems and examples.

3. The student will learn problem-solving skills that are useful in physics and other disciplines.

4. The student will perform physics experiments appropriate for a 3-hour course. These experiments will teach the student skills for understanding the natural world through measurement. Experiment topics will include reflection, refraction, diffraction, interference, polarization, and laser spectroscopy.

COURSE CONTENT:

Chapter	Title/Description	Tests
1	Reflection and Refraction	
2	Thin Lenses	
3	Thick Lenses	
4	Mirrors	Test 1
5	Aberrations	
6	Stops and Pupils	
7	Fiber Optics	
9	Optical Systems	Test 2
11	Interference	
12	Thin Films	
13	Coherence	
14	Diffraction	
15	Diffraction Gratings	Test 3
16	Light Scattering	
17	Polarization	
18	Optical Data Processing	
19	Holography	
23	Lasers	

EVALUATION METHODS:

The final grade in this course will be determined as follows:

1.	Tests	50%
2.	Homework	10%
3.	Experiments	15%
4.	Cumulative Final Exam	25%
		100%

Grading Scale:

90-100	A
85-89.9	B+
80-84.9	B
75-79.9	C+
70-74.9	C
65-69.9	D+
60-64.9	D
Below 60	F

NOTES AND POLICIES:

1. The best way to learn physics is to practice it. Homework assignments will be given daily and will be collected and graded. Completing the homework assignments is crucial to understanding the material covered in lecture.

2. Students desiring assistance outside of class should see the instructor during his posted office hours or by appointment.

3. Any student who misses more than 4 lectures is subject to being dropped from the course by the professor with an F or W, unless the absences are excused (as determined by the professor). If a student wishes to withdraw from the course, it is the student's responsibility to initiate and complete the drop process prior to the deadline.

4. Any student entering class late will already be marked absent. If you want the "absent" changed to a "late", you must notify the instructor immediately after class on the day you are late. Three "lates" will be counted as one "absent".

5. Cell phones must be turned **OFF** (not set to vibrate) during class. It would be rude to distract your classmates and it is important to be focused in class. Violators will be subject to disciplinary action.

6. Make-up tests will only be given to students who miss a test or due to an excused absence (as determined by the instructor).

7. DO NOT WAIT UNTIL THE LAST MINUTE TO STUDY FOR TESTS!! IT DOESN'T WORK! The best way to prepare is to complete each homework assignment daily and to review each day's notes before coming to your next class. You should have a scheduled time each day (1 to 2 hours) to study and practice physics.

8. Students should bring the text and a calculator to every class.

9. Students should bring a calculator to every test. It should have functions such as x^2, square root, $1/x$, y^x, scientific notation (EE or ENG), lnx, e^x, logx, store, recall, sin, cos, tan, $\sin^{-1}$, $\cos^{-1}$, $\tan^{-}$

1, π, radians, & degrees. Such basic scientific calculators are made by many vendors (such as Texas Instruments, Sharp, Casio, ...) and can be purchased for $10 to $15.

10. Students may NOT use programmable calculators on tests. You must have a NON-PROGRAMMABLE scientific calculator for each of the tests.

11. If you really want to learn Lasers and Optics, then you will need to THINK about the material. This takes time and effort, but it will truly pay off in the form of increased learning. Specifically, you should do the following before coming to each class:

    a. Study the previous day's notes (This includes reworking the examples without looking at the answers).
    b. Read the assigned material in the textbook.
    c. Solve all of the assigned homework problems.
    d. Ask questions (write them down while you are studying)!

FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED NEW COURSE or MODIFICATION OF AN EXISTING COURSE

Department/School Fine Arts/CLA **Date** 10/01/2024

Course No. or Level Theatre 320 **Title** Theatre History

Semester hours. 3 Clock hours: Lecture 3 Laboratory _____

Prerequisites None Instructor permission/audition/interview _____

Enrollment expectation 6-10

Indicate any course for which this course is a (an)

modification **This is a modification of 320: Theatre History I: Beginning to 1700 and 321: Theatre History II: 1700 to the Present to condense them into this one course.**
(proposed change in course title, course description, course content or method of instruction)

substitute _____
(The proposed new course replaces a deleted course as a General Education or program requirement.)

alternate _____
(The proposed new course can be taken as an alternate to an existing course.)

Name of person preparing course description **D. Keith Best**

Department Chairperson's/Dean's Signature D. Keith Best

Provost's Signature

Date of Implementation FALL 2025

Date of School/Department approval **10/01/2024**

Catalog description:

320 Theatre History (3) Study of the Western theatre, both its physical form and literature, from the beginning to the present.

When completed, forward to the Office of the Provost. 9/03

FRANCIS MARION UNIVERSITY: DESCRIPTION OF PROPOSED NEW COURSE or MODIFICATION OF AN EXISTING COURSE

Department/School **Fine Arts/CLA** **Date** **10/01/2024**

Course No. or Level **Theatre 405** **Title** **Advanced Acting**

Semester hours. **3** Clock hours: Lecture **3** Laboratory _____

Prerequisites **205 or permission of the department** Instructor permission/audition/interview

Enrollment expectation **6-10**

Indicate any course for which this course is a (an)

modification **This is a modification of 405: Advanced Acting to increase the credit hours from 2 to 3 and change the course description to reflect additional material**
(proposed change in course title, course description, course content or method of instruction)

substitute _____
(The proposed new course replaces a deleted course as a General Education or program requirement.)

alternate _____
(The proposed new course can be taken as an alternate to an existing course.)

Name of person preparing course description **D. Keith Best**

Department Chairperson's/Dean's Signature D. Keith Best

Provost's Signature _____

Date of Implementation FALL 2025

Date of School/Department approval **10/01/2024**

Catalog description:

405 Advanced Acting (3) (Prerequisite: 205 or permission of the department) Emphasis on the practical application of Stanislavski's principles of psycho-technique and their subsequent interpretations. Also covers professional audition techniques and preparation.

When completed, forward to the Office of the Provost. 9/03