

# Admission Requirements, Employment, and Fees

For information on how to apply to our program, please visit the: [Physics and Astronomy Department website](#). If you have any questions, contact the Graduate Secretary.

## Prerequisites for Graduate Study:

All Graduate College admission requirements can be found at [http://www.graduate.ku.edu/01-00\\_abt\\_admissions.shtml](http://www.graduate.ku.edu/01-00_abt_admissions.shtml).

A baccalaureate degree with a major in physics is desirable but not required. Recommended preparation consists of courses in mechanics, electromagnetic theory, modern physics and introductory quantum mechanics, advanced laboratory, and at least one course in mathematics beyond differential equations. A student with less than the recommended preparation may enroll in these courses for graduate credit.

**Physics GRE:** The exam is not required for admission, however, a Ph.D. student who sends in an original copy of a Physics GRE score of 650 or higher before enrollment will be excused from the Department's [undergraduate certification](#) process.

Students are admitted for graduate study by the College upon the recommendation of the Department. Ordinarily, admission requires an undergraduate grade point average (GPA) of at LEAST 3.0, both overall and in the proposed major. A degree-seeking applicant who does not meet the standards for admission as a regular student may, upon the recommendation of the Department, be admitted on a probationary or provisional status. See the Graduate Catalog for details.

Normal preparation for graduate study in physics should include:

- Mechanics (at the level of the textbooks by Marion and Thornton)
- Electrodynamics (level of D. J. Griffiths)
- Quantum Mechanics (level of Liboff)
- Laboratory (level of Melissinos or Brophy)
- At least two courses in mathematics beyond elementary calculus

Students with less preparation may take most of these courses for graduate credit. Somewhat different preparation is needed for the MS programs in Geophysics and Computational Physics/Astronomy. Also, entering graduate students should have a working knowledge of computers and computer programming, preferably including fluency in either the FORTRAN or C++ programming language.

**Diagnostic Exam:** All new graduate students will be given a three-hour diagnostic exam when they first arrive, consisting of selected problems in mechanics, electricity and magnetism, wave phenomena, quantum mechanics, and statistical physics. Problems will be selected from previous exams. The exam will be given in August before the fall

semester and in January before the spring semester. Exam results will be used for advising purposes only, and will not remain on the student's permanent record.

Although most students earn a Master's degree while pursuing their doctoral work, the Master's degree is not a prerequisite to the Ph.D.

### **Departmental Employment:**

Most graduate students in physics hold a position as a teaching or research assistant. These assistantships normally require halftime duties (20 hours per week), but students holding them can be classified as full-time students if the duties are in their field of study.

To be eligible for employment as a graduate teaching assistant (GTA), all graduate students who are non-native speakers of English are required to achieve a minimum score of 50 on the TSE or the KU SPEAK test. A score of 26 on the Speaking portion of the internet-based TOEFL exam will also be accepted. Students who fail to achieve these minimum scores will be required to take the appropriate courses at the Applied English Center (AEC). Attendance is required by the Board of Regents to ensure your GTA appointment.

### **Fees:**

Fees change from year to year. See the current timetable for the most recent information.

Persons employed on a monthly, by semester, or yearly basis by the University for at least 40% time but less than full time may pay fees at the staff rate when properly certified to the Office of Admissions and Records by the Department. Staff fee eligibility certificates are available in the Department office. Persons eligible for staff rates during the regular academic year are also normally eligible for such rates during the summer session.

Graduate teaching assistants are eligible for a pro rata reduction in their tuition and incidental fees during the semesters they hold an instructional appointment. For GTA appointments of 40% or more, full tuition is waived. The College Office provides the Registrar with a list of eligible persons.

## **Enrollment and Grading**

**Enrollment:** (see also the section on the [Ph.D. program](#)). It is the policy of the Graduate School that both full-time and part-time students must progress at a reasonable rate and that their enrollment shall reflect the demand on faculty time and university facilities.

To be certified by the Graduate School as a full-time graduate student for purposes of qualifying for fellowship tenure, veteran's benefits, student visas, meeting residence requirements, and similar certification, the student should be enrolled in at least 9 hours

of work, or at least 6 hours with a half time appointment as a GTA or GRA. Courses taken at the Applied English Center may be included in the minimum. The Graduate School requires that students who are employed more than half time be enrolled in at least 6 hours per semester in order to be considered full-time.

It is the policy of the Department that a student must be making satisfactory academic progress, in some cases greater than that represented by the Graduate School's minimum requirements, in order to merit financial support in the form of an assistantship. The Department has provided guidelines for the faculty advisors to use in approving student schedules:

All full-time students who do not hold an assistantship are to enroll for at least 9 hours per semester (6 in the summer). Those who hold a half-time assistantship during the fall or spring semesters are to enroll in at least 3 hours. To be eligible for a summer GTA or GRA appointment, a student must have met the above enrollment criteria the previous semester or be prepared to meet it in the upcoming fall semester.

Students who have passed the comprehensive examination must be continuously enrolled, including summer sessions, until all requirements for the degree are completed. (See ["Post-Comprehensive Enrollment"](#) for further information.)

#### **Course Numbering System:**

- Courses 000-099 do not count toward graduation.
- Courses 100-299 are designed for freshman and sophomores.
- Courses 300-499 are designed for juniors and seniors.
- Courses 500-699 are designed primarily for juniors and seniors but may be taken by graduate students for graduate credit.
- Courses 700-799 are designed primarily for graduate students who have less than 30 of graduate credit but may be taken by undergraduates for undergraduate credit.
- Courses 800-999 are open only to graduate students except by special permission.

**Grading System:** The grading system in the Graduate School is a A,B,C,D,F system with some additions. For any given course, the instructor has the discretion to assign +/- grades in addition to the lettered scheme. Regular courses (i.e. all courses except research courses 800, 899, and 999) are graded as follows:

- A = above average graduate work
- B = average graduate work
- C = passing but unsatisfactory graduate work (remember: students must hold a B GPA in order to remain in good standing with the Department and Graduate School).
- D = failing graduate work
- F = failing graduate work
- I = work of A or B level but which is unfinished for good reason. The grade of I remains until the student completes the work and the instructor changes the I to A,B,C,D, or F. Research in progress that is not complete enough for evaluation is graded as P (participation) not I.

- W = the student has formally withdrawn from the course in accordance with the regulations of the Graduate School.
- S = satisfactory work in a seminar or colloquium for which a specific grade (A or B) little meaning. This grade is not used in this Department except as a grade for certain examinations. No more than 6 hours graded S are allowed to count towards the graduate degree.

Research courses (800, 899, and 999) are graded as follows:

- The instructor may assign, each semester, a grade of A,B,C,D,F, or W with the same definitions as above. I is not a valid grade for research.
- Another option is to assign, each semester, P, which means participation, with evaluation pending. In this case, upon completion of the research leading to the master's or Ph.D. degree, the instructor must assign a letter grade (A,B,C,D, or F) for the last semester of enrollment. This assignment is necessary in order to characterize the quality of the final product and to allow the student to graduate.

The comprehensive oral examination and the final exams for Ph.D. (as well as general exam for MS) are graded as follows:

- H = honors, the highest grade
- S = satisfactory, a passing grade
- U = unsatisfactory, a failing grade

Faculty members may assign + or - signs to grades for use within the Department. They are to be written on the carbon copy of the Registrar's grade sheet (the one that is retained by the Department) and on the student's grade cards. They are normally reported to students by their advisors.

Course work, including that taken in the Applied English Center, should average better than a B. Supplementary + and - signs are ignored in computing this average. Upon falling below a cumulative graduate grade point average of B, the student shall be placed on probation. At the end of the next semester of enrollment, the student's overall average for graduate work must be raised to a B, or a Departmental recommendation to the Graduate School will be required for the student to continue.

## **Departmental Committees and Organizations**

**Astronomy Associates of Lawrence (AAL):** Astronomy Associates of Lawrence is an organization of students and townspeople interested in Astronomy for the fun of us. This organization elects its own officers. Faculty Advisor: Prof. Bruce Twarog.

**Departmental Assembly:** The constituted body for full departmental meetings is the "Departmental Assembly". The Department provides for the inclusion of regularly enrolled students in both its Departmental Assembly and its policy-making committees. The number of students in each body is at least 20 percent of the number of faculty members who hold the rank of instructor or above and who serve on that body. The

Departmental Assembly is comprised of the entire faculty, plus student members of the Committees on Graduate Studies and Undergraduate Studies.

**Engineering Council:** The student representative to this council is elected each year by students majoring in Engineering Physics.

**Graduate Studies:** This committee comprises seven faculty members appointed by the department chairperson and two graduate students from Physics. This committee handles graduate student petitions and reviews the program and student progress.

**Sigma Pi Sigma and SPS:** The Society of Physics Students is open to all persons with an interest in physics. Sigma Pi Sigma is the physics honors society within SPS with scholastic requirements for membership. SPS is a member society of the American Institute of Physics. This organization elects its own officers. Faculty Advisors: Profs D. Besson and J. Wu.

**Undergraduate Studies:** This committee is comprised of six members appointed by the department chairperson, three students elected by undergraduate majors in the Department, plus the Associate Chair and Laboratory Director. One student is to represent Physics, one to represent Astronomy, and one to represent Engineering Physics.

Awards for Outstanding Teaching by a Graduate or Undergraduate Student

## Awards

Near the end of the academic year, three outstanding teaching assistants are selected and are given a monetary award paid from the Emery E. Slossen Fund. Awardees are restricted to those teaching assistants (graduate or undergraduate) who have held at least quarter time appointments during both semesters of the current academic year. The selection committee shall consist of the Director of Laboratories and the Associate Chairman. Their selections shall be reported to the Committee on Undergraduate Studies. The Director of Laboratories shall request evaluations from all course coordinators and any other faculty supervising teaching assistants. Evaluations shall be on the basis of:

- preparation for teaching assignments
- quality of grading and recording
- effective presentation of the material
- assisting students patiently and pleasantly

Strong consideration shall be given to performance beyond the call of duty.