

**Senior Comprehensive Evaluation**  
Department of Physics  
Manchester University

Learning Outcomes of the Physics Major:

- Physics majors will develop laboratory, mathematical, and problem-solving skills, be able to mathematically model physical phenomena, and have the ability to communicate an understanding of the laws of physics.
- Students will demonstrate strong problem-solving skills using Newton's Law of Motion, the Laws of Thermodynamics, Maxwell's Equations, the principle of energy, the behavior of atoms, nuclei, and materials, special relativity, and wave theory.

The Physics Senior Comprehensive Evaluation:

To complete the physics SCE, a physics major will be required to

- (1) pass a written examination
- (2) carry out a *Senior Research Project (SRP)*
- (3) present their *SRP* results
- (4) submit a complete and current curriculum vita.

The physics SCE examination must be taken during the last semester of the senior year for physics majors. The student is responsible for scheduling the examination with one of the faculty in the department. For most students, it is recommended that the examination be taken early in the spring semester of their senior year to allow for adequate time to retake the examination, in the event that a re-take is necessary.

Students who do not pass the written examination will be given the opportunity to retake the exam at no less two weeks, but not no more than one month, after the initial examination. A complete and current curriculum vita must be turned in at the time the SCE written examination is administered.

Physics majors are encouraged to begin thinking about their *SRP* early in their career at Manchester University. Myriad summer internships and research opportunities are available to the strong and determined student; such opportunities can serve as the basis for the *SRP*, even if they are carried out earlier than the student's senior year. It is recommended that the student consult with a member of the physics faculty to discuss their research plan prior to embarking on it.

The *Senior Research Project* will culminate with a public presentation in an appropriate forum (e.g., Science Division Seminar or an undergraduate research conference). It is expected that the student will submit a copy of the presentation (e.g. PowerPoint slides or poster) to the department upon completion of the presentation. The *SRP* and presentation will be evaluated based on a rubric that will be made available to the student. Students who receive unsatisfactory evaluations of their *SRP* and/or its presentation will be required to consult with a faculty member in the department in order to formulate a plan and timeline required to adjust/improve the effort.

The faculty in the department of physics will evaluate all aspects of the SCE. The written examination must be passed at the 52% level. The *SRP* and presentation will be evaluated based on a rubric that will be made available to the student. SCE results will be communicated via email and/or written letter.