This handbook is addressed to all current and incoming ScM students in Physics. It is to be used as a planning guide and a reference resource throughout their ScM study. Pertinent University web resources should be regarded as the primary references for degree requirements and options.
TABLE OF CONTENTS

Introduction 3

Digest of Program & Requirements 3-4

Academic Standing 3-4

Courses 4-5

Research and Master’s Thesis (Recommended) 5

Advising & Communication 5-6

Professional Development 6

For International Students 6
A. INTRODUCTION

The Brown Physics graduate program provides students with focused training and an opportunity to perform independent research in some of the most current areas of Physics. The aim of the Master’s Degree Program in Physics is to train professional physicists, providing them with a mastery of the fundamental principles, facts and methods of the discipline and the opportunity to participate in original research. It certifies a command of certain intellectual tools of broad validity and Physics' modes of thought.

The Physics Master's program is suitable as both a means for professional development and preparation for further graduate study. The program offers enough flexibility to allow for completion of the degree in two, three, or four semesters of full time enrollment, depending on a student’s background and preferences. It can also be earned through part-time enrollment over a span of longer time for domestic students.

Students admitted into the Master's program cannot automatically transition to the PhD track (see Section F below).

In this program, students develop a solid and broad base of Physics knowledge through the core curriculum and departmental colloquia. Upper level courses and topical research seminar series subsequently provide more specialized exposure. Coursework constitutes the bulk of the program with participation in original research being strongly encouraged.

B. DIGEST OF PROGRAM AND REQUIREMENTS

The requirement for a ScM degree in Physics consists of successfully completing a total of eight graduate level courses: four of the six core courses and four additional graduate courses in Physics or related fields. If a Master’s Thesis is included in the degree plan, two of the eight required courses in total would be Research in Physics, in which the student performs an original investigation under the sponsorship of a faculty member (research supervisor) leading to a Master’s Thesis.

The program’s standard structure is two courses per semester, over four semesters (2-2-2-2). Two courses per semester is considered full-time enrollment. However, it is a flexible program, allowing for completion of the degree in two, three, or four semesters. This flexibility allows students to enroll in different course progression combinations such as 3-3-2 or 4-4. It is important to note that deviation from the standard structure must be pre-approved by the Department. Deviation from the standard course structure can affect time to completion and tuition cost, as well as producing visa implications for international students. Students should be sure to seek approval well in advance from the Department when deviating from the standard program structure. More information can be found on the Graduate School’s website here.

In the 2-2-2-2 standard course structure, the first year is spent on coursework and acclimating to the Department. If a thesis or transition to the PhD track is being considered, time may also be spent investigating areas of research and prospective research advisors. In the second year courses and, if applicable, research projects should be completed - preferably leading to MS thesis.

Academic Standing
A student’s academic standing will be evaluated as Good Standing if he/she passes the required courses. It is expected that all core courses will be taught and taken in the grading option of ABC/NC. For any student who passes a core course with a grade of S, the instructor must fill out
an evaluation form, which includes an equivalent ABC letter grade. A student may be placed on Warning for poor course performance in a required course, which results in a grade of NC. Receipt of a second NC grade may result in the student being advised to leave the program. The student may be permitted to provide the program director with a viable plan for correcting the issues contributing to the failure, and for re-establishing performance, which will lead to success. A student who receives three grades of NC in required courses will be withdrawn from the program. In all cases, the student will be given written notification of academic standing with clear criteria for regaining good standing and the consequences of not meeting the criteria.

The Director of the Master’s Program (DMP) will review the students’ course grade records to evaluate a student's performance. If it is determined a student is not performing satisfactorily in courses, they will be notified in writing and offered advising support.

C. COURSES

Degree Requirements

The ScM degree recognizes a significant level of academic achievement beyond an undergraduate degree. A total of 8 credits in 2000 level courses form the main requirement for the ScM degree in Physics. Of the eight required courses, four will be selected from the six core courses of the PhD program (PHYS2010, 2030, 2040, 2050, 2060, 2140). Four additional credits at the 2000 level are required. These courses are to be selected from the remaining core courses or the large number of other upper level Physics courses. Up to two of these additional credits, can be taken in another department, at the 2000 level, with pre-approval of the DMP.

Students who matriculate without the prerequisite mastery necessary for succeeding in the core courses will be advised to take a mixture of 1000 level and 2000 level courses during their course of study, necessitating a 3 or 4 semester track to completion.

The six core courses are:

| Physics 2010 | Techniques in Experimental Physics |
| Physics 2030, 2040 | Classical Theoretical Physics I & II |
| Physics 2050, 2060 | Quantum Mechanics |
| Physics 2140 | Statistical Mechanics |

The student's own taste and the supervisor's recommendations are both vital guides in their overall course selection. All courses are expected to be from the 2000 level. Since, the Department's annual course offerings vary, the students are advised to consult the most current listing of courses. Sometimes, special courses can be arranged in response to student requests, given sufficient numbers and sufficient lead-time. Reading courses can be counted towards the advanced course requirement only upon pre-approval by the DMP, using the Advanced Course Permission Form. A generic research course cannot be used to satisfy the advanced course requirement.

In addition to the sequence of advanced Physics courses, MS students are highly encouraged to attend additional training and advising activities offered by the program. The various weekly series of topical seminars and departmental colloquia, open to all students and faculty, provide broad perspectives in current Physics research. These additional, non-credit components supplement the Physics MS program. Regular attendance and participation would be of benefit to the students' professional development.
Preparation of a Master’s Thesis is highly recommended, as it forms an important pillar of the professional training by strengthening knowledge in a chosen research field. If a thesis option is chosen, the student will work under the mentorship of a faculty member or team, earning two credits upon completion.

Individual course registrations are submitted online via the University’s Banner registration system.

D. RESEARCH & MASTER’S THESIS

Participation in research is highly recommended as it helps students to acquire practical knowledge and skills useful for future employment. Not all ScM students will participate in research, since a thesis is optional.

However, for those considering research in their degree plan, the following should be noted:

Many students enter graduate school without a strong attraction to a specific research field. It is an important goal of the first year of MS study to evoke preferences by attending colloquia and seminars, and engaging in informal discussions with faculty and experienced graduate students.

Establishment of a research connection requires concentrated thought and substantial initiative on the part of the individual concerned. Three of the steps involved are:

- learning what kinds of work are going on and, hence, what is available
- estimating what opportunities, duties and daily life might be in those groups of interest
- establishing a personal connection

Interdepartmental research projects carried out in a related department are possible. In all stages of the work, the supervising faculty has the primary role in evaluating the quality of the research. It is expected that a primary advisor, and a second reader will evaluate both the intellectual depth and breadth of a Physics MS thesis.

E. ADVISING & COMMUNICATION

The Department has traditionally been distinguished by a relaxed and informal interaction among its faculty members and graduate students. We count this tradition as one of our most valuable assets. In order to preserve the tradition while ensuring sufficient mentoring; we rely on student initiative and participation. In addition to classroom contact and office hour visits, seminars and colloquia also provide convenient occasions for students to become acquainted with faculty members.

The formal mechanism for faculty advising is as follows: one faculty member is designated as the Director of the Master’s Program (DMP). He/she will meet with each incoming student to review preparation and goals, discuss the choice of the first year course program, and recommend a tentative degree plan and course progression. The DMP will continue to advise the student on his/her progress throughout the period of study by:

- being available for individual advising, as needed or requested
- monitoring each student's progress within the graduate program, and
- maintaining an open line of communication with the faculty as a whole on matters of general or individual concern
- communicating on relevant issues.
The DMP also serves as a liaison with the Graduate School.

A member of the departmental administrative staff, designated as the Student Affairs & Programs Manager, serves the role as the MS program manager. The program manager is available to assist students with all graduate matters. S/he is the first point of contact for most academic matters.

F. PROFESSIONAL DEVELOPMENT

The University provides a multitude of resources for professional development, including:
- Sheridan Center for Advanced Teaching and Learning
- CareerLab
- Writing Center

Students are encouraged to participate in various activities and programs campus-wide, provided they are deemed suitable to their professional development.

Transitioning to the PhD Track

Students admitted into the Master's program cannot automatically transition to the PhD track, they must submit an application. Students who intend to apply to the PhD program are advised to:
- Excel in their core course work. Three core courses are recommended during the first semester if they wish to transition into the PhD program after their first year.
- Take advantage of opportunities to make a favorable impression upon program faculty, by discussing their research interests and possibly getting involved with faculty guided research as volunteers, etc..
- Students are advised to apply for PhD programs in multiple universities to improve their chances of admission.

H. INTERNATIONAL STUDENTS

The following University offices and programs are devoted to supporting the unique needs of international students at Brown:
- Office of International Student and Scholar Services (OISSS)
- Center for Language Studies
- The Writing Center
- English For International Teaching Assistants

This is a local and independent resource available:
- International House of Rhode Island

Fluency in English is an important skill for physicists and professionals. The Department encourages students whose native language is not English to take advantage of the opportunities and assistance provided by the above offices and organizations.

International students must be enrolled into the ScM program as full-time students.