

## Physics Students

**August:** placement exam for 501, 503, 507, or challenge exam with permission of GPD

**Year 1 fall term** (standard sequence, maybe 1/2 of students follow standard sequence)

501 QM 1: grade of B or better - OR - pass challenge exam

503 E&M 1: grade of B or better - OR - pass challenge exam

507 Classical Mechanics: grade of B or better - OR - pass challenge exam

633 Seminar in Physics

**January:** placement exam for 611, and challenge exam for 502, 504 if allowed by GPD

**Year 1 spring term**

502 QM 2: grade of B or better - OR - pass challenge exam

504 E&M 2: grade of B or better - OR - pass challenge exam

611 Statistical Mechanics: grade of B or better - OR - pass challenge exam

634 Seminar in Physics

**Note on challenge exams:** *Taking the challenge exam generally requires that you have previously taken the course at Rutgers, but had a grade lower than B, or that you took an equivalent course elsewhere.*

**Credit Transfer:** After you have 12 Rutgers credits, if you took graduate courses before coming to Rutgers, you can transfer up to 24 credits of those grad courses which are not equivalent to courses taken at Rutgers. If the courses are equivalent to the core courses, you still need to pass the challenge exam or take the Rutgers core course.

**Year 2 fall term**

- Identify research mentor - Most Ph.D. students continue with their qualifier mentor for their Ph.D. project, but this requires their mutual agreement. Ph.D. projects and advisers can be in different areas from the qualifier. The graduate program includes many faculty with appointments not based in Physics and Astronomy, but the qualifier must be done with a mentor based in Physics & Astronomy.
- Notify GPD and qualifier comm. chair of project by Sep 1.
- Submit written report to your qualifier committee at least 1 week before presentation.
- Written report OK?
- Presentation OK?
- Questions answered OK?

**Advanced to candidacy:** requires completing 6 core courses and 3 parts of qualifier.

**Advanced coursework:**

2 in-area courses

2 out-of-area courses - see note below

**Annual committee meetings:** start year after passing qualifier: Year 3, 4, 5, ...

**72 credit requirement:** You must take 72 credits. 10 courses = 30 credits listed above are required. Most students get most credits from Research in Physics, 701 / 702, after being advanced. (Before being advanced, sign up for 3-credit 623 / 624.) There is no reward for extra credits. Generally sign up for 1 - 9 credits of 701 / 702 as needed. Adjust the number to have 72 at the end of the term you defend. You must sign up for at least 1 credit per term. At least 24 of the 72 credits must come from 701 / 702.

PhD defense: For information on graduating, see the GSO site: <http://www.physics.rutgers.edu/GSO/thesis/thesis.shtml>

For forms and deadlines, also look at <http://gsnb.rutgers.edu/academics/how-apply-degrees>. Department policy requires a 5 person committee, usually made up of four members from your annual committee meetings plus 1 outside member.

Out of area course guide: The department research program is divided into 5 areas, and you must take 2 advanced grad courses in two different areas that are not your research area. The courses listed below will satisfy the requirement. If you wish to use a course not on the list, discuss this with the GPD first.

<b>Area:</b>	<b>Standard Course</b>
<b>A: Condensed Matter</b>	601 solid state or 627 surface
<b>B: Subatomic</b>	605 nuclear or 613 particle
<b>C: Astronomy</b>	514 radiative processes or 607 galaxies
<b>D: General Relativity</b>	617 GR - out of area for everyone
<b>E: Biophysics</b>	567 Physics of Living Matter

**Note:** Graduate school forms can be found at: <http://gsnb.rutgers.edu/resources/graduate-students-forms>.

**Note on registration difficulties:** 623 and 624 can be taken multiple times for credit, unlike the standard courses, other than the advanced special topics courses. Sometimes if you are having registration difficulties with a particular course, signing up for 623 / 624 instead and taking the course might provide a workaround. Please consult with the course instructor and GPD in this case.

## Astronomy Students

**August:** placement exam for 501, 503, 507, or challenge exam with permission of GPD

**Year 1 fall term** (standard sequence, maybe 1/2 of students follow standard sequence)

501 QM 1: grade of B or better - OR - pass challenge exam

503 E&M 1: grade of B or better - OR - pass challenge exam

507 Classical Mechanics: grade of B or better - OR - pass challenge exam

633 Seminar in Physics

**January:** The January placement exam are not required for astronomy students.

Challenge exams might be offered, if needed.

### Year 1 spring term

514 Radiative Processes: grade of B or better

607 Galaxies or 608 Cosmology grade of B or better

634 Seminar in Physics

**Note on challenge exams:** *Taking the challenge exam generally requires that you have previously taken the course at Rutgers, but had a grade lower than B, or that you took an equivalent course elsewhere.*

**Credit Transfer:** After you have 12 Rutgers credits, if you took graduate courses before coming to Rutgers, you can transfer up to 24 credits of those grad courses which are not equivalent to courses taken at Rutgers. If the courses are equivalent to the core courses, you still need to pass the challenge exam or take the Rutgers core course.

### Year 2 fall term

- Identify research mentor - Most Ph.D. students continue with their qualifier mentor for their Ph.D. project, but this requires their mutual agreement. Ph.D. projects and advisers can be in different areas from the qualifier. The graduate program includes many faculty with appointments not based in Physics and Astronomy, but the qualifier must be done with a mentor based in Physics & Astronomy.
- Notify GPD and qualifier comm. chair of project by Sep 1.
- Submit written report to your qualifier committee at least 1 week before presentation.
- Written report OK?
- Presentation OK?
- Questions answered OK?

**Advanced to candidacy:** requires completing 5 core courses and 3 parts of qualifier.

### Advanced coursework:

3 more advanced in-area courses are required (607 or 608 required for advancement):

606 Stars & Planets

607 Galaxies

608 Cosmology

610 Interstellar Matter

2 out-of-area courses are required - see note below

**Annual committee meetings:** start year after passing qualifier: Year 3, 4, 5, ...

**72 credit requirement:** You must take 72 credits. 10 courses = 30 credits listed above are required. Most students get most credits from Research in Physics, 701 / 702, after being advanced. (Before being advanced, sign up for 3-credit 623 / 624.) There is no reward for extra credits. Generally sign up for 1 - 9 credits of 701 / 702 as needed. Adjust the number to have 72 at the end of the term you defend. You must sign up for at least 1 credit per term. At least 24 of the 72 credits must come from 701 / 702.

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