2015-2016 PETITION/PROGRAM SHEET
Degree: Bachelor of Science
Major: Physics

About This Major . . .

Physics is the study of the universe: what it is made of and how it works, ranging from stars and galaxies to atoms and nuclei and everything in between. Physics forms the foundation of many technical fields including electronics and optics. Physics also features prominently in many of the hottest areas of current research and innovation, such as the multidisciplinary fields of nanotechnology and biophysics.

The physics program serves as a foundation for a wide array of careers. Physics majors from Colorado Mesa University have gone on to graduate programs in physics, astrophysics, chemistry, materials science, aerospace engineering, electrical engineering, and to medical school. They have also gone directly into jobs in engineering, business, and research. Over the last ten years Colorado Mesa physics majors have gone to graduate schools at the University of Colorado Boulder, University of Utah, Purdue University, and Washington State University. For more information on what you can do with this major, go to http://www.coloradomesa.edu/career/whatmajor.html.

All CMU baccalaureate graduates are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, and specialized knowledge/applied learning. In addition to these campus-wide student learning outcomes, graduates of this major will be able to:

1. Show fluency with the major fields of physics (classical mechanics, electromagnetism, statistical physics, and quantum theory). (Specialized Knowledge)
2. Use mathematical representations to analyze physical scenarios. (Quantitative Fluency)
3. Use laboratory techniques to investigate experimentally physical phenomena. (Applied Learning)
4. Communicate effectively about topics in physics. (Communication Fluency)
5. Execute a project which addresses a significant and complex issue in physics. This project will integrate knowledge and techniques from different areas of physics. (Specialized Knowledge/Applied Learning)

NAME: _____ **STUDENT ID #:** _____

LOCAL ADDRESS AND PHONE NUMBER: _____

_____ **( )** _____

I, (Signature)_____, hereby certify that I have completed (or will complete) all the courses listed on the Program Sheet. I have read and understand the policies listed on the last page of this program sheet. I further certify that the grade listed for those courses is the final course grade received except for the courses in which I am currently enrolled and the courses which I complete next semester. I have indicated the semester in which I will complete these courses.

_____ _____ 20_____
Signature of Advisor Date

_____ _____ 20_____
Signature of Department Head Date

_____ _____ 20_____
Signature of Registrar Date

DEGREE REQUIREMENTS:

- 120 semester hours total (Students must complete a minimum of 30 of the last 60 hours of credit at CMU, with at least 15 semester hours in major discipline courses numbered 300 or higher).
- 40 upper division credits (A minimum of 15 taken at the 300-400 course levels within the major at CMU).
- 2.00 cumulative GPA or higher in all CMU coursework.
- 2.00 cumulative GPA or higher in coursework toward the major content area. A "C" or higher is required in all major courses.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- When filling out the program sheet a course can be used only once.
- A student must follow the CMU graduation requirements either from 1) the program sheet for the major in effect at the time the student officially declares a major; or 2) a program sheet for the major approved for a year subsequent to the year during which the student officially declares the major and is approved for the student by the department head. Because a program may have requirements specific to the degree, the student should check with the faculty advisor for additional criteria. It is the student's responsibility to be aware of, and follow, all requirements for the degree being pursued. Any exceptions or substitutions must be approved by the student's faculty advisor and Department Head.
- See the "Undergraduate Graduation Requirements" in the for additional graduation information.
- Essential Learning Capstone should be completed between 45 and 75 hours.
- See the "Undergraduate Graduation Requirements" in the catalog for additional graduation information.

ESSENTIAL LEARNING REQUIREMENTS (31 semester hours)
See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.

Course No	Title	Sem.hrs	Grade	Term/Trns
English (6 semester hours, must receive a grade of "C" or better and must be completed by the time the student has 60 semester hours.)				
ENGL 111	English Composition	3		
ENGL 112	English Composition	3		
Math (3 semester hours, must receive a grade of "C" or better, must be completed by the time the student has 60 semester hours.)				
MATH 151	Calculus I	5*		
*3 credits apply to the Essential Learning requirements and 2 credits apply to elective credit				
Humanities (3 semester hours)				
Social and Behavioral Sciences (6 semester hours)				
Natural Sciences (7 semester hours, one course must include a lab)				
	L			
History (3 semester hours)				
HIST				
Fine Arts (3 semester hours)				

Course No	Title	Sem.hrs	Grade	Term/Trns
WELLNESS REQUIREMENT (2 semester hours)				
KINE 100	Health and Wellness	1		
KINA 1		1		
ESSENTIAL LEARNING CAPSTONE (4 semester hours)				
ESSL 290	Maverick Milestone (see English & math pre-reqs)	3		
ESSL 200	Essential Speech (co-requisite)	1		
PHYSICS MAJOR REQUIREMENTS (60 semester hours) Must pass all courses with a grade of "C" or higher.				
PHYS 131	Fundamental Mechanics	4		
PHYS 131L	Fundamental Mechanics Lab	1		
PHYS 132	Electromagnetism and Optics	4		
PHYS 132L	Electromagnetism and Optics Lab	1		
PHYS 230	Intermediate Dynamics	3		
PHYS 231	Modern Physics	3		
PHYS 251	Electronics for Scientists	3		
PHYS 252	Intermediate Lab	2		
PHYS 311	Electromagnetic Theory I	3		
PHYS 321	Quantum Theory	3		
PHYS 331	Advanced Laboratory I	2		
PHYS 342	Advanced Dynamics	3		
PHYS 362	Statistical & Thermal Physics	3		
PHYS 422	Quantum Theory II	3		
PHYS 473	Modern Optics	3		
PHYS 482	Senior Research	1		
PHYS 482	Senior Research	1		
PHYS 494	Seminar	1		
PHYS 494	Seminar	1		
(PHYS 482 and 494 are taken twice)				
MATH 152	Calculus II	5		
MATH 253	Calculus III	4		
MATH 260	Differential Equations	3		
MATH 360	Methods of Applied Mathematics	3		
ELECTIVES (All college level courses appearing on your final transcript, **not listed above** that will bring your total semester hours to 120 hours.) (23 semester hours; 13 hours upper division may be needed.)				
*MATH 151	Calculus I	2		

SUGGESTED COURSE SEQUENCING FOR A MAJOR IN PHYSICS

This is a suggested sequence of course work. Certain courses may have prerequisites or are only offered during the Fall or Spring semesters. It is the student's responsibility to meet with the assigned advisor and check the 2 year course matrix on the Colorado Mesa website for course availability.

FRESHMAN YEAR

Fall Semester		Hours	Spring Semester		Hours
PHYS 131	Fundamental Mechanics	4	PHYS 132	Electromagnetism and Optics	4
PHYS 131L	Fundamental Mechanics Lab	1	PHYS 132L	Electromagnetism and Optics Lab	1
MATH 151	Calculus I	5	MATH 152	Calculus II	5
ENGL 111	English Composition	3	ENGL 112	English Composition	3
ESSL	Humanities	3	ESSL	History	3
		16			16

SOPHOMORE YEAR

Fall Semester		Hours	Spring Semester		Hours
PHYS 230	Intermediate Dynamics	3	PHYS 231	Modern Physics	3
PHYS 251	Electronics for Scientists	3	PHYS 252	Intermediate Lab	2
MATH 253	Calculus III	4	MATH 260	Differential Equations	3
ESSL	Natural Science	3	ESSL	Social/Behavioral Science	3
KINE 100	Health and Wellness	1	ESSL 200	Essential Speech	1
KINA	Activity	1	ESSL 290	Maverick Milestone	3
		15			15

JUNIOR YEAR

Fall Semester		Hours	Spring Semester		Hours
PHYS 311	Electromagnetic Theory I	3	PHYS 342	Advanced Dynamics	3
PHYS 321	Quantum Theory I	3	PHYS 362	Statistical and Thermal Physics	3
PHYS 331	Advanced Laboratory	2	ESSL	Social/Behavioral Science	3
MATH 360	Methods of Applied Mathematics	3	ESSL	Natural Science with lab	4
ESSL	Fine Arts	3	Electives (unrestricted)		3
		14			16

SENIOR YEAR

Fall Semester		Hours	Spring Semester		Hours
PHYS 473	Modern Optics	3	PHYS 422	Quantum Theory II	3
PHYS 482	Senior Research	1	PHYS 482	Senior Research	1
PHYS 494	Seminar	1	PHYS 494	Seminar	1
Electives (unrestricted)		9	Electives (unrestricted)		9
		14			14

POLICIES:

1. Please see the catalog for a complete list of graduation requirements.
2. This program sheet must be submitted with your graduation planning sheet to your advisor during the **semester prior to the semester of graduation, no later than October 1 for spring graduates, no later than March 1 for fall graduates.** You must turn in your "Intent to Graduate" form to the Registrar's Office **by September 15 if you plan to graduate the following May, and by February 15 if you plan to graduate the following December**.
3. Your advisor will sign and forward the Program Sheet and Graduation Planning Sheet to the Department Head for signature. Finally, the Department Head will submit the signed forms to the Registrar's Office. (Students cannot handle the forms once the advisor signs.)
4. If your petition for graduation is denied, it will be your responsibility to reapply for graduation in a subsequent semester. Your "Intent to Graduate" does not automatically move to a later graduation date.
5. NOTE: During your senior year, you will be required to take a capstone exit assessment/project (e.g,, Major Field Achievement Test).