



# **Structural Anatomy & Rehabilitation Sciences Discipline Handbook 2021-22**

Regardless of the discipline, each GSBS student (MS or PhD) will receive the degree of Biomedical Sciences. The discipline is listed on the transcript as the Major.

The information provided in this document serves to supplement the requirements of the Graduate School of Biomedical Sciences detailed in the UNTHSC Catalog with requirements specific to the discipline of Structural Anatomy and Rehabilitation Sciences.

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# Structural Anatomy and Rehabilitation Sciences Discipline

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**Graduate Faculty:** Fisher; Gonzales; Handler; Lovely; Liu; Maddux; Menegaz; Patterson; Reeves; Rosales.

Structural Anatomy and Rehabilitation Sciences (SARS) focuses on the integration of anatomical form with biomechanical function using advanced experimental, computational, and clinical tools. Major research foci in the SARS discipline include: (1) functional morphology or the study of form-function relationships, evolutionary/adaptive significance, and mechanical behaviors of musculoskeletal tissues; (2) biomechanics, movement science, and neuromuscular integration; (3) clinical anatomical studies linked to applications in orthopedics and physical therapy; (4) the analysis, design, and/or development of rehabilitation protocols, assessment tools and techniques, assistive devices, and instrumentation used in rehabilitation practice; and (5) studies of educational pedagogy in anatomy/movement science through the development of unique educational tools, techniques, and assessment strategies. SARS offers research opportunities, coursework, and teaching experiences that will develop and train students who will be qualified to serve as faculty members, researchers, and clinicians in various departments at health science centers, universities, and other research organizations.

All students entering the discipline will complete an integrated biomedical science core curriculum that includes fundamental principles of biochemistry, cellular and molecular biology, microbiology and immunology, pharmacology, physiology, and neurobiology. Beginning with the second semester, students will enroll in additional advanced courses for the discipline such as Applied Biomechanics, Structural Anatomy of the Musculoskeletal System, Structural Neuroscience, and other advanced elective courses, to be completed during their graduate career. Students are required to participate in seminars, work in progress (WIP) presentations, and journal club for the duration of their graduate career. Students will conduct original, publishable research and will be expected to present their results at the annual UNTHSC Research Appreciation Day (RAD) and at national scientific conferences.

The completion of the M.S. degree typically requires two to three years; the Ph.D. degree is generally completed in four to five years. Graduates with advanced degrees typically find employment in higher education, industry and government agencies.

## Structural Anatomy and Rehabilitation Sciences Discipline Faculty

**Graduate Faculty Membership Categories:** *Associate members of the Graduate Faculty are able to serve as members of thesis or dissertation advisory committees, as major professors (chairs) or co-chairs on thesis advisory committees, and as co-chair on dissertation advisory committees with a full member as chair. Full members of the Graduate Faculty are able to serve as members of thesis or dissertation advisory committees, and as major professors (chairs) or co-chairs on thesis or dissertation advisory committees.*

### [Cara Fisher, Ph.D.](#)

Assistant Professor, Physiology and Anatomy  
Associate Member, Graduate Faculty

Dr. Fisher's research focuses on anatomical variation and its relationships to pathology and clinical practice. She serves as the course director for the Physician Assistant gross anatomy course. She is also a laboratory instructor for dissection-based anatomy courses for first-year medical and graduate students, and she mentors advanced medical and graduate students in elective dissection courses.

### [Lauren Gonzales, Ph.D.](#)

Assistant Professor, Physiology and Anatomy  
Full Member, Graduate Faculty

The overarching goal of Dr. Gonzales' research program is to understand how key changes in primate sensory anatomy have influenced primate and anthropoid evolution. Her approach uses comparative anatomy (via CT scans) and ecology of living animals as a reference to reconstruct the functional and adaptive implications of anatomical and behavioral changes in extinct species. Currently, this work centers on two primary areas of study: the semicircular canals of the inner ear and the evolution of the brain. She is also an avid field paleontologist and has developed two field programs aimed at recovering an early fossil record for tropical South American and renewing excavations for Middle Miocene fossil sites on Maboko Island, Kenya. Both localities document a critical period known as the Middle Miocene Climatic Optimum (MMCO), a brief period of global warming followed by a sharp drop in temperatures and increased aridification. At this time many modern taxa make a first appearance. As part of this work, the Gonzales lab has begun a large mass digitization project aimed at creating a 3-dimensional archive of fossils collected at both sites. The goal is to expand this part of the project into outreach workshops aimed at introducing free digital anatomy collections to rural communities and classrooms.

**Emma K. Handler, Ph.D.**

Assistant Professor, Physiology and Anatomy  
Full Member, Graduate Faculty

Dr. Handler's research encompasses two distinct fields: dental evolution and medical education. Her dental evolution research examines the morphological consequences of selection on behavior. Animal domestication is one way to explore this dynamic because humans have selected for specific behaviors and domesticated animals experience a suite of unintended morphological changes as a result. Animal domestication and human "self-domestication" theories posit that reduced aggression is the underlying cause of many unintended physical features that emerge in domesticated animals, including tooth size diminution. Dr. Handler's research, which is a collaboration between UNTHSC, the University of Iowa, and the Institute of Cytology and Genetics in Novosibirsk, Russia, aims to assess the dental size and composition of different behaviorally-selected strains of foxes. Her second research focus is on education. This research explores the most effective learning strategies for students in an online environment. Current research projects include an exploration of the efficacy of active learning in online courses and assessment of individual active learning techniques in online courses.

**Rehana Lovely, Ph.D.**

Assistant Professor, Physiology and Anatomy  
Full Member, Graduate Faculty

Dr. Lovely's research broadly focuses on collaborating with physical therapists, surgeons and other clinicians to investigate human anatomical variations, mapping of surface projection of the peripheral nerves and pathophysiology of myofascial pain. She is also interested in anatomy education research involving community outreach programs and medical student education.

**Hao (Howe) Liu, P.T., M.S., M.D., Ph.D.**

Professor, Physical Therapy  
Full Member, Graduate Faculty

Dr. Liu has spent his research career in neuroscience, anatomy and physical therapy, but in last 18 years his research centers more on balance improvement and fall prevention among older individuals (primarily) and clinical anatomy of the musculoskeletal system in Gross Anatomy lab (secondarily). More specifically, he has led his geriatric research group (faculty members, Ph.D. and DPT students) with focuses on 1) effects of inappropriate use of assistive ambulatory devices (AADs) on gait, balance, and posture; 2) interventions with combination of physical therapy exercise and Chinese medicine to improve gait, balance, strength, and posture in general older population, AAD users, and patient-specific older population; and 3) bioengineering modification and testing of assistive ambulatory devices. Dr. Liu is a very active in providing community services to local senior living communities. As a faculty member, he and his team had provided geriatric rehabilitation related community services to local senior living communities in central Arkansas area (2003-2009) and in DFW metropolitan area (2010 – now).

### **Scott D. Maddux, Ph.D.**

Assistant Professor, Physiology and Anatomy  
Full Member, Graduate Faculty

Dr. Maddux's research focuses on human evolution during the Middle and Late Pleistocene with an emphasis on Neandertal and modern human craniofacial anatomy. In particular, he is interested in the developmental, biomechanical, and stochastic processes which produced the characteristic midfacial prognathism of Neandertals and orthognathism of modern humans. Related to these issues, he has corollary interests in patterns of human craniofacial allometry, integration, sexual dimorphism, and eco-geographic variation. To investigate these topics, the Maddux laboratory employs multiple techniques and approaches, including medical imaging and laser scanning modalities, linear and geometric morphometrics, and experimental modeling in non-human species. Current research projects are primarily concentrated in two main areas; the influence of climatically-adaptive variation in human upper respiratory tract anatomy on overall craniofacial morphology; and the "self-domestication" hypothesis as a model for explaining facial retraction as an evolutionary byproduct of selection for increased social tolerance.

### **Rachel A. Menegaz, Ph.D.**

Assistant Professor, Physiology and Anatomy  
Full Member, Graduate Faculty

Dr. Menegaz's research explores the growth and function of the mammalian masticatory apparatus. The biomechanical demands imposed by dietary composition are known to affect chewing behavior and joint kinematics and, over time, the growth trajectories of the craniofacial skeleton and its associated soft tissues (joint cartilages, muscles of mastication, etc.). By modulating diet, we are able to affect the overall growth of these tissues, dental eruption and occlusion, biomineralization of the cranial skeleton, and the structure and physiology of masticatory muscles. She is particularly interested in how early life history events (such as weaning and dental eruption/replacement) affect feeding, growth, and adult morphological outcomes. Current research themes include: (1) Variation in maturation rates among tissues of the masticatory complex and how this affects feeding performance and plasticity. What happens during the transition between infant-like suckling and adult-like chewing, and what are the structural and behavioral constraints that limit efficient feeding during early childhood? (2) The role of type I collagen in the growth of the craniofacial skeleton. How do collagen disorders, such as *osteogenesis imperfecta*, affect the facial phenotype? What behavioral and/or pharmaceutical interventions are effective in recovering the phenotype and function in these disorders? More information about her research can be found at [www.menegazlab.com](http://www.menegazlab.com).

Dr. Menegaz is also involved in outreach activities through the Center for Anatomical Sciences. She is the director of the Summer Opportunities in Anatomy Research (SOAR) undergraduate internship program and the co-director of the Summer Bridge Program for Texas Academy of Biomedical Sciences (TABS) 9th grade students.

**Kimberly Meyer, MPAS, Ph.D.**

Associate Professor, Physician Assistant Studies  
Associate Member, Graduate Faculty

Dr. Kim Meyer is a licensed Physician Assistant and holds a Ph.D. in Education. Dr. Meyer's clinical practice was in Neurosurgery before moving full time into education. Now as the Director of the Center for Innovative Learning, Dr. Meyer focuses on educational design to facilitate learning and teaching faculty members to improve their educational design and technology skills. Her research focuses on health sciences education, educational outcome mapping and tracking, and backwards curriculum design.

**Rita M. Patterson, Ph.D.**

Professor, Family and Osteopathic Manipulative Medicine  
Full Member, Graduate Faculty

Dr. Patterson's background is in biomedical engineering, with specific training and expertise in applied research in Orthopaedics, human performance, and rehabilitation. She has a unique perspective that can bridge and facilitate technology development in clinical settings and applications. In the department of Orthopaedic Surgery and Rehabilitation at the University of Texas Medical Branch in Galveston TX, she had a successful partnership for 20 years with a hand surgeon investigating the anatomic, biomechanic and kinematics of the carpal bones and the upper extremity. She also worked closely with upper extremity physical therapists and rehabilitation science specialists to understand hand function. At UNTHSC, Dr. Patterson works in the Human Movement Performance laboratory. This lab is devoted to improving knowledge of musculoskeletal function in order to assist physicians in the diagnosis and treatment of medical problems. The goals include improved clinical measurements of biomechanical function, objective methods of evaluation, treatment, and therapy, and mathematical/computer models of muscle, joint, and bone mechanics.

**Rustin E. Reeves, Ph.D.**

Professor, Physiology and Anatomy  
Full Member, Graduate Faculty

Dr. Reeves' research includes collaboration with physical therapists, orthopedic surgeons, and clinicians to investigate pathological issues from an anatomical and biomechanical perspective. Recent research involves ultrasound diagnosis of ankle injuries and surface mapping of the dorsal scapular nerve for use in pain management. Other areas of interest include K-12 science outreach programs for teachers and students interested in the biomedical sciences. Dr. Reeves is also involved with clinical skills training of area health care professionals utilizing cadavers from the Center's Willed Body Program. The Center for Anatomical Sciences houses the institution's BioSkills Laboratory which offers numerous clinical training activities and serves as a research facility for graduate students, faculty, and orthopedic surgeons in the Dallas-Fort Worth area.

## **Armando Rosales, MD**

Associate Professor, Physiology and Anatomy  
Full Member, Graduate Faculty

Dr. Rosales has 31 years of experience teaching gross anatomy to medical, nursing, physical therapy, physician assistant, and graduate students. His research interest are directed toward the development of multimedia teaching tools for use in the anatomical sciences through carefully supervised quality cadaver dissections for digital image processing. Other research interests include participation in workshops for area science teachers and high school students which are designed to elevate their interest in science and medicine.

## **Requirements**

**The requirements below are in addition to the GSBS requirements listed in the [GSBS Degree Programs](#) chapter of the [UNTHSC Catalog](#).**

A student who receives not more than one “C” in the first semester (BMSC 6201, 6202, 6203, or 6204) and maintains an overall GPA of 3.0 or better after the first semester of graduate study will be allowed to join the Structural Anatomy and Rehabilitation Sciences discipline. Ph.D. students in SARS who are in good academic standing will take the Oral Qualifying Examination in the fall of Year 2, following the successful completion of the discipline-specific required courses.

### **I. Required Courses**

#### SARS discipline-specific required courses

PHAN 6308 (Applied Biomechanics) (offered Spring)

PHAN 6340 (Structural Anatomy of the Musculoskeletal System) (offered Fall)

PHAN 5630 (Structural Neuroscience) (offered Fall)

A grade of “A” or “B” in these courses is required. A student who receives a “C” in one of the discipline-specific required courses, but who is otherwise in good academic standing with an overall GPA of at least 3.0, will be allowed to self-remediate the course once. A student who receives two or more “C’s” in the discipline-specific required courses must retake those courses in their entirety the following year. A Ph.D. student must receive an “A” or “B” in these courses, or successfully self-remediate or retake the courses, before taking the Oral Qualifying Examination.



## II. Seminar Course, Work-in-Progress (WIP), and Journal Club

PHAN 5390.914 – Seminars in Structural Anatomy & Rehabilitation Sciences  
PHAN 6150 – Structural Anatomy & Rehabilitation Sciences Journal Club

Students are required to register for the Seminars in Structural Anatomy & Rehabilitation Sciences course (PHAN 5390.914) in the spring of Year 1. Starting in Year 2, all M.S. and Ph.D. students are expected to present their research in the Seminars course a minimum of once per year as a “work in progress” (WIP).

All SARS students are required to register for a journal club course (PHAN 6150) during every long semester beginning in the spring of year 1. Once M.S. students register for Thesis (BMSC 5395) or Ph.D. students register for Doctoral Dissertation (BMSC 6395), they are no longer required to register for a journal club course; however, senior students are still expected to attend and participate in the journal club.

## III. Advanced Courses

The degree plan must include a minimum of 4-6 SCH for M.S. Students and 8-10 for Ph.D. students from the following (other courses can be substituted according to the research project of the student):

Course	Title	Semester	SCH
PHAN 5400	Histology	Fall	2
<b>PHAN 6308</b>	<b>Applied Biomechanics*</b>	Spring	2
PHAN 5401	Gross Anatomy (with prosection labs)	Spring	5
PHAN 5301	Structural Anatomy (Online) (with virtual labs)	Spring	3
PHAN 6204	Embryology	Spring	1
<b><i>Dissection-Based Structural Anatomy Course Sequence (Listed Chronologically)</i></b>			
<b>PHAN 6340</b>	<b>Structural Anatomy of the Musculoskeletal System*</b>	Fall	4
<b>PHAN 5630</b>	<b>Structural Neuroscience*</b>	Fall	2
PHAN 5332	Structural Anatomy of the Cardiopulmonary System	Fall	2
PHAN 5334	Structural Anatomy of the Human Digestive and Renal System	Fall	3
PHAN 5330	Structural Anatomy of the Human Reproductive System	Spring	3

***\*Required course for all SARS students.***

### Other

Students may take courses from other programs as electives with consent from the major professor and the SARS graduate advisor. Students are encouraged to seek out Specials Problems (BMSC 5390/6390) courses to strengthen their knowledge and application of biomedical sciences.

#### IV. Individual research and Thesis/Dissertation Courses

Course	Title	Maximum Hours Applied to Degree
BMSC 5998	Individual Research for M.S. Students	12 SCH
BMSC 6998	Individual Research for Ph.D. students	40 SCH
BMSC 5395	Thesis (M.S. students)	6 SCH
BMSC 6395	Doctoral Dissertation (Ph.D. students)	12 SCH

#### V. Teaching Electives

PHAN 6000 – Teaching Practicum (1 SCH)

The Teaching Practicum course provides training and experiences in didactic (classroom) teaching. Students will complete a certificate in Teaching Essentials from the Center for Innovative Learning, and deliver didactic content (lectures and Q&A/application sessions). Students interested in education and teaching are encouraged to take PHAN 6000. We encourage all those interested in academic careers to participate in this course.

Teaching Assistanceships

Students may also serve as teaching assistants (TAs) for UNTHSC courses with anatomy laboratory components. All Ph.D. students are required to serve as TAs a minimum of once per year. Students interested in education and teaching are encouraged to serve as a TA more regularly. Students will be assigned laboratory teaching duties by GSBS and the Center for Anatomical Sciences.

## Sample Degree Plans

### I. Master of Science

The typical degree plan leading to the M.S. degree is outlined below. The degree plan may vary depending on availability of course offerings in a given semester and each student's background and progress toward the thesis project. This is a template and should be modified accordingly.

<b>M.S. Degree Plan for Structural Anatomy and Rehabilitation Sciences Track</b>		
<b>Year 1: Fall</b>		
BMSC 6201	Fundamentals of Biomedical Science I	2
BMSC 6202	Fundamentals of Biomedical Science II	2
BMSC 6203	Fundamentals of Biomedical Science III	2
BMSC 6204	Fundamentals of Biomedical Science IV	2
BMSC 5150	Lab Rotations (1 SCH; each student will register for 2 rotations)	2
BMSC 6200	Experimental Design and Biostatistics	2
<i>Milestones</i>	<i>Change of Discipline; Designation of Major Professor</i>	0
		12 SCH
<b>Year 1: Spring</b>		
BMSC 5160	Biomedical Ethics	1
BMSC 5315	Principles of Scientific Communication	2
BMSC 5998	Individual Research	0-5
PHAN 5390.914	Seminar in Current Topics	1
PHAN 6150	SARS Journal Club	1
PHAN 6308	Applied Biomechanics	2
ELECTIVES	Recommended: PHAN 5401 (5 SCH)	0-5
<i>Milestones</i>	<i>Designation of Advisory Committee; Degree Plan</i>	0
		12 SCH
<b>Year 1: Summer</b>		
BMSC 5998	Individual Research	5
BMSC 5108	Transferable Skills	1
		6 SCH
<b>Year 2: Fall</b>		
BMSC 5998	Individual Research	0-5
PHAN 6150	SARS Journal Club	1
PHAN 6340	Structural Anatomy of the Musculoskeletal System	4
PHAN 5630	Structural Neuroscience	2
ELECTIVES	Recommended: PHAN 5332 (2 SCH), PHAN 5334 (3 SCH)	0-5
<i>Milestones</i>	<i>Research Proposal</i>	0
		12 SCH
<b>Year 2: Spring</b>		
PHAN 6000	Teaching Practicum	1
PHAN 6150	SARS Journal Club	1
BMSC 5998	Individual Research	1-10
ELECTIVES	Recommended: PHAN 5330 (3 SCH)	0-3
		12 SCH
<b>Year 2: Summer</b>		
BMSC 5395	Thesis	6

## II. Doctor of Philosophy (Ph.D)

The typical degree plan leading to the Ph.D. is outlined below. The degree plan may vary depending on availability of course offerings in a given semester and each student's background and progress toward the dissertation. This is a template and should be modified accordingly.

<b>Ph.D. Degree Plan for Structural Anatomy and Rehabilitation Sciences Track</b>		
<b>Year 1: Fall</b>		
BMSC 6201	Fundamentals of Biomedical Science I	2
BMSC 6202	Fundamentals of Biomedical Science II	2
BMSC 6203	Fundamentals of Biomedical Science III	2
BMSC 6204	Fundamentals of Biomedical Science IV	2
BMSC 5150	Lab Rotations (each student will register for 2 rotations)	1 (2)
BMSC 6200	Experimental Design and Biostatistics	2
<i>Milestones</i>	<i>Change of Discipline; Designation of Major Professor</i>	0
		12 SCH
<b>Year 1: Spring</b>		
BMSC 5160	Biomedical Ethics	1
BMSC 5315	Principles of Scientific Communication	2
BMSC 5109	Diversity, Equity and Inclusion in Biomedical Sciences: Fundamental Concepts	1
BMSC 5998	Individual Research	0-4
PHAN 5390.914	Seminar in Current Topics	1
PHAN 6150	SARS Journal Club	1
PHAN 6308	Applied Biomechanics	2
ELECTIVES	Recommended: PHAN 5401 (5 SCH)	0-5
<i>Milestones</i>	<i>Designation of Advisory Committee; Degree Plan</i>	0
		12 SCH
<b>Year 1: Summer</b>		
BMSC 6998	Individual Research	5
BMSC 5108	Transferable Skills	1
		6 SCH
<b>Year 2: Fall</b>		
BMSC 6998	Individual Research	0-5
PHAN 6150	SARS Journal Club	1
PHAN 6340	Structural Anatomy of the Musculoskeletal System	4
PHAN 5630	Structural Neuroscience	2
ELECTIVES	Recommended: PHAN 5332 (2 SCH), PHAN 5334 (3 SCH)	0-5
<i>Milestones</i>	<i>Oral Qualifying Exam</i>	0
		12 SCH
<b>Year 2: Spring</b>		
PHAN 6150	SARS Journal Club	1
BMSC 6998	Individual Research	1-11
ELECTIVES	Recommended: PHAN 5330 (3 SCH)	0-3

		12 SCH
<b>Year 2: Summer</b>		
BMSC 6998	Individual Research	3
PHAN 6000	Teaching Practicum	2
BMSC 6101	Responsible Conduct of Research	1
<i>Milestones</i>	<i>Research Proposal</i>	0
		6 SCH
<b>Year 3: Fall</b>		
BMSC 6998	Individual Research	0-8
PHAN 6150	SARS Journal Club	1
ELECTIVES	Electives	1-5
		9 SCH
<b>Year 3: Spring</b>		
BMSC 6998	Individual Research	8
PHAN 6150	SARS Journal Club	1
		9 SCH
<b>Year 3: Summer</b>		
BMSC 6998	Individual Research	1-6
		6 SCH
<b>Year 4: Fall</b>		
BMSC 6998	Individual Research	6
BMSC 6395	Doctoral Dissertation	3
		9 SCH
<b>Year 4: Spring</b>		
BMSC 6395	Doctoral Dissertation	9
		9 SCH

For additional information regarding Academic Procedures, please refer to the Graduate School of Biomedical Sciences Catalog at: [Academic Procedures \(GSBS\)](#)

# Advancement to Candidacy

## I. Master of Science

Advancement to Master's Candidacy is achieved after successful completion of a research proposal.

The research proposal is a detailed outline of the thesis project. It must include a summary of the proposed project, the hypothesis and aims to be investigated, significance and innovation of the project, research design and methodology to be used, a review of the salient literature that supports or opposes the hypothesis, and potential limitations. To take advantage of the advisory committee's expertise and advice, and to clearly define the project and the committee's expectations, it is imperative that the student meets with his/her advisory committee before preparing the research proposal.

Timeline for the M.S. Research Proposal:

- The research proposal must be completed before the **end of the second year** of graduate study. M.S. students are encouraged to complete their research proposal in the Fall of year 2.
- The student must submit a Notice of Research Proposal Seminar and Defense no later than **30 days** prior to the defense.
- The research proposal should be provided to the advisory committee no later than **14 days** prior to the defense.

The student will conduct a public seminar presentation of the research proposal, followed by a private defense of the research proposal with the members of the student's advisory committee. The research proposal must be approved by the advisory committee and the Dean prior to registering for Thesis (BMSC 5395).

Research Proposal Guidelines, the Notice of Research Proposal Seminar and Defense, and the Research Proposal approval forms are available on the [GSBS Forms and Guidelines website](#).

Once a master's student has successfully advanced to candidacy, they may use "M.S. Candidate" as a title on any general business correspondence such as business cards, e-mail messages, etc.

## II. **Doctor of Philosophy**

Advancement to Doctoral Candidacy is a two-step process. The first step of this process is successful completion of the Oral Qualifying Examination, a major milestone in most doctoral programs regardless of the field of study. The second step of this process is the preparation and defense of a research proposal. Below are details of the Structural Anatomy and Rehabilitation Sciences Discipline for advancing to candidacy.

### A. **Oral Qualifying Examination**

The qualifying examination ensures that the doctoral student has mastered information needed to succeed as a Ph.D. in the fields associated with Structural Anatomy and Rehabilitation Sciences. The main goal of the examination is to ensure that each doctoral student has a broad knowledge base in the biomedical sciences and principles of Structural Anatomy and Rehabilitation Sciences.

The qualifying examination within the Structural Anatomy and Rehabilitation Sciences discipline should be undertaken in the Fall of Year 2 of graduate study after the successful completion of the SARS required advanced courses. Students will receive a study guide from the SARS graduate advisor upon their matriculation into the discipline. The student is expected to become knowledgeable in the topics covered in the study guide through their course work, reading of textbooks and scientific literature, and discussion with faculty members.

A committee comprised of members of the Structural and Rehabilitation Sciences graduate faculty, other UNTHSC faculty members, and the student's university member administer the qualifying examination. The graduate advisor will serve as committee chair for the qualifying exam and is a voting member of the committee. If the graduate advisor is the major professor, she/he will appoint another faculty member to serve as the chair of the committee. The graduate advisor will also appoint 3-4 additional voting faculty members to the committee. The university member serving on the student's advisory committee is a non-voting member and must be present for the qualifying exam. The student's major professor may not attend the qualifying examination.

At the start of the qualifying exam, the student will be given a list of 12 questions from three major areas: structural anatomy, rehabilitation sciences, and experimental design. The student must answer 6 total questions including at least one question from each of the three major areas. The student will have one hour to review the questions and prepare their answers, followed by approximately two hours of oral examination by the committee.

Two attempts to successfully pass the qualifying examination are allowed. Failure of the student to pass the qualifying examination results in dismissal of the student from the doctoral program. A doctoral student who does not pass may be allowed to complete the requirements for a Master of Science degree (terminal Master's Degree). It is the responsibility of the chair of the oral qualifying exam committee to obtain signatures from the examination committee, university member, graduate

advisor, and department chair upon completion of the exam. The appropriate form may be obtained from the [GSBS Forms and Guidelines website](#).

## **B. Research Proposal**

The research proposal is an outline of the dissertation project. It must include a summary of the proposed project, the hypothesis and aims to be investigated, significance and innovation of the project, research design and methodology to be used, a review of the salient literature that supports or opposes the hypothesis, and potential limitations. To take advantage of the advisory committee's expertise and advice, and to clearly define the project and the committee's expectations, it is imperative that the student meets with his/her advisory committee before preparing the research proposal.

Timeline for the Ph.D. Research Proposal:

- The research proposal should be completed before the **end of the second year** of graduate study.
- The student must submit a Notice of Research Proposal Seminar and Defense no later than **30 days** prior to the defense.
- The research proposal should be provided to the advisory committee no later than **14 days** prior to the defense. However, it is strongly recommended that the student provide their research proposal to their advisory committee earlier (ideally, 4 weeks in advance). This is a professional courtesy to the advisory committee and may assist the student in strengthening their proposal prior to the defense.

The student will conduct a public seminar presentation of the research proposal, followed by a private defense of the research proposal with the members of the student's advisory committee. The research proposal must be approved by the advisory committee and the Dean prior to registering for Dissertation (BMSC 6395).

Research Proposal Guidelines, the Notice of Research Proposal Seminar and Defense, and the Research Proposal approval forms are available on the [GSBS Forms and Guidelines website](#).

Once a doctoral student has successfully advanced to candidacy, he/she may use "Ph.D. Candidate" or "Doctoral Candidate" as a title on any general business correspondence such as business cards, e-mail messages, etc. In addition, the minimum number of credit hours required for full-time enrollment drops from 12 SCH to 9 SCH in long semesters. Full-time enrollment remains 6 SCH in summer semesters.



## Other

### I. Yearly Progress Reports

The yearly progress report is a formal meeting where the student and advisory committee meet to evaluate the students progress. The student is expected to meet with their advisory committee a minimum of once per academic year, but is encouraged to meet more regularly as may be appropriate.

The yearly progress meeting is intended to help students focus on their personal academic goals within their selected academic field. Please see the [GSBS Forms and Guidelines website](#) for the rubric associated with this yearly milestone. This report will allow the student to reflect on their academic year and their research progress. During this meeting, faculty may advise the student on how best to improve. Again, this meeting is to help teach the student how to create and manage their research agenda.

Yearly progress reports are due no later than the last day of the summer semester as defined by the most current academic years calendar. However, it is strongly encouraged that students submit at least a month early.

### II. Individual Development Plan

The individual development plan (IDP) is a tool to help a student focus on how to leverage their expertise into a satisfying and productive career. Students will be required to complete an IDP throughout their graduate careers at UNTHSC. The individual development plan (IDP) will help students explore career possibilities and set goals to follow the career path that fits them best.

Students will be prompted by the GSBS when an IDP requires submission, revision, or reevaluation.