Academics

2.1 Degree Requirements

2.1.1 Masters of Science (M.S.) Degree

The physics and astronomy Master of Science degrees are offered with either thesis or critical essay options. The degrees may be terminal or an intermediate step toward a Ph.D. In all cases, the final examination is oral, conducted by a committee of three members of the graduate faculty approved by the Dean of the Graduate College.

The program for the M.S. with thesis requires a thesis based on an original experimental or theoretical investigation by the candidate. The program for the M.S. with critical essay requires a critical essay on the literature of a particular area of physics.

Master of Science in Physics

1. For the M.S. with thesis or with critical essay, the candidate must complete a minimum of 30 semester hours of graduate work in courses numbered 4000 or above, of which at least 15 semester hours must be at the 5000 or above level, and with a minimum average GPA of 3.00. For the M.S. with thesis no more than 6 of the minimum 30 semester hours may be in PHYS:7992 and PHYS:7990), and for the M.S. with critical essay no more than 4 hours. Seminars do not count toward the 30 semester-hour requirement. Up to one-third of the coursework may be in graduate courses in related scientific fields other than physics (e.g., mathematics, chemistry, astronomy, geology, and engineering).

2. Prepare a thesis or critical essay and pass the Final Examination.

Master of Science in Astronomy

1. Candidate must complete a minimum of 30 semester hours of graduate work in courses numbered 4000 or above with at least 15 semester hours at the 5000 or above level, and with a minimum average GPA of 3.00. The 30 semester hours must include at least 12 s.h. chosen from: ASTR:6870) Radiative Processes in Astrophysics; ASTR:6770). The Interstellar Medium; ASTR:6780 Stellar Astrophysics; ASTR:6880 High Energy Astrophysics; ASTR:6781) Galactic Astronomy; ASTR:6782 Extragalactic Astronomy. For the M.S. with thesis no more than 6 of the minimum 30 semester hours may be in PHYS:7992 and ASTR:7991) and for the M.S. with critical essay no more than 4 hours. Seminars do not count for credit toward the 30 semester-hour requirement. Up to one-third of the coursework may be in graduate courses in related fields such as meteorology and electrical engineering.

2. Prepare a thesis or critical essay and pass the Final Examination.
2.1.2 Doctor of Philosophy (Ph.D.) Degree

The doctoral degree in physics may be completed with an emphasis in physics, or through the Astronomy Track, with an emphasis in astronomy. The degree requirements are similar for the two tracks but the specific coursework requirements differ. Students who follow the Astronomy Track will receive a designation on their final transcript indicating that they have been awarded the Ph.D. in Physics (Astronomy).

The Doctor of Philosophy program in physics requires a minimum of 72 s.h. of graduate credit, corresponding to coursework at the 3000-level and above.

Graduate students who wish to pursue a Ph.D. in physics must pass a qualifying examination in all principal areas of physics at the level of advanced undergraduate work. The Qualifying Exam is discussed in more detail in Section 2.4. The examination, which may be repeated only once, is given each year before the beginning of the spring semester. Students must pass the qualifying examination before the beginning of their fourth semester of graduate work at The University of Iowa. Note that students who report a score of 630 or above on the Advanced Physics GRE subject exam are exempt from this requirement.

All Ph.D. students must also pass a Comprehensive Examination (see Section 2.5); participate in advanced seminars; do original research in experimental physics, theoretical physics, or astrophysics; and prepare and defend a written dissertation based on this work.

The program of study for the Ph.D. with emphasis in physics or astronomy includes thorough course work in both classical and quantum physics for all students, whether their specialized research is to be in an experimental or a theoretical area. Students must take at least 24 s.h. of 200-level (5000-level or above) courses in the department, excluding PHYS:7992 Individual Critical Study, PHYS:7990 Research: Physics, ASTR:7991 Research: Astronomy, and seminars.

**Physics Track**

The following core graduate level courses are required for the Ph.D. with an emphasis in physics.*

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS:4761-4762</td>
<td>Mathematical Methods on Physics</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>PHYS:5710</td>
<td>Classical Mechanics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>PHYS:5730</td>
<td>Statistical Mechanics I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>PHYS:5811-5812</td>
<td>Classical Electrodynamics I-II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>PHYS:5741-5742</td>
<td>Quantum Mechanics I-II</td>
<td>6 s.h.</td>
</tr>
</tbody>
</table>

* Advanced mathematics, such as complex analysis and tensor analysis, is used freely in these courses. An introduction is given in Mathematical Methods of Physics I and II. A math placement exam given during orientation will be used to help determine if you should take these courses. Students who pass the exam can be exempted from this requirement.
Astronomy Track

For the Ph.D. with an emphasis in Astronomy, students must complete at least four of the following core graduate level astronomy courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTR:6870</td>
<td>Radiative Processes in Astrophysics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>ASTR:6785</td>
<td>The Interstellar Medium</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>ASTR:6790</td>
<td>Stellar Astrophysics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>ASTR:6880</td>
<td>High Energy Astrophysics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>ASTR:6781</td>
<td>Galactic Astronomy</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>ASTR:6782</td>
<td>Extragalactic Astronomy</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>PHYS:7760</td>
<td>General Relativity and Cosmology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>PHYS:7830</td>
<td>Space and Astrophysical Plasma Physics</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

In addition, each student must complete at least two of the following core graduate level physics courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS:5710</td>
<td>Classical Mechanics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>PHYS:5730</td>
<td>Statistical Mechanics I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>PHYS 5811-5812</td>
<td>Classical Electrodynamics I-II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>PHYS:5741-5742</td>
<td>Quantum Mechanics I-II</td>
<td>6 s.h.</td>
</tr>
</tbody>
</table>

General Comments

Doctoral students in both the physics and astronomy tracks must pass each of the six 5000-level or above core courses with a minimum grade of B. If they do not they must retake the course to achieve the minimum grade. Exceptions to this rule may be approved by the EO Committee on a case-by-case basis.

Note that for both the physics and astronomy tracks, beyond the listed core courses, two additional advanced elective courses at the 5000 or above level are required for the Ph.D.

Because not all specialty courses are offered every year, students may wish to enroll in these courses in the first year to ensure adequate preparation for research in the subsequent year.

After a student has chosen a research specialty, he or she must submit a formal thesis proposal and defend the proposal in an oral comprehensive exam (Section 2.5). The appropriate thesis advisor then becomes the candidate’s general advisor and the chair of the comprehensive and final examination committee. The comprehensive exam is typically taken within one or two years after beginning research, and must be taken at least one semester prior to the final thesis defense.

Ph.D. candidates are recommended for the degree when they have written and defended their dissertation and, with the approval of their research advisor, have submitted the results for formal publication in a widely distributed, refereed scientific journal.
2.1.3 Worksheets

M.S. Astronomy Worksheet

(3.00 minimum GPA required)

Name_______________________________

Required 30 semester hours of 4000 level or above, with at least 15 at the 5000 or above level, and must include at least 12 s.h. chosen from:

- ASTR:6870) Radiative Processes in Astrophysics
- ASTR:6785 The Interstellar Medium
- ASTR:6790 Stellar Astrophysics
- ASTR:6880 High Energy Astrophysics
- ASTR:6781 Galactic Astronomy
- ASTR:6782 Extragalactic Astronomy

Up to one-third of the coursework may be in graduate courses in related fields such as meteorology and electrical engineering, and such courses are encouraged.

Identify transfer credits in above categories with a T.

Residency met? (24 of 30 here)

10-yr old credits?

Course # | credits
--- | ---

Total to date

Course # | credits
--- | ---

Total to date

Course # | credits
--- | ---

Total to date

4000-5000 level

5000+ level

Individual Critical Study/Research PHYS:7992 & ASTR:7991
(6 sh max with thesis & 4 sh max with critical essay)

Credits to date

Total credits required 30

Hours needed
M.S. Physics Worksheet
(3.00 minimum GPA required)

Required 30 semester hours of 4000 level or above, with at least 15 at the 5000 level.

Up to one-third of the coursework may be in related scientific fields other than physics and mathematics – for example, chemistry, astronomy, geology, or engineering.

<table>
<thead>
<tr>
<th>Course #</th>
<th>credits</th>
<th>Course #</th>
<th>credits</th>
<th>Course #</th>
<th>credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total to date ________

Identify transfer credits in above categories with a T.

Residence requirement met: _____ yes; _____ no

__________ 10-yr old credits?

4000-5000 level

5000+ Level

Individual Critical Study/Research

**PHYS:7992** & **PHYS:7990**

(6 sh max with thesis & 4 sh max with critical essay)

Course # | credits
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total to date ________

4000-5000 level

5000 level

Individual Critical Study/Research

Credits to date ________

Total credits required 30

Hours needed ________
P.h.D. Plan of Study Worksheet - Physics or Astronomy Track
(3.00 minimum GPA required)

72 total semester hours are required with at least 24 semester hours at the 5000 or above level. Specific course requirements are given in Section 2.1.2.

<table>
<thead>
<tr>
<th>5000+ Level</th>
<th>Research/Seminars</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-hour required (excluding PHYS:7990-7992 and seminars)</td>
<td>PHYS:7990-7992) &amp; seminars</td>
<td>4000-level</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course #</th>
<th>credits</th>
<th>Course #</th>
<th>credits</th>
<th>Course #</th>
<th>credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total to date ________
Total to date ________
Total to date ________

Identify transfer credits in above categories with a T.

Residence Requirement:

Of the required 72 s.h., at least 39 must be earned while registered in the University of Iowa Graduate College and after formal program admission.
2.2 Expectation for Enrollment as Full-Time Student*

The rules that define full-time graduate student enrollment status can be found in the University General Catalog and/or the Graduate College Manual. Here we briefly summarize those rules. If you have questions about the rules or how they may apply in your case, see your advisor or the Director of Graduate Studies.

Full-time graduate student status normally requires enrollment in a minimum of 9 s.h. at the 3000 level or above at UI during the fall and spring semesters of each academic year. Exceptions to the 9 s.h. rule are noted below. Course registration is not required during the summer provided the student intends to register for full-time status during the ensuing fall semester. Also please note that the specific enrollment requirements for full-time status are somewhat more stringent for international graduate students because of additional immigration rules for international students.

Full time graduate students in the Ph.D. program are normally expected to register for a minimum of 9 s.h. of graduate level work each semester until the minimum required 24 s.h. of coursework at the 5000 or above level has been completed. The required courses are delineated in Section 2.1.2 for both the Physics and Astronomy Tracks. Once the minimum required 24 s.h. of coursework has been completed, students may petition to take fewer than 9 s.h per semester by filling out a “short hours form” available through the Registrar’s Office. Such a petition may be justified based on one or more of the following conditions, and must be approved by the Department.

Justification for registering for fewer than 9 s.h.:
The student is engaged in:

- Research in fulfillment of a degree requirement
- Writing a thesis or dissertation
- Preparing a prospectus
- Gaining facility in a foreign language or other tools
- Preparing for a comprehensive/final examination
- Internships
- Research/Teaching Assistantship (RA/TA)

International students requesting to register for fewer than 9 s.h must also fill out an additional form available through OISS:

http://international.uiowa.edu/ui-departments/enrollment-rules
This form requires justification based on at least one of the following conditions:
That the student has:

- Graduate Assistantship and registered in at least 6 hours
- Completed/is currently completing all required coursework and is preparing for a
  Comprehensive Examination
- Completed/is currently completing all required coursework and is making normal progress

When considering whether to petition for a reduction in the required 9 s.h. enrollment rule it is
important to remember that the total hours and Graduate College residency requirements must
also be met. These require 72 semester hours total of graduate level work, and satisfaction of the
following UI Graduate college residency requirement:

*Residency Requirement for the Doctoral Degree:*
Student registration should reflect accurately the amount and kind of work undertaken in the
Graduate College. The Ph.D. and D.M.A. are granted primarily on the basis of achievement, and
engagement with one’s discipline is an important part of achieving quality in a dissertation. The
purpose of the registration requirement is to promote a high level of intellectual and scholarly
activity. These requirements foster intensive, concentrated engagement over an extended period
of time with the faculty members and graduate students in a student’s program. All doctoral
programs will contain a minimum of 72 semester hours of graduate work. Of those 72 semester
hours, at least 39 must be earned while registered in The University of Iowa Graduate College.
After completing 21 semester hours of graduate work under Graduate College registration and
in compliance with the Graduate College policy for time limits on academic credit, i.e., courses
ten years or older may not be counted toward the degree, students must complete an additional
18 semester hours to be taken as follows: (1) enrollment as a full-time student (9 semester hours
minimum) in each of two semesters, or (2) enrollment for a minimum of 6 semester hours in each
of three semesters.

A student must be registered in the semester in which (s)he earns her/his degree

* The specific rules regarding full-time enrollment status and residency are dictated by the UI
  Graduate College and/or Immigration Law and are subject to change. It is the student’s
  responsibility to ensure that all the legal requirements for enrollment status and residency are
  met. If you have any questions in this regard you are advised to contact the Graduate College or
  the International Student Services Office.
2.3 Progress to the Degree

Graduate students are expected, on a continuing basis, to make reasonable progress toward their degree goal. Continued financial support, though a graduate assistantship (TA or RA) or fellowship, is contingent on such progress. Because individual circumstances vary, it can be difficult to specify in every case what constitutes adequate progress toward the degree. For example, some of the coursework requirements may be delayed for students who begin significant research activities in the first two years. In addition, it is not uncommon for students to change research advisors, which can delay reaching various milestones. The discussion here is not intended to dissuade students from starting research early, or from changing research advisors or topics if they feel that would be in their best interests. However a general schedule and set of milestones is suggested below for both M.S. and Ph.D. students:

Progress to the M.S. Degree (see M.S. requirements in Section 2.1.1):
1. By the end of the 2nd semester at UI:
   * Complete 18 s.h. of graduate level coursework, including 9 s.h. at the 5000 or above level.
   * Identify a faculty advisor and topic area for a research thesis or critical essay.
2. By the end of the 3rd semester at UI:
   * Complete 27 s.h. of graduate level coursework including at least 12 s.h. at the 5000 or above level
   * Make substantial progress in research or review work for your thesis or critical essay.
   * In consultation with your advisor select your examination committee.
3. By the end of the 4th semester at UI:
   * Complete all coursework requirements
   * Complete and defend your M.S. thesis or Critical Essay.

Progress to the Ph.D. Degree (see Ph.D. requirements in Section 2.1.2):
1. By the end of the 2nd semester at UI:
   * Complete 18 s.h. of graduate level credit including at least 9 s.h. of coursework at the 5000 or above level.
   * For international students pass the Speak/Lec Test.
2. By the beginning of the 4th semester at UI:
   * Pass the Ph.D. Qualifying Examination
   * Complete 27 s.h. of graduate level credit including at least 12 s.h. of the required 5000 or above level coursework
3. By the end of the 4th semester at UI:
   * Complete the required 24 s.h. of graduate level coursework at the 5000 or above level.
   * Identify a faculty research advisor.
4. By the end of the 5th semester at UI, and in consultation with your research advisor:
   * Identify a research topic or question
   * Begin preparing your Comprehensive Exam research proposal
   * Select your Comprehensive Exam/Dissertation committee.
5. By the end of the 6th semester at UI:
   * Complete the Comprehensive Examination
   * Complete the Ph.D. residency requirement.
6. Subsequent to the passing the Comprehensive Exam:
* Write annual progress report describing your research progress including any significant results or difficulties that you have encountered.
* Have annual post comps review meetings to discuss your progress with your Dissertation committee

+ Teaching assistants whose first language is not English are expected by the end of your first year as a teaching assistant to have attained a B certification from the English as a Second Language (ESL) office. The College of Liberal Arts and Sciences will not approve any appointments for a second year teaching assistants who have not met this criterion.

2.4 Qualifying Exam

Graduate students who wish to pursue a Ph.D. in physics must pass the Qualifying Examination, which covers the principal areas of physics at the level of advanced undergraduate work. Graduate students are required to sit for the Ph.D. Qualifier Exam in January during their first year of graduate study at UI. Students will be given two chances to pass the Qualifier.

The exam consists of 12 problems (6 problems each day) and will cover the following subjects at the advanced undergraduate level:

- Classical Mechanics
- Electricity and Magnetism
- Statistical Physics
- Quantum Mechanics

You should have completed the following advanced undergraduate courses (or their equivalents) in preparation for the exam: PHYS:3710, 3730, 3741, 3742, 3811, 3812.

Sample exams from prior years are available from Jeanne Mullen in the General Office.

Students who have reported a Physics GRE subject test score of 630 or greater are exempt from this requirement.

Students must pass the Qualifying Examination (or submit verification that the requirement has been met by GRE score) before the beginning of their fourth semester of graduate work at The University of Iowa.
2.5 Comprehensive Exam Guidelines

2.5.1 Objective of the Comprehensive Examination

The intent of the Comprehensive Exam is to solidify the program of research proposed for the
doctoral thesis and to obtain approval for this course of research from the Ph.D. thesis
committee. The Comprehensive Exam involves the formal presentation of the proposed thesis
research plan, including a review of the scientific background and relevant literature, and a
summary of the preliminary work completed (if any). The exam itself is comprised of a written
thesis proposal and an oral defense of that proposal before the Ph.D. thesis committee.

In the Comprehensive Exam the student is expected to demonstrate a clear understanding of the
relevant scientific background to the project, present a clear statement of the research questions
to be addressed, and outline a research plan for addressing those questions. It is important to
note, however, that it is not necessary for the student to guarantee that all aspects of the proposal
will work as expected, because that would require the research to be essentially done. It is also
not necessary for the final dissertation to be on the same topic that he/she defends at the
Comprehensive Exam, should the research take a different, but justifiable, direction.

2.5.2 Scheduling the Comprehensive Examination

- The Comprehensive Exam must be passed at least one semester prior to the final thesis
defense.
- It is recommended that the Comprehensive Exam be taken within two years after beginning a
research program.
- A copy of the written proposal should be given to each committee member at least two weeks
prior to the scheduled oral examination.

2.5.3 Selection of the Ph.D. Thesis Committee

The Comprehensive Exam Committee generally also serves as the Ph.D. Thesis Committee. In
each the case the makeup of the Committee will be determined by the advisor, in consultation with
the student. This committee must be approved by the Departmental Executive Officer. The Ph.D.
Thesis Committee will consist of five members as follows:
- the student’s advisor, who will serve as chair of the committee;
- three additional members from the Department of Physics and Astronomy;
- one member from outside the Department. The outside member must hold a Ph.D. and
have a tenure track faculty position, or equivalent position in a research institution or
industry.

Once the Committee has been approved by the DEO and at least two weeks prior to the exam, the
following information must be provided to Jeanne Mullen:
• names and titles of committee members;
• date, time and location of exam
• completed Doctoral Plan of Study (Jeanne Mullen will submit this form).

2.5.4 Format of the Written Thesis Proposal

The Comprehensive Examination is an evaluation of the prospective thesis topic and the student’s mastery of subjects in the research area of the proposed thesis. The proposal, which should be prepared in close consultation with the student’s advisor, must demonstrate significant and thoughtful consideration of the thesis problem and clear evidence that the student is prepared to carry out the research in the proposed area.

The format and structure of the Comprehensive Exam is intended to be flexible. However, the proposal itself should consist of the following sections:

1) Abstract: A brief summary of the proposed research program.

2) Scientific Background: The proposed research should be placed in the appropriate scientific context, with a concise presentation of the central scientific issues and a review of the relevant scientific literature. This section should include a clear statement of why the proposed research problem is important.

3) Methodology: An outline of the methodology to be used.

4) Previous Work: An overview of the results of preliminary research completed in preparation for the project.

5) Proposed Work: A description of the proposed work to be completed for the project.

The length of the written proposal should be approximately 15 pages, not including the reference list, although deviations from this standard are allowed at the discretion of the student’s advisor.

Depending on timing of the Comprehensive Exam, Sections (4) and (5) may carry different weights: a student at an early stage may have few (or even no) preliminary results but present a clearly defined work plan, while a student at a later stage may have already completed a substantial fraction of the final dissertation work.

2.5.5 Format of the Oral Defense

The oral defense of the thesis proposal before the Ph.D. Thesis Committee is a key element of the Comprehensive Examination. The student should prepare an approximately 45 minute presentation of his/her thesis proposal, allowing ample time for questions from members of the committee. The presentation should demonstrate the student’s mastery of the subject matter of the research area, identify the research problem to be tackled and address the importance of the research in the context of the discipline, and lay out the plan of the proposed research, including a review of the preliminary research completed. The oral defense represents an opportunity for
the committee to evaluate the scope of the proposed research as well as the suitability of the research as the basis for awarding the Ph.D. degree.

2.6 Progress toward a degree after the comprehensive exam

In order to assure that students make timely progress toward their degree, the student’s advisory committee has responsibility for oversight of the student’s progress toward the degree. Specifically,

- The student should prepare an annual written report to be distributed to the internal members (Physics and Astronomy) of his/her thesis committee. This is typically a one page summary of the research progress including any significant results or problems that may have been encountered in the project.

- The annual progress report should be approved by the thesis committee.

2.7 Review of Requirements for the PhD degree

Complete the departmental course requirements/find an advisor/do research/write thesis/complete 72 hours of credit and handle all of the paperwork to satisfy these requirements. The UI Catalog has all of these requirements listed. Please be sure that Jeanne Mullen has copies of everything you do for this.

**Comprehensive Exam**

Prepare for comprehensive exam, ideally by the end of the third year, in consultation with your research advisor. Note, the comprehensive exam cannot be taken in the same semester as the thesis defense, and you must be registered during the semester you do the comprehensive exam. Note that if you do your comps in the summer, you must be enrolled for the summer session.

Complete a plan of study: [http://www.grad.uiowa.edu/sites/default/files/DPos.pdf](http://www.grad.uiowa.edu/sites/default/files/DPos.pdf) and submit it with a copy of your student record, current registration and Request for Doctoral Comprehensive Examination form to Jeanne Mullen.

[http://www.grad.uiowa.edu/sites/default/files/CompExam.pdf](http://www.grad.uiowa.edu/sites/default/files/CompExam.pdf)

After passing the comprehensive exam, the exam report must be filed (by Jeanne Mullen). Note that students must have a continuous registration after completing the comprehensive exam (with summers excepted, unless you wish to graduate in the summer).
**Prepare PhD Thesis and Thesis Defense**

You and your advisor will decide when to plan for the final thesis defense. It is your responsibility to know the Graduate College deadlines and when the thesis deposit date is. (see below for deadlines) It must follow various formatting rules, see [http://www.grad.uiowa.edu/theses-and-dissertations/graduate-college-thesis-manual](http://www.grad.uiowa.edu/theses-and-dissertations/graduate-college-thesis-manual)

Note that you must be a registered student in the semester in which you graduate (register for 0-2 or more s.h. of credit). In fact, students must have continuous registration after completing the comprehensive exam (summers excepted, unless you wish to graduate in the summer).

Generally, the complete PhD thesis is sent to committee members at least two weeks in advance of the thesis defense date. Requesting the thesis defense is done with the form available at [http://www.grad.uiowa.edu/sites/default/files/AdvancedDegreeForms.pdf](http://www.grad.uiowa.edu/sites/default/files/AdvancedDegreeForms.pdf)

See deadlines for when this final exam report is due. Please be sure that Jeanne Mullen gets a copy.

Sometimes the final exam is passed, but the thesis needs revisions before the thesis is signed. To graduate in a given semester, the thesis final deposit needs to be turned in before the final deposit deadline. Sometimes the final deposit is done in a subsequent semester. Summer degrees are awarded, but no summer graduation ceremonies are held. If you make your final thesis deposit after the final deposit deadline, but before the first day of classes in the new semester, you may register “Early clearance registration” through the Graduate College which has minimal fees.

**Graduate College Deadlines**

[http://www.grad.uiowa.edu/deadlines](http://www.grad.uiowa.edu/deadlines) for graduation applications, final exam requests, thesis first deposit, final exam report and thesis final deposit.