Orientation Information for Physics and Astronomy Majors

For general information and help selecting your fall schedule, contact:

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If you are majoring in physics, you have the option of doing a concentration in one of the following: astrophysics, computational physics, or applied & engineering physics. Or you can do no concentration. Regardless of your choice, the courses are identical in the first semester, so freshmen don't have to decide yet. The astronomy major does not have concentrations.

Degree requirements are divided into two groups: Mason core and major courses. For the "written communication" Mason core requirement, you have to take specific courses, ENGH 101 and 302. For each of the other Mason core categories, you select 3 credits (usually one course) from a list of approved courses. Your major requirements satisfy the quantitative reasoning, information technology & computing, and natural science Mason core categories.

My website: http://physics.gmu.edu/~joe/ has a number of links to help you with course selection and registration. Scroll down until you reach the section "GMU Links."

Patriot Web: https://patriotweb.gmu.edu/ Log in here with your Mason login to schedule and enroll in your courses. You can also view a schedule of courses for the semester to see which courses are being offered and which still have spots available.

Catalog: https://catalog.gmu.edu/ You can use this to search for information on specific courses and programs.

Sample Schedules: http://physics.gmu.edu/~joe/Sample-schedules.html

Mason Core: https://catalog.gmu.edu/mason-core/ Here you can find the specific courses that you can use to satisfy the various Mason core categories. Click on a course link to find a brief description of the course.

Transfer Credits: https://www.gmu.edu/transfer/credits This page tells you what course credit you'll receive at GMU for your AP, IB, CLEP, etc. You'll want to check and see which Mason core and/or major requirements you already have covered.

Transfer Credit Matrix: https://admissions.gmu.edu/transfer/transferCreditSearch.asp If you've taken courses at other colleges, this page will tell you what course credit you'll receive here when you transfer the courses in.

Steps for Course Selection (freshmen)

1. For both physics and astronomy majors, Calc I is a prerequisite for nearly all of the other major courses. So your first step is to figure out which math course you'll take in the fall.

If you've already earned credit for Calc I or beyond (for example, with a sufficient grade on the AP

exam), then you can register for the next course in the sequence (MATH 113 Calc I, MATH 114 Calc II, MATH 213 Calc III, MATH 214 Differential Equations and/or MATH 203 Linear Algebra). If you've already earned credit for a calc course but don't feel that you learned it solidly, then you should take it again here.

If you have not already earned credit for Calc I or beyond, then you should either take precalc (MATH 105) or Calc I (MATH 113). You'll need to take the math placement test in order to register. Info on the math placement test is here:
https://science.gmu.edu/academics/departments-units/mathematical-sciences/mathematical-sciences-testing-center

2. Select physics courses, if applicable. The first course in the required physics sequence, for both physics and astronomy majors, is PHYS 160 (lecture) and 161 (lab). Since Calc II (MATH 114) is a coreq for PHYS 160, you can only take PHYS 160/161 in the fall if you also take MATH 114 or beyond. (If course *A* is a coreq for course *B*, then you can only take *B* if you've already taken *A* or are taking *A* at the same time as *B*.) Physics and astronomy majors often want to take some sort of physics in their first semester, so we offer PHYS 122 and 123. These are both 1-credit, half-semester courses (122 the first half and 123 the second half) that cover relativity and quantum physics at a non-mathematical level. They are not required but most students really enjoy them. If you take them, they would count as electives towards your degree. So, depending on the math course you take in the fall, the physics course you should take is…

MATH 105 or 113:	PHYS 122 and/or 123 or no physics
MATH 114:	PHYS 160 and 161
MATH 213:	PHYS 260 and 261

3. With your math and physics selections complete, it's time to round out your schedule with Mason core courses and/or courses to satisfy a minor or second major (if you'd like to do one of these). You'll probably want to aim for 14 or 15 credits total in your first semester. I usually recommend taking ENGH 101 as one of your Mason core courses during your first semester (unless you already have credit for it), but you can take it in a later semester if you prefer.

First, check to see if any of the courses that you're bringing in (for example, from AP exams) satisfy any of the Mason core categories. Use the "Transfer Credit Policy" and/or "Transfer Credit Matrix" links above to identify which of our courses you have credit for. Then use the catalog (link above) to search for that course. Its course description will indicate which, if any, Mason core category it satisfies.

You need 3 credits (usually 1 course) per category. (For the arts requirement, you can do 3 separate 1-credit performance courses. Or you can do a single 3-credit course, which is standard for the other categories.) From the categories above that you have not already satisfied, select courses that look like they might be interesting to you. Use the "Mason Core" link above to find courses that satisfy each category.

Note: If you are an astronomy major or physics major with an astrophysics concentration, your first astronomy course will come in the spring semester.

4. Once you've selected the courses you'd like to take in the fall, you can use Patriot Web (link above) to schedule them. The scheduling tool will search for sections of the courses that do not conflict with

each other and offer you various possibilities, showing you what your full course schedule will look like each day of the week. It might not be possible to construct a schedule containing all of the courses you want. One or more might not be offered this semester, or might be full. Or, there might be a time conflict between two or more of the courses. In the case of conflicts, always prioritize math and physics. If you can’t get all of the courses you wanted, then return to step 3 and find other Mason core course(s) to take instead.