Physical Rehabilitation Science
Doctoral Program

Student Handbook

This handbook is not a contract and all information is subject to change at any time at the sole discretion of the Program, School, and/or University.
# Table of Contents

Overview of the Program ........................................................................................................... 3
Program Philosophy .................................................................................................................. 3
Research Faculty ....................................................................................................................... 3
Admissions .................................................................................................................................. 4
  Criteria ....................................................................................................................................... 4
  Procedure .................................................................................................................................. 4
  Tuition and Fees ...................................................................................................................... 5
Assistantships ........................................................................................................................... 5
Physical Rehabilitation Science Curriculum .................................................................................. 5
Plan of Study ............................................................................................................................... 6
  Milestones and Evaluation ....................................................................................................... 6
  Criteria for the review of student progress and performance ......................................................... 7
  PhD. Progression Benchmarks ................................................................................................. 8
Successfully defending and submitting the dissertation ................................................................. 11
Policy on Academic Performance and Satisfactory Progress ......................................................... 11
Comprehensive Examinations and Advancement to Candidacy ..................................................... 12
Appendices .................................................................................................................................. 13
  Guidelines for Plan of Study Meeting ...................................................................................... 13
  Course Registration Guidelines ............................................................................................... 15
Physical Rehabilitation Science Program Forms ............................................................................. 16
  Physical Rehabilitation Science Doctoral Degree Plan of Study Approval Form ......................... 17
  PhD Plan of Study Course Outline .......................................................................................... 18
  PTRS Annual Doctoral Student Report ..................................................................................... 19
  Physical Rehabilitation Science Doctoral Degree Comprehensive Examination Approval Form .... 21
  Physical Rehabilitation Science Doctoral Degree Dissertation Proposal Approval Form ............. 22
PTRS Procedures for Funding Travel for PhD Graduate Students ............................................... 23
Application for Ph.D. Graduate Student Departmental Travel Awards ........................................... 24
PTRS PhD Graduate Student Leave/Travel Request Form ............................................................... 26
Award Opportunities in PRS and the Graduate Program in Life Sciences ....................................... 27
Overview of the Program

The Doctor of Philosophy program in Physical Rehabilitation Science is aimed at training researchers capable of advancing the field of physical rehabilitation in order to improve the lives of people with functional impairments. Drawing on links with key departments within the School of Medicine and two sister Universities, the program offers a comprehensive interdisciplinary learning experience leading to a Doctor of Philosophy degree in Physical Rehabilitation Science under the Graduate Program in Life Sciences (GPILS).

Program Philosophy

The complex and highly integrated systems of the human body have traditionally been studied in isolation, under both normal and pathological conditions. While this approach has been highly successful in elucidating basic mechanisms of health and disease, the dynamic interactions of the body’s organ systems are often left unappreciated. Since a significant percentage of the population has some degree of physical disability, scientific and medical communities must implement a holistic approach to studying the causes and amelioration of function impairment and physical disability. We believe that the adverse consequences of chronic systemic disease, congenital defects, trauma-related damage, or progressive decline in tissue viability can be reduced through intensive research focused on a plethora of topics addressing the mechanisms and management of chronic systems disorders. We further believe that a relevant translational approach (from laboratory bench to clinical patient care) will help facilitate an understanding of the integrated functions of these systems. Over time, this new information will increase the ability of medical personnel to accurately diagnose disabling disorders and prescribe appropriate preventative or corrective counter measures.

To ensure that acceptable numbers of rehabilitation researchers are trained and available to meet society’s needs, the University of Maryland School of Medicine, Department of Physical Therapy and Rehabilitation Science offers a formal program of interdisciplinary study leading to the Doctor of Philosophy degree in Physical Rehabilitation Science. This program draws on internationally recognized research expertise found within the Department of Physical Therapy and Rehabilitation Science, and other basic science and clinical departments within the School of Medicine, as well as programs throughout the University of Maryland System. The program is focused on critical areas of research that help prevent or dramatically reduce the many forms of disability that restrict significant numbers of individuals from functioning fully and freely in their surroundings.

Research Faculty

Our faculty members pursue a variety of research areas, most of which are well-funded by internal and external sources, such as the National Institutes of Health (NIH). Examples of their ongoing research include:

- Understanding the neuromotor bases of age-associated balance dysfunction and falls.
- Evaluating novel rehabilitation approaches for fall prevention among older adults.
- Investigating neuromotor mechanisms and rehabilitation of posture and movement impairments after stroke.
- Testing innovative stroke rehabilitation techniques.
- Investigating underlying neuroplasticity and mechanisms of stroke recovery.
- Investigating the mechanisms and motor-related rehabilitation of children with cancer.
- Applicants are strongly encouraged to review the faculty research profiles at: http://pt.umaryland.edu/PTRS-Research/

Admissions

Criteria

- Evidence of academic accomplishment (e.g. GPA, typically over 3.5)
- Minimum of Bachelors Degree in a relevant discipline, field of study or profession (e.g. biology, engineering, exercise physiology, exercise science, kinesiology, medicine, nursing, occupational therapy, physical therapy)
- Previous course work in biology, chemistry, physics, mathematics, and statistics.
- TOEFL scores required for submission typically are: 550 for paper-based tests, 213 for computer-based tests, 80 for the internet-based tests. IELTS test takers must score no less than Band 7 (total).
- GRE scores of ≥ 308 (1200) for combined verbal (160) and quantitative (148), and over 4.0 for the writing section.
- Statement of research interests and career goals.
- Letters of reference

Procedure

The department seeks individuals who will bring their scholarship, motivation, and commitment to the program. Applicants must have a complete application on file in the Admissions Office to be reviewed for admission. Applications will be reviewed on a rolling basis until March 15 of each year. All applications must include:

- Statement of research interests and career goals (1-2 pgs).
- Curriculum vitae
- Official transcripts from all schools attended.
- Three letters of reference written by individuals familiar with the candidate’s academic and work experiences.
- Official GRE scores. You may contact the GRE at (866) 473-4373 or online at http://www.gre.org for more information. Our institution code is 5848 and our department code is 0619.
- Official TOEFL scores are required when a student’s first language is not English. TOEFL information is available at http://www.ets.org/toefl. Our institution code is 5848 and our department code is 48.
- International applicants must provide two official native-language transcripts (or mark sheets) and two official transcripts translated into English from each college or university attended. Documents must list subjects, grades, and class rank. Students whose universities issue only one set of official records must provide certified, notarized (raised seal), copies of those records.

Equal Opportunity: The University of Maryland, Baltimore is an equal opportunity institution with respect to both education and employment. The university’s policies, programs, and activities are in conformance with pertinent federal and state laws and regulations on nondiscrimination regarding race, color, religion, age, ancestry or national origin, gender, sexual orientation, and handicap.
Tuition and Fees
Graduate Student Tuition, Health and Fees

Assistantships
Graduate research or teaching assistantships are available and awarded on a yearly basis. Each assistantship includes a stipend, tuition remission for up to 10 credits per semester (20 per year) and benefits. Students making satisfactory progress are typically supported for the duration of their graduate studies up to five years. The stipends are in line with NIH guidelines, and accordingly, students are expected to spend 20 hours per week on research, teaching, or a combination of the two in addition to full-time studies for their PhD. Generally, assistantships are awarded April 1 each year, but students who apply earlier may be granted an assistantship, depending on availability and student qualifications.

Physical Rehabilitation Science Curriculum
A minimum total of 60 credits is required for graduation. These are composed of the following. * = required coursework. All others are elective:

**Interdisciplinary Science Core** - (10 credit minimum)
The Science Core is designed to provide an interdisciplinary foundation for further study in an area of one’s choice.

- Foundations of Rehabilitation Science I - PTRS -688-02 (3 credits)*
- Foundations of Rehabilitation Science II - PTRS -688-03 (3 credits)*
- Research Seminar PTRS 788- 4 semesters (1 credit each)*

**Tools Core** - (12 credit minimum)
The Tools Core provides the research skills needed in the field of rehabilitation science, as well as direct preparation for an academic career. Some courses may be offered at the University of Maryland College Park (UMCP) and University of Maryland Baltimore County (UMBC) campuses. Example courses include:

- Graduate Seminar in Teaching I - PTRS 702 (1 credit)*
- EDMS-UMCP (Statistics and Research Design series)
- Graduate Seminar in Teaching II - PTRS 703 (1 credit)*
- Independent Study PTRS 798 (1-3 credits)
- Introduction to Matlab PTRS 689 (2 credits)

**Concentration/Cognate Area** – (22 credit minimum)
The primary area of concentration is Neuromotor Control with complementary sub-specialty areas which include, Rehabilitation Engineering, Rehabilitation Biomechanics, Applied Physiology, and Epidemiology. Additional sub-specialties include Human Centered Computing at UMBC (see link for example courses) and Cognitive Motor Neuroscience (see link for example courses) at UMCP. Other example courses include:

- Principles of Epidemiology - PREV 600 (3 credits)
- Human Anatomy - PTRS 700 2 - (3 credits)
- Physiology of Aging – DBMS 614
- Independent Study PTRS 798 (1-3 credits)
- UMCP Program in Cognitive Neuroscience
- UMBC- Program in Human Centered Computing
Laboratory Rotations
Laboratory rotations are not required but may be recommended depending upon the student’s interests or desire for greater exposure to options or tools for program research.

Doctoral Dissertation Research – (minimum of 12 credits)

Pre-doctoral trainees in Physical Rehabilitation Science (PRS) are provided with a an in-depth regimen of coursework that articulates with independent study preparation and a programmed sequence of research that culminates in a final dissertation. The PRS PhD curriculum has two objectives, which provide:

1. A sound foundation in the intellectual tools required for all human movement scientists in the areas of statistics, research design, and laboratory methods and techniques

2. Advanced research training in Neuromotor Control and Rehabilitation, which is the program’s primary area of focus. This knowledge area consists of two facets: neuromotor science and motor control and behavior.

   - Neuromotor science refers to knowledge about brain anatomy and physiology in relation to movement and disorders of movement function.
   - Relevant techniques for research might include brain imaging, transcranial magnetic stimulation, direct transcranial cortical stimulation, startle probes, peripheral nerve stimulation or electroencephalography, each of which is available to the trainees.
   - Motor control and behavior refers to knowledge about the principles of interaction between neural/physiological, biomechanical and behavioral systems underlying the learning and development of movement function and dysfunction that can inform rehabilitation assessments and interventions.
   - Relevant techniques for research might include physiological and biomechanical analyses, adaptation and learning paradigms, computational modeling, and clinical assessments of movement function.

Typically a student will seek to study with a particular advisor (usually a full-time departmental faculty) based on the student’s prior knowledge of that advisor’s research focus and the advisor’s interest in advising the student. The primary advisor is both academic and research advisor for the student. Subsequently, a student may change to another research advisor if the student’s interests develop in a different direction. This research advisor may be outside the PTRS department, in which case, the original advisor typically remains as the academic advisor. Courses for the first two semesters as a graduate student are chosen in consultation with the primary advisor. Prior to the start of the second year, students will convene a plan of study committee to formulate the remaining coursework and laboratory affiliations. If an advisor is new to advising, a senior graduate faculty will typically act as a secondary adviser. A secondary advisor may also be appointed for content expertise. The advisors may choose to act as co-advisors in this case.

Plan of Study

Milestones and Evaluation

A formal evaluation of the PRS student begins with the plan of study meeting at the end of the first year (see Guidelines for Plan of Study Meeting in Appendix P 14). The second formal evaluation is the comprehensive/ qualifying examination at the beginning of the third year. The comprehensive
exam consists of 4 separate written sessions which will be completed within a week and on a schedule agreed to by the advisor and student, followed by an oral discussion with the student and examination committee within approximately two weeks. Approximately six months after passing the comprehensives, the student must submit a dissertation proposal and successfully present an oral defense of the proposal before the dissertation committee. The dissertation committee is formed around faculty expertise pertinent to the student’s dissertation research (see Comprehensive Examinations and Advancement to Candidacy). Following the successful defense of the proposal approved by the committee, the student is officially admitted to doctoral candidacy. The final formal evaluation is the defence of the dissertation. In addition to these formal methods of evaluation, an annual review of the students’ progress is conducted by the PhD Program Director or an independent faculty if the PhD Director is a primary, secondary or co-advisor of the student.

Criteria for the review of student progress and performance

- **Maintenance of satisfactory GPA:** All PhD students are required to maintain a 3.0 GPA overall (4.0 maximum). Students earning a letter grade of “C” must meet with their advisor and plan of study committee to determine an appropriate response that may include retaking the course and requiring a minimum grade of “B”. In such cases the student transcript will include both the letter grade of “C” and the grade for the retake of the course. Two semesters of below 3.0 will typically be cause for dismissal.

- **Performance in the laboratory:** Students must learn laboratory skills, techniques and theory, as well as laboratory maintenance and management functions. These abilities are seen as crucial to a successful career in research and are monitored by the advisor.

- **Student Research:** From the beginning, the student is expected to engage the research process at all levels, including data collection, reduction and analysis, research design, and publication. Aspects of this criterion are monitored by the student’s mentor(s) and include number and quality of research proposals, quality of data collection and analysis, number of primary and secondary manuscript and abstract submissions, number of submissions published, and other products in which the development involved the student’s effort.

- **Progress on the Plan of Study:** Maintenance or amendment of this timeline is monitored by the advisor and the student’s Plan of Study Committee. Minor amendments such as course switches are approved by the advisor, while more extensive amendments or those that affect academic progression must be approved by the Plan of Study Committee.

- **Research Agenda:** Prior to the dissertation phase of the program, the student engages in his/her own research to develop preliminary information leading to proposing a hypothesis or identifying a dissertation question. The advisor will ensure that the student’s research is focused and aimed at accomplishing this objective.

- **Dissertation Phase:** The advisor and student work together to ensure that the student maintains the appropriate timeframe for completion of the comprehensive examination as well as the dissertation proposal and defense. It is recognized that there is often a need to modify these timeframes due to the nuances of conducting research and the frequent need to conduct additional experiments or analyses. The dissertation committee is charged with ensuring the quality of the student’s dissertation, while the advisor/s and student are charged with ensuring the maintenance of the timeline.
PhD. Progression Benchmarks
Based on a 4-5 year program

Benchmarks for Year 1:

1. Writing a review paper in an area of interest as part of a three credit Physical Rehabilitation Science Core Curriculum. Good quality papers turn into publications and/or provide background and significance sections for future grants, but the primary purpose of this exercise is to evaluate writing competence.

2. Writing an abstract for a poster presentation at a local, regional or national conference based on research in which the student has contributed. Contributing to the design and presentation of the poster.

3. Participating in data collection, reduction and analysis of at least one research project led by their mentor.

4. Determining a research path with goals and hypotheses. It is recognized that this plan (goals/hypotheses) may change but the student must demonstrate the capacity to identify and defend an acceptable research project.

5. Determining a “Plan of Study” with the advisor and secondary/co-advisors.

6. Discussion with mentor on the need to complete any optional workshops that are designed to complement formal coursework. Examples with links include:
   a. GPILS 601: Hypothesis Testing
   b. GPILS 601: How to Read & Present a Scientific Paper/How to give a scientific talk and utilize PowerPoint effectively
   c. SOM: Publish, Don’t Perish! How to Write and Publish a Research Paper
   d. Copyright class – HS&HSL
   e. RefWorks Workshop - HS&HSL bibliography management workshop.

Determination of Progress for Year 1 (in addition to ongoing mentoring by advisor/s).

Plan of Study Approval.

1. This will be an oral presentation with a minimum of five (5) graduate faculty present including the primary mentor, other mentors if appropriate, the PhD Program Director (or other senior member), an external faculty member (defined as not primary in the PTRS department) and as many other PTRS graduate faculty as are available.

2. Presentation will include:
   a. Review of PRS Annual Doctoral Student Report form (percentage of time spent, etc.).
   b. A presentation by the student of Benchmark #4 above including the plan of study.
c. Written documentation of Benchmarks #1 and 2 above.

d. A discussion of Benchmark #3 above led by the student including student concerns and impediments to progress.

3. The plan of study committee will discuss, evaluate, and agree on plan of action with the student for the next year. The faculty mentor will document this plan in the PRS Annual Doctoral Student Report form. Plan will also include a decision on progress. Decision will be one of the following:

   a. Plan is approved and student proceeds with plan.

   b. Student has to revise and re-convene with the committee within one month

4. If student passes, the plan will include:

   a. Abstracts to be submitted / meetings to attend.

   b. Courses and workshops to take, techniques to learn.

Faculty mentor will forward the PRS Annual Doctoral Student Report to all attendees to approve and sign. Completed and signed original will be maintained in Program Coordinator’s office in the student’s file.

**Benchmarks for Year 2:**

1. Writing two abstracts for presentations, at least one of which should be a national conference with a goal of one being an oral presentation.

2. Contributing to the writing of at least one research paper for publication.

3. Completing mandatory and elective courses based on the “Plan of Study.”

**Determination of Progress for Year 2:**

1. Student completes PRS Annual Doctoral Student Report form and presents summary presentation of accomplishments from previous year to PhD Director (or other graduate faculty if deemed appropriate).

2. Student discusses any concerns, impediments to progress if benchmarks are not accomplished.

3. Graduate Faculty will discuss, evaluate, and agree on plan of action with the student for the next year. The faculty mentor will document this plan in the PRS Annual Doctoral Student Report form.

4. Faculty mentor will forward the PRS Annual Doctoral Student Report to all attendees to approve and sign. Completed and signed original will be maintained in Program Coordinator’s office in the student’s file.

**Benchmarks for Year 3:**

1. Contributing to the writing of at least one additional research paper for publication with a goal
of being first author.

2. Writing two abstracts for presentations, at least one of which should be a national conference and at least one of which should be an oral presentation.

3. Completing mandatory and elective courses based on the “Plan of Study.”

4. Take comprehensive examination in two parts (written and oral) with approximately 2 weeks between each.

   The comprehensive exam consists of 4 separate written sessions which will be completed within a week and on a schedule agreed to by the advisor and student, followed by an oral discussion of the examination topics with the student and examination committee within approximately two weeks (See Guidelines for Advancement to Candidacy). Decision will be one of the following:

   a) Pass and proceed to Part 2 oral.
   b) Re-take within 3-6 months.

5. Approximately 6 months after passing the Comprehensive Exam, write and defend a dissertation proposal in grant format.

   Defense of the Dissertation Proposal. The dissertation committee consisting of minimum of five (5) graduate faculty present including the primary mentor, secondary or co-mentor (if one exists), the PhD Program Director, an external faculty member (defined as not primary in the PRS department) will convene to evaluate the proposal. Their decision will be one of the following:

   i. Pass and proceed to Candidacy.
   ii. Re-take within 6 months.

**Determination of Progress for Year 3**

1. Student completes PRS Annual Doctoral Student Report form and presents summary presentation of accomplishments from previous year to the PhD Director (or other graduate faculty if deemed appropriate).

2. Student discusses any concerns, impediments to progress if benchmarks are not accomplished.

3. Graduate Faculty will discuss, evaluate, and agree on plan of action with the student for the next year. The faculty mentor will document this plan in the PRS Annual Doctoral Student Report form.

4. Faculty mentor will forward the PRS Annual Doctoral Student Report to all attendees to approve and sign. Completed and signed original will be maintained in Program Coordinator’s office in the student’s file.

**Benchmarks for Year 4/5:**

PRS Student Handbook, updated 3/2017
1. Writing at least two abstracts for presentations at national or international conferences.

2. Writing and submitting a grant for pre-doctoral funding where feasible.

3. Write up two-three papers (one as first author) for the dissertation with at least one of these submitted for publication before graduating.

**Determination of Progress for Year 4/5**

1. Student completes [PRS Annual Doctoral Student Report form](#) and presents summary presentation of accomplishments from previous year to the PhD Director (or other graduate faculty if deemed appropriate).

2. Student discusses any concerns, impediments to progress if benchmarks are not accomplished.

3. Faculty mentor will forward the PRS Annual Doctoral Student Report to all attendees to approve and sign. Completed and signed original will be maintained in Program Coordinator’s office in the student’s file.

**Determination of Progress for Final Year**

**Successfully defending and submitting the dissertation**

All graduate school requirements for dissertation standards, deadlines for submission to the graduate school, and committee formation must be followed. The committee must include members of the Graduate Faculty with at least three regular members and at least one member outside the primary faculty of the department. See Graduate School Procedures. The dissertation must be previewed by two readers who are members of the dissertation committee (arranged by the advisor) at least fifteen working days prior to the planned defense. All other committee members must receive a final copy of the dissertation at least 10 working days prior to the defense.

**Policy on Academic Performance and Satisfactory Progress**

The PRS doctoral program follows all policies as outlined by the Graduate School at the University of Maryland.

**Purpose**: Satisfactory academic performance and progress within the University of Maryland Baltimore’s doctor of philosophy (PhD) programs is a shared responsibility of the University of Maryland Baltimore Graduate School (UMBGS), the Doctoral Programs, and graduate students. This policy specifies the elements of satisfactory academic performance and progress for students in UMBGS PhD programs.

Please see the details as outlined in: [Academic Performance and Satisfactory Progress in University of Maryland Baltimore PhD Programs](#). Information on UMBGS policy and procedures for appeal of probation or academic dismissal are also available at that site.
Comprehensive Examinations and Advancement to Candidacy

Advancement to candidacy occurs once a student successfully proposes and defends their dissertation. The pre-requisite for dissertation proposal and defense is successful completion of the comprehensive examination. The following guidelines are established for the timetable and format of the comprehensive examinations and advancement to candidacy for Physical Rehabilitation Science Doctoral Degree. These guidelines provide consistency within the program while at the same time recognizing the need for individual variation across different areas of sub-specialty/cognate, advisors and students.

1. Students may sit for examinations after they have completed the Foundation of Rehabilitation Science Core Courses and a minimum of 40 credits of their total coursework. The scheduling of the examination is initially set at the student's plan of study meeting. It may be postponed if the student/advisor believe this is necessary.

2. The composition of the candidacy examination will consist of a minimum of four faculty: the academic advisor, the research advisor or co-advisor (if different/present) and other graduate faculty. At least two of the faculty must be from the Department of Physical Therapy and Rehabilitation Science (minimum 1) and/or the Graduate Faculty of the Physical Rehabilitation Science Program. At least one must be from outside the Department of Physical Therapy and Rehabilitation Science and/or the Graduate Faculty of the Physical Rehabilitation Science Program. The latter person should be selected by the student and academic advisor and, typically, would be someone who has had a role in teaching the student.

3. The written examination will be comprised of four separate sessions (between 2-5 hours each) to be completed within one week with a closed-book format. Two sessions will be devoted to a comprehensive understanding of specific areas of the research concentration. The remaining sessions are typically devoted to interdisciplinary knowledge, sub-concentration areas and tools knowledge. For these two sessions, the students may have knowledge of the specific questions 48 hours in advance if this is agreed upon by the student and committee.

4. An oral discussion will follow the written examination to provide any clarification of responses or additional information that the committee deems necessary. The oral exam should be no more than 2 weeks after the end of the written examinations. Any exceptions to these procedures should be submitted to the program director for approval. All students will receive general feedback from the advisor on written answers prior to the oral discussion meeting.

5. A decision on passing will be made immediately after the oral discussion meeting based on a consensus of the committee. Students who fail the comprehensive examination may retake the entire examination after an appropriate time period decided by the advisor. A second complete failure will result in dismissal from the program. Students who do not reach an acceptable standard in part of the examination will be offered a chance to remediate in a format agreed upon by the committee.

6. Approximately six months after passing the comprehensives, the student must submit a dissertation proposal and successfully present an oral defense of the proposal before a dissertation committee.
Appendices

Guidelines for Plan of Study Meeting

The following represent guidelines formulated by Graduate Faculty of the Department of Physical Therapy and Rehabilitation Science regarding the Plan of Study meeting for PhD Students. Deviations from below may occur and are viewed on a case-by-case basis.

1. This meeting should take place just prior to the second year. The exact time would depend partly on the student’s progress and direction.

2. The meeting should include the student’s academic advisor and research advisor (if different). It should also include the Program Director (or other senior member) and at least two other members of the Departmental PhD Program Committee. Finally, it should contain at least one member who is outside the department. Minimum number is 5. There is no maximum number.

3. The meeting itself is run by either the student's advisor or the Program Director but typically the former.

4. Before the meeting, the student contacts his/her primary mentors to plan and go over the PRS Annual Doctoral Student Report.

5. In the meeting itself, the student does a presentation (about 30 minutes) reviewing their progress and in particular emphasizing the future plan as far as possible (see below). This can be verbal rather than a PowerPoint presentation. Committee members are free to make comments and ask the student and/or advisors questions. The idea is to ensure a good plan of study for each student based on their needs and interests as well as the departmental requirements.

5. Presentation will include:


   b. A presentation of the student’s intended research path with goals and hypotheses. It is recognized that this plan (goals/hypotheses) may change but the student must demonstrate the capacity to identify and defend an acceptable research project.

   c. The plan of study.

6. The plan of study committee will discuss, evaluate, and agree on plan of action with the student for the next year. The faculty mentor will document this plan in the PRS Annual Doctoral Student Report form.
Sample Plan of Study: Neuromotor Concentration
Requirements: Min of 10 credits of interdisciplinary science coursework, Min of 12 credits of research tools coursework and Min of 22 credits in the Neuromotor control concentration and cognate areas.

<table>
<thead>
<tr>
<th>Interdisciplinary Core:</th>
<th>Credits:</th>
<th>Course #:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations of Physical Rehabilitation Science I,II (2 semesters)</td>
<td>6</td>
<td>PTRS689</td>
</tr>
<tr>
<td>Research Seminar: I-IV (4 semesters)</td>
<td>4</td>
<td>PTRS788</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>10</strong></td>
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<tr>
<th>Tools Core:</th>
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</thead>
<tbody>
<tr>
<td>Graduate Seminar in Teaching I</td>
</tr>
<tr>
<td>Analog Circuits, Measurement &amp; Control</td>
</tr>
<tr>
<td>Physiological Signal Processing</td>
</tr>
<tr>
<td>Special Topics: Human Motion Analysis</td>
</tr>
<tr>
<td>Principles of Biostatistics</td>
</tr>
<tr>
<td>Correlation and Regression Analysis</td>
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<tr>
<td><strong>Total:</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Motor Control Concentration Area:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroplasticity</td>
</tr>
<tr>
<td>Independent Studies</td>
</tr>
<tr>
<td>I. Hemiplegic Gait Analysis</td>
</tr>
<tr>
<td>II. TMS in the Study of Neuroplasticity</td>
</tr>
<tr>
<td>III. The Neurophysiology of Plasticity</td>
</tr>
<tr>
<td>IV Writing assignments (various)</td>
</tr>
<tr>
<td>Motor Behavior</td>
</tr>
<tr>
<td>Motor Control Theory</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
</tr>
</tbody>
</table>

| Doctoral Dissertation Research: | 12 | PTRS899 |

| **Grand Total:** | **60** | |
Course Registration Guidelines

Web Registration Instructions for UMB Campus Courses
As a graduate student in Physical Therapy and Rehabilitation Science, you are participating in the Graduate School’s web registration program. This program allows you to conduct your registration activities on-line. Registration on-line is done using the existing "SURFS" (Student User Friendly System) website.

- After consulting with your advisor regarding course selection, go to the SURFS website and login at the 'key' graphic on the left side of the page.
- Follow the links to the 'registration' section.
- The on-line registration is available through August 30th 2004 for the Fall term.
- SURFS may be accessed at any hour except 11:30PM - 3:30AM daily.
- Changes to the registration made after June 1st (Summer term) or August 30 (Fall term) will require a paper transaction with your department and the Graduate School.
- Web registration may not be used for auditing courses or for inter-institutional enrollment and registration. Please follow web instructions carefully if you are registering for a variable credit course.

SURFS Graduate School
Graduate Enrollment Affairs
Room 336 BSU
Voice: (410) 706-7131
TDD: (410) 706-7714
Fax: (410) 706-3473
gradinfo@umaryland.edu
Website: Graduate School

As noted above, there are several course options that are available on the UMCP and UMBC campuses. The Program Coordinator will assist with the process of enrolling in such courses. To access instructions to and the application for Inter-Institutional course enrollment go to: http://www.graduate.umaryland.edu/documents/InterInstitutional_Enrollment_Form.pdf.
Physical Rehabilitation Science Program Forms
Physical Rehabilitation Science Doctoral Degree Plan of Study Approval Form

<table>
<thead>
<tr>
<th>Name of Graduate Student:</th>
<th>________________________________</th>
</tr>
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<tbody>
<tr>
<td>Area of Concentration:</td>
<td>________________________________</td>
</tr>
<tr>
<td>Date of Entry to Program:</td>
<td>________________</td>
</tr>
<tr>
<td>Date of Plan of Study Meeting:</td>
<td>________________</td>
</tr>
</tbody>
</table>

The undersigned have read and do approve the Plan of Doctoral Study for the above candidate in Physical Rehabilitation Science. The Plan of Study fulfills the stated requirements of the Physical Rehabilitation Science Ph.D. program and appears to provide a sound training and education in the area of concentration as well as in the interdisciplinary focus on physical rehabilitation. The Plan of Study, with any required modifications, will be attached to this form and kept in the student’s files with the Program Director and Program Coordinator.

<table>
<thead>
<tr>
<th>NAME/Dept</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Advisor:</td>
<td>____________________________________________</td>
</tr>
<tr>
<td>Co-Advisor (if any):</td>
<td>____________________________________________</td>
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<td>Program Director:</td>
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<td>Graduate Faculty:</td>
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Student Signature: ________________________________
# PhD Plan of Study Course Outline

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
<th>Core</th>
<th>Tools</th>
<th>Cognate</th>
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PTRS Annual Doctoral Student Report

Name: ___________________________ Date: ____________  
End of which year of training: _____

Please complete all sections below. Once complete, please submit original + CV to Janice Abarro.

Section I: Please update your CV with data below for the previous 12 months highlighting those items added.
- List conferences attended  
- List presentations given  
- List publications (not those in preparation)  
- List grant applications  
- List teaching and any service

Section II: Please complete this section and sign:

How many hours per week do you generally work? ______

How many hours per week do you spend on work directly related to your thesis? ______

How many hours per week does your mentor spend with you working on your thesis? ______

Over the past 12 months, check off the research activities that you have experienced giving an approximate estimate of percentage time in each.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Check</th>
<th>% Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Design</td>
<td></td>
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<tr>
<td>Library Search</td>
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<tr>
<td>Library Reading</td>
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<tr>
<td>Subject Recruitment</td>
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<tr>
<td>Data Collection</td>
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<tr>
<td>Data Reduction</td>
<td></td>
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<tr>
<td>Data Analysis</td>
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<tr>
<td>Paper Write-up</td>
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<tr>
<td>Grant Write-up</td>
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<tr>
<td>Preparing Presentations</td>
<td></td>
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<tr>
<td>Other (specify)</td>
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</tbody>
</table>

List all faculty from outside the department with whom you have had a meaningful chance to interact on the topics of research (yours or theirs).
<table>
<thead>
<tr>
<th>Faculty</th>
<th>Institution</th>
<th>Location of Interaction</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

Student Signature: __________________________________________

### Section III: Plan of Action for coming year

Please complete this section with your main advisor/s. Once form is completed and signed, please submit original to Janice Abarro.

**Est Dates**

Papers to be submitted:

Grants to be submitted:

Abstracts to be submitted:

Meetings to attend:

Courses and workshops to take/Techniques to Learn:

Plans to address any student concerns in the upcoming year:

Plans to address any advisor concerns in the upcoming year:

Mentor/s Signatures: ___________________________  ___________________________
Physical Rehabilitation Science Doctoral Degree Comprehensive Examination Approval Form

Name of Graduate Student: ________________________________

Area of Concentration: ________________________________

Date of Entry to Program: ________________

Date of Comprehensive Orals: ________________

The undersigned have read the written answers and questioned the candidate orally as required by the rules of the PhD Physical Rehabilitation Science degree. The committee is in agreement that the candidate has demonstrated sufficient ability and knowledge to pass these examinations. This form is filed with the Program Coordinator.

<table>
<thead>
<tr>
<th>NAME/Dept or Univ.</th>
<th>Signature</th>
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<tbody>
<tr>
<td>Academic Advisor:</td>
<td>________________________________</td>
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<tr>
<td>Co-Advisor (if any):</td>
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<td>Graduate Faculty:</td>
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<td>Graduate Faculty:</td>
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<tr>
<td>Graduate Faculty:</td>
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<tr>
<td>External Faculty:</td>
<td>________________________________</td>
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</tbody>
</table>
Physical Rehabilitation Science Doctoral Degree Dissertation Proposal Approval Form

Name of Graduate Student: ________________________________

Area of Concentration: __________________________________

Date of Entry to Program: ______________

Date of Dissertation Proposal: ______________

The undersigned have read the dissertation proposal and questioned the candidate orally as required by the rules of the PhD Physical Rehabilitation Science degree. The committee is in agreement that the candidate’s proposal demonstrates sufficient quality and quantity of programmatic research to be acceptable as a potential dissertation leading to the PhD. This judgment is pending completion of the proposed research as written (unless changes are approved) and an acceptable defense of the dissertation. This form is filed with the Program Coordinator.

<table>
<thead>
<tr>
<th>NAME/Dept or Univ.</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Advisor:</td>
<td>________________________________</td>
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<tr>
<td>Graduate Faculty (reader):</td>
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<td>Graduate Faculty (reader):</td>
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<td>Graduate Faculty (reader):</td>
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<td>Graduate Faculty (reader):</td>
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<td>External Faculty:</td>
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<td>Faculty:</td>
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<td>Faculty:</td>
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</table>
PTRS Procedures for Funding Travel for PhD Graduate Students

Criteria for requesting graduate student travel support from department DRIF funds

- Any currently registered graduate student may apply for funds (full-time or part-time).
- Students must be first author on a paper or poster in order to qualify for funding.
- Automatic funding will be given for one conference per fiscal year, with the advisor’s approval, consisting of EARLY BIRD Registration, and travel expenses up to $750 if the above criteria are met. Note if EARLY BIRD Registration is not completed in time, the student will pay the balance.
- Any additional conference per fiscal year (July 1 to June 30) can be applied for but would need to be considered by the PhD Director on its merits. An additional conference will not be funded except under exceptional circumstances, including leftover funding from the first conference. In this case, application and approval for Graduate Student Travel via the Graduate Student Association (GSA) would be expected too. The maximum award from the GSA is $300, however due to the number of applications received by the GSA the amount of the award may be less than $300. To access the GSA Policy and GSA Travel Fellowship Application, click on the link: http://www.graduate.umaryland.edu/gsa/Awards/Travel-Fellowships/
- If a student did not use the full $750 for one conference, the remaining money could be put towards a second conference, if travel will occur in the same fiscal year.
- Applications must be made well in advance of the conference (even before acceptance is known) and certainly well before EARLY BIRD REGISTRATION is over.
- The PTRS Application Form for Graduate Student Travel funds follows this Policy.
- All applications should be submitted to the Program Director and should not exceed the $750 limit.
- Note: Graduate students are also encouraged to apply to the UMB Graduate School for $300 travel funds

It is recognized that some students may have additional funding sources from grants.
Application for Ph.D. Graduate Student Departmental Travel Awards

Student Name:______________________________________________________

Title of Conference:____________________________________________________

________________________________________________________________________

Dates:_________________________ Location:___________________________

Title of Presentation:____________________________________________________

________________________________________________________________________

Authors:___________________________________________________________________

Poster/Verbal/Not Known Yet (circle) Graduate student must be first author on paper or poster to qualify for funding.

Early Bird Registration $:________________________

Estimated Lodging $:____________________for _______ days

Estimated Travel $:____________________by air/train/car

Note that the combination of the Lodging and Travel should not exceed $750. If it does, the student should recognize that only $750 will be reimbursed by the PTRS department fund.

Department Allowance: $____________________

Other Funding Sources:
1. Funding Source:____________________ Amount $________ Approved_______ Date_______
2. Funding Source:____________________ Amount $________ Approved_______ Date_______
3. Funding Source:____________________ Amount $________ Approved_______ Date_______

Student Signature:____________________________________________________ Date:____________________

Approved by Advisor:____________________________________________ Date:____________________
FOR SECOND CONFERENCE ONLY: Please give a rationale for why it is important that you secure extra funds to attend a second conference per year.

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Approved by Program Director: ___________________________ Date: _____
PTRS PhD Graduate Student Leave/Travel Request Form

Name: __________________________    Employee ID: __________ Date of Application: ________

I request leave of _____________ day(s) / hour(s) as follows:

<table>
<thead>
<tr>
<th>Time/ Date</th>
<th>Time/ Date</th>
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<tbody>
<tr>
<td>Annual Leave from __________________________ through _____________________________</td>
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<tr>
<td>Holiday Leave from __________________________ through _____________________________</td>
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<tr>
<td>Other (Specify Below) from ____________________ through _________________</td>
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</tr>
</tbody>
</table>

Complete the following, if applicable:

____ Sick leave requested above is for medical care appointment that could not be made during off-duty time (attach doctor's slip).

____ Other Leave (Specify: Examples: Jury Duty, Work Related Travel) ______________________________

_________________________________________________________________________________

_________________________________________________________________________________

_______________________________________________

Contact Number where you can be reached: __________________________________________________

Graduate Student’s Signature ____________________________________________ Date: ______________

(Circle one)
Advisor’s Approval / Disapproval Signature _______________________________ Date: ______________

Vacation and Sick Leave
Graduate assistants are not covered by the University of Maryland’s vacation or leave policies applicable to faculty or staff. However, The Department of Physical Therapy & Rehabilitation Science allows that the mentor provide the graduate assistant with two weeks of leave each calendar year (January 1 – December 31), and a limited amount of time for absence due to unexpected sickness, family or any other emergency. Graduate Assistants will also observe the UMB Holiday Schedule available at https://www.umaryland.edu/media/umb/af/fs/payroll/2016-Holiday-Schedule.pdf.

Leave time for graduate assistants is granted on an equitable and nondiscriminatory basis. Any graduate assistant leave approved by the mentor or supervisor must be used by the graduate assistant during the calendar year for which it was approved. Leave does not carry-over from one year to the next.

PLEASE NOTE:
PhD students are to submit Leave/Travel Requests to their advisor. Advisor or student to give signed request form to PhD Program Coordinator.
Award Opportunities in PRS and the Graduate Program in Life Sciences

The Graduate Program in Life Sciences (GPILS) would like to recognize outstanding merit on the part of our students, postdoctoral scholars and faculty. Toward this goal, an awards committee was established and is now soliciting nominations for five awards. Each award will include a certificate and cash honorarium. In addition, a plaque bearing the names of the recipient of each award will be placed on display in a prominent location. The awards, a description of each award, and the materials requested to evaluate nominees is summarized below. Nominations will be accepted until May 31st and we expect that the awards will be made at a ceremony at the beginning of the next academic year. Nominations should be sent to Mr. Tom McHugh at tmchugh@som.umaryland.edu.

The Otani Award
The Otani award commemorates Elaine Miye Otani. She was a student who stood for hard work and perseverance with an intense interest in her field of study. She was especially interested in the mechanisms of cellular differentiation and carcinogenesis. Yet she found time to spread her friendship and goodwill among those around her, trying at the same time to inspire them in their studies. Her family set up this living memorial as a tribute to her and her aspirations. This award will be given annually to the graduate student in GPILS of outstanding character who demonstrates superior academic performance and who shows outstanding promise as an independent investigator. The student must have a consistent record of service and support to the overall goals of GPILS by stimulating interest in and attempting to improve the quality of academic studies among fellow students in GPILS. In summary, the recipient of this award should show evidence of a good working relationship with peers and GPILS faculty and have earned the esteem of others. Nominees for the Otani award must have successfully completed the Qualifying Examination and submitted a research proposal to the advisory committee. The Program Directors for each of the graduate programs in GPILS are asked to work with their internal training committees to nominate appropriate students for the award. More than one individual may be nominated but they must meet the above mentioned criteria. The following items are required:

- A statement from the GPILS Program Director explaining why the student is being nominated.
- A letter from the nominee’s faculty mentor or another appropriate faculty.
- A current curriculum vitae.

PhD Thesis Project

Each program is invited to nominate one person for this award. Nominations for this award should be limited to students who have completed their dissertation projects or who will defend before the end of the spring semester. The letters of recommendation should focus on a description of the significance of the work in the specific field of study and science in general. The following items are requested by the committee:

- A letter of recommendation from the GPILS Program Director
- A letter from the nominees “outside committee member” (who may be in the same Program but outside the immediate field of study)
- A current curriculum vitae • An abstract summarizing the overall dissertation project (written by the nominee)

PhD Scholar Award
Each program is invited to nominate one person for this award. This award is intended to recognize students who have not yet advanced to candidacy. Nominations for this award should be students with outstanding academic performances who show great potential as scientists. In addition to the nomination letter, two support letters are requested. These letters may come from anyone but letters from individuals who have served as mentors on the student rotations, or members of the student’s academic advisory committee are strongly recommended. The following items are requested by the committee:

- A nomination letter
- A current curriculum vitae
- Two letters of support

**Teacher of the Year**

Students and Faculty are invited to nominate outstanding educators for this award. The nominee must be a member of the Graduate faculty and at least one Program in GPILS. The nomination requires a succinct letter of recommendation supporting the nomination and may come from anyone affiliated with the GPILS program.