School of Medicine

Degrees Offered

- MD, Doctor of Medicine
- MD/PhD, Dual Doctor of Medicine and Doctor of Philosophy
- PhD, in Biochemistry and Molecular Medicine
- PhD in Cancer Cell Biology
- PhD in Cellular and Integrative Physiology
- MS, PhD in Clinical and Translational Science
- PhD in Immunology and Microbial Pathogenesis
- PhD in Neuroscience
- MHS, in Pathologists’ Assistant
- MHS, in Physician Assistant
- MS, PhD, Exercise Physiology
- MOT, Master of Occupational Therapy
- OTD, Occupational Therapy Doctorate
- DPT, Doctor of Physical Therapy
- PhD, Pharmaceutical and Pharmacological Sciences
- MS, Biomedical Sciences
- MS, Health Sciences
- MS, in Athletic Training
- AuD, Doctor of Audiology
- MS, Speech-Language Pathology

Introduction

The West Virginia University School of Medicine is a part of the Robert C. Byrd Health Sciences Center, a comprehensive academic health system with three regional campuses in the state, a network of affiliated hospitals and practice plans, and a mission of education, research, clinical care, and service to the state. On the main campus in Morgantown, students have access to a full range of research and clinical facilities, including a relatively new, four-story laboratory building and a wide range of advanced research centers. West Virginia University Hospitals feature sophisticated medical technology, including magnetic resonance imagery, lithotripsy, and laser surgery; the campus includes a large and busy tertiary hospital, a Level 1 trauma center, a children’s hospital, cancer center, a psychiatric hospital, primary care and specialty clinics, a rehabilitation hospital, and many other patient care facilities.

Graduate study in the biomedical sciences is in seven PhD graduate programs: biochemistry and molecular biology; cancer cell biology; cellular and integrative physiology; exercise physiology; immunology and microbial pathogenesis; neuroscience; and pharmaceutical and pharmacological sciences (a collaboration with the School of Pharmacy). Biomedical sciences graduate students take a common core curriculum the first semester and match with a faculty mentor and select one of the seven PhD training programs after the first semester or by the end of year one. There is also a M.S. degree in the Biomedical Sciences. Core coursework for this M.S. degree is similar to that of the first semester of PhD training in the biomedical sciences.

There is also a combined MD/PhD dual degree option for students interested in pairing medical and basic science education at the doctoral level.

The Division of Professional and Undergraduate Programs offers graduate degrees in the clinical areas of athletic training, audiology, exercise physiology, occupational therapy, pathologists’ assistant, physical therapy, physician assistant and speech-language pathology. All graduate and professional programs in the School of Medicine complement other existing programs in health professions offered through other schools (dentistry, nursing, pharmacy and public health) that are part of the Health Sciences Center.

The MS and PhD programs in Clinical and Translational Science, housed within the West Virginia Clinical and Translational Science Institute, foster the training and career development in clinical and translational research.

The MS in Health Sciences is a 12-month, non-thesis master's program that targets students who desire to enhance their competitiveness for entry into advanced professional or graduate programs or who are interested in more in-depth study in biomedical or public health disciplines.
ADMINISTRATION

DEAN
• Clay Marsh - M.D. (West Virginia University School of Medicine)

VICE DEAN FOR MEDICAL EDUCATION & ACADEMIC AFFAIRS
• Norman D. Ferrari III - M.D. (West Virginia University School of Medicine)
  Chief Academic Officer for Physician Education

VICE DEAN-PROFESSIONAL & UNDERGRADUATE PROGRAMS
• MaryBeth Mandich - Ph.D. (West Virginia University School of Medicine)

VICE DEAN FOR CLINICAL SERVICES & CMO WVU HEALTHCARE
• Michael Edmond, MD, MPH - M.D. (West Virginia University School of Medicine)

ASSOCIATE DEANS
• Scott A. Cottrell - Ed.D. (West Virginia University College of Education and Human Services)
  Student Services and Curriculum
• Robert Gustafson (Interim) - M.D. (West Virginia University School of Medicine)
  Faculty Services
• James P. Griffith - M.D. (West Virginia University School of Medicine)
  Charleston Campus Student Services
• Stephen Hoffmann - MD (University of Cincinnati)
  Clinical Programs
• Rosemarie Cannarella Lorenzetti - M.D. (West Virginia University School of Medicine)
  Eastern Campus Student Services
• Linda Nield - MD - Dartmouth School of Medicine
  MD Degree Admissions
• Manuel Vallejo, MD, DMD - West Virginia University School of Medicine
  Graduate Medical Education and DIO

ASSOCIATE DEAN FOR RESEARCH
• Laura F. Gibson - PhD (West Virginia University School of Medicine)

ASSISTANT DEANS
• Julie Green
  Faculty and Practice Plan Affairs
• Becky Stauffer - CPA
  Finance and Chief Administrative Officer
• Dorian Williams - M.D. (West Virginia University School of Medicine)
  Technology & Simulation

ASSOCIATE VICE PRESIDENT FOR HEALTH SCIENCES
• John Linton - PhD (Kent State University)
  Dean, Charleston Campus
• Emma Morton Eggleston - MD (University of North Carolina)
  Dean, Eastern Campus

Degree Designation Learning Outcomes

MASTER OF SCIENCE (MS) IN THE BIOMEDICAL SCIENCES
This program is designed to assist in the selection of a career path, albeit industry, teaching, or a professional program, and/or for the transition to a biomedical Ph.D. program. The first-year curriculum imparts a fundamental understanding of the functional components of a cell and the basis for regulation of cellular processes and organ systems. After selecting a mentor, students take additional courses that align with their research interests.

Students will:
• Integrate molecular, cellular, and integrative systems concepts
• Critically interpret the current scientific literature
• Develop critical thinking and problem-solving skills
• Design and interpret experiments to test molecular, cellular, and integrative systems mechanisms
• Demonstrate technical skills in conducting scientific experimentation
• Articulate, verbally and in writing, their understanding of concepts during scientific discussions
• Discuss relevant scientific ethical issues presented as case studies
• Engage with fellow students and faculty and demonstrate teamwork

MASTER OF SCIENCE (MS) IN CLINICAL AND TRANSLATIONAL SCIENCE

This program is designed to foster the training and career development of health professionals in clinical and translational research. The target group for this program is junior faculty, fellows, residents, and PhDs. Trainees acquire a well-rounded education in the areas of biostatistics, epidemiology, translational science, clinical trials, scientific ethics, and scientific writing (grant and manuscript) and obtain research training in a mentored environment.

Students will:
• Differentiate between parametric and nonparametric methodologies
• Test hypotheses, using statistical software (SAS, R) to perform basic biostatistical analyses
• Examine mortality and morbidity trends
• Measure frequency and association
• Design research studies and interpret data
• Screen from an epidemiological perspective
• Translate research discoveries into policies and practices that promote health
• Critically evaluate the clinical trial literature
• Design an original clinical trial
• Write a grant proposal and manuscript
• Discuss relevant scientific ethical issues presented as case studies

MASTER OF SCIENCE (MS) IN EXERCISE PHYSIOLOGY

This program is designed with a clinical and a thesis track. The clinical track specializes in working with persons with diseases such as obesity, cardiovascular disease, and diabetes and aging. The thesis track provides opportunities for students to study mechanisms leading to and contributing to health diseases and disparities and to understand the impact of exercise on these health issues. The graduates of the masters program will become leaders who will supervise Exercise Physiologists in hospitals, rehabilitation, aquatic therapy programs, fitness, or academic settings.

Students will:
• Critically apply theories, methodologies, and knowledge to address fundamental questions in health specific issues related to exercise physiology
• Demonstrate skills in written and oral communication and critical thinking by critically analyzing research that is significant and novel in exercise physiology and within the sub-discipline associated with it
• Plan and conduct this research or implement this project under the guidance and approval of their research mentors while developing the intellectual independence that typifies true scholarship (thesis track students)
• Critically evaluate published research data and demonstrate clinical skills in working with patients and evaluating health and exercise-stress test data for appropriate exercise treatment (clinical track students)
• Follow the principles of ethics associated with appropriate research conduct (thesis track students) or clinical treatment of patients (clinical track students)
• Interact productively with people from diverse backgrounds including mentors and team members/peers with integrity and professionalism

MASTER OF SCIENCE (MS) IN THE HEALTH SCIENCES

This is a terminal degree program targeting students interested in developing their skills toward a career requiring knowledge in the biomedical sciences. The objectives of this program are to:
• Provide integrative scientific education in the biomedical and public health sciences to graduates from an accredited undergraduate institution
• Develop integrative and critical thinking skills to allow application of scientific knowledge to traditionally non-scientific fields
• Train students in the rudiments of research on a basic science, public health, or clinical topic, including hypothesis testing, data collection, and manuscript preparation
• Enhance students’ competitiveness for admission to a health professional and/or Ph.D. program
• Provide the opportunity to explore career options in various health professional disciplines
• Enhance skills for job placement including resume and cover letter evaluation, and interviewing preparation
Students will:

- Demonstrate mastery of basic science information in at least two basic science courses
- Demonstrate mastery of core public health knowledge
- Be able to learn new information via reading the scientific literature and attending seminars
- Demonstrate mastery of public speaking and written communication skills
- Be able to develop novel hypotheses, collect data to test this hypothesis, and report their findings
- Enhance their competitiveness for career placement

**MASTER OF OCCUPATIONAL THERAPY (MOT)**

This program is designed to meet the needs of rapidly changing and dynamic health and human services delivery systems that require the occupational therapist to possess basic skills as a direct care provider, consultant, educator, manager, researcher, and advocate for the profession and the consumer.

Students will:

- Successfully complete the coursework and fieldwork components of the program; completing the program with a grade point average of 3.0 or higher and a passing grade on all fieldwork
- Graduate within a time frame of three years following acceptance to the program; completing all academic work, clinical fieldwork, and community service within that time frame
- Demonstrate professional behaviors, attitudes, and values that are in agreement with and as outlined in the West Virginia Student Occupational Therapy Program Handbook and the American Occupational Therapy Association (AOTA) Occupational Therapy Code of Ethics and Ethics Standards
- Demonstrate an appreciation for the attitudes, values, and behaviors of peoples of various cultures and backgrounds
- Utilize an occupation and evidence-based approach as components of occupational therapy practice.
- Successfully complete all elements of a master degree level research project including an oral presentation.
- Demonstrate the ability to adapt to appropriate, varying, and novel situations and circumstances within their educational and clinical environments.
- Demonstrate the ability to frame issues and problems of human occupation that are consistent with and reflective of current frames of reference and theoretical models and approaches within the profession of Occupational Therapy.
- Demonstrate an appreciation for and understanding of the value of professional advocacy and promotion of the profession of Occupational Therapy
- Demonstrate entry-level competence in areas of evaluation, treatment, communication, critical reasoning, and leadership upon graduation
- Develop the skills necessary, as well as an appreciation, for becoming a life-long learner

All graduates must:

- Have acquired, as a foundation for professional study, a breadth and depth of knowledge in the liberal arts and sciences and an understanding of issues related to diversity
- Be educated as a generalist with a broad exposure to the delivery models and systems used in settings where occupational therapy is currently practiced and where it is emerging as a service
- Have achieved entry-level competence through a combination of academic and fieldwork education
- Be prepared to articulate and apply occupational therapy theory and evidence-based evaluations and interventions to achieve expected outcomes as related to occupation
- Be prepared to articulate and apply therapeutic use of occupations with individuals or groups for the purpose of participation in roles and situations in home, school, workplace, community, and other settings
- Be able to plan and apply occupational therapy interventions to address the physical, cognitive, psychosocial, sensory, and other aspects of performance in a variety of contexts and environments to support engagement in everyday life activities that affect health, well-being, and quality of life
- Be prepared to be a lifelong learner and keep current with evidence-based professional practice
- Uphold the ethical standards, values, and attitudes of the occupational therapy profession
- Understand the distinct roles and responsibilities of the occupational therapist and occupational therapy assistant in the supervisory process
- Be prepared to effectively communicate and work inter-professionally with those who provide care for individuals and/or populations in order to clarify each member’s responsibility in executing components of an intervention plan
- Be prepared to advocate as a professional for the occupational therapy services offered and for the recipients of those services

Be prepared to be an effective consumer of the latest research and knowledge bases that support practice and contribute to the growth and dissemination of research and knowledge
DOCTOR OF PHYSICAL THERAPY (DPT)

This program is designed to educate individuals with the knowledge, skills, and behaviors consistent with professional excellence. Working as part of a community of professionals, the program strives to advance practice characterized by independence, professional judgment, and involvement.

Graduates will:

• Demonstrate basic and applied knowledge necessary to practice PT as a member of the health care team in diverse settings
• Demonstrate the ability to make sound clinical decisions using information literacy skills, critical thinking, and scientific evidence
• Find employment with special emphasis on recruitment and retention of graduates in WV
• Adhere to core professional values
• Demonstrate the ability to practice independently
• Adhere to legal and ethical standards
• Demonstrate a life-long commitment to the profession by activity in professional organizations, scholarship, education, and advocacy
• Deliver high quality physical therapy services to individuals and communities across a continuum of care, including rural settings.
• Demonstrate sound, independent clinical decisions utilizing information literacy, critical thinking skills, and scientific evidence
• Function as a unique member of the health care team, including receiving and providing appropriate referrals
• Provide culturally sensitive care distinguished by advocacy, trust, respect, and an appreciation for individual differences
• Demonstrate a commitment to the health of the community through participation in primary and secondary prevention programs
• Actively engage in local and professional advocacy in a changing health care environment

DOCTOR OF MEDICINE (MD)

This program is designed for students to develop knowledge, skills, and attitudes across six (6) competency areas: Patient Care, Medical Knowledge, Practice-Based Learning and Improvement, Interpersonal and Communication Skills, Professionalism, and Systems-Based Practice.

Students will:

Provide patient care that is compassionate, appropriate, and effective and promote life-styles that promote improved health:

• Gather essential and accurate patient information, including a complete and appropriately organized medical history and physical examination
• Evaluate patient information in order to formulate complete and accurate differential diagnoses and apply appropriate diagnostic tests to confirm diagnoses
• Develop patient management plans that are evidenced-based and considerate of cultural and ethnic preferences
• Counsel and educate patients and their families about prevention strategies, diagnostic tests, treatment options/plans, and patient orders/prescriptions
• Perform medical procedures appropriately and professionally
• Partner with patients to prevent health problems and improve health status

Demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences and apply this knowledge to patient care:

• Describe normal structure and function of the human body and each organ system over the lifespan
• Describe molecular, cellular, and biochemical mechanisms of homeostasis
• Describe and apply normal cognitive and social growth and development of humans to diagnose abnormal cognitive and social development
• Describe causes of altered structure and function of organ systems and tissues that result in disease (genetic, developmental, nutritional, toxic, infectious, inflammatory, neoplastic, degenerative, traumatic, and behavioral)
• Describe foundations of diagnostic methods, therapeutic interventions, outcomes, and prevention with respect to specific disease processes in individuals and populations
• Describe genetic and physiologic basis of individual patient response to drugs
• Describe and apply foundational principles of epidemiology, statistics, and ethics to diagnosis and treatment of disease
• Explain the effect of social determinants, health behaviors, and preventative measures on health status and disease of individuals and populations
• Demonstrate use of scientific method and critical evaluation of scientific literature in establishing causation, diagnosis, and therapy of disease

Demonstrate the ability to investigate and evaluate their role in the care of patients, to appraise and assimilate scientific evidence, and to continuously improve their role in patient care based on constant self-evaluation and learning:

• Locate, appraise and assimilate evidence from scientific studies including basic, clinical, translational, and community (population) based research
• Apply knowledge of study designs and statistical methods to appraise studies
• Use information technology to manage information and support patient care decisions
• Develop the skills necessary for lifelong learning, as evidence by demonstrating independent and self-directed study
• Utilize strategies to identify and analyze strengths, deficiencies, and limits in one’s knowledge, collaboration skills, and professionalism

Demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, peers, and health professionals:

• Communicate effectively and demonstrate caring and respectful behaviors with patients and families across a broad range of socioeconomic and cultural backgrounds
• Collaborate with a team of health care professionals to provide patient-focused, preventive, acute, chronic, continuing, rehabilitative, and end-of-life care
• Provide an accurate and complete oral presentation of a patient encounter
• Demonstrate effective communication and collaboration with all members of a health care team
• Write timely, legible, accurate and complete documentation of a clinical encounter in written or electronic format

Demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles:

• Demonstrate respect, compassion, integrity, responsiveness to needs of patients, society, and profession that supersedes self-interest
• Demonstrate a commitment to ethical principles, including provision or withholding of care, confidentiality, informed consent, and respect for patient privacy and autonomy
• Demonstrate sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in culture, age, gender, race, religion, disabilities, sexual orientation, and health
• Create and sustain a therapeutic and ethically sound relationship with patients
• Demonstrate timeliness and punctuality in the execution of learning and clinical duties

Demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to learn about other resources in the system to promote optimal health care:

• Define the roles of health care professionals and demonstrate how inter-professional collaboration improves patient safety, patient-centered outcomes, and system performance
• Describe and distinguish effective methods of organizing, financing, and providing health care
• Describe how the prevention and treatment of healthcare disparities may affect individual patients, populations, and the healthcare system
• Advocate for quality patient care, as evidenced by recognizing system limitations and failures and contributing to healthcare safety and improvement

DOCTOR OF PHILOSOPHY (PHD)

PhD in the Biomedical Sciences

Students in the first semester of year one in the Biomedical Sciences Graduate Programs take a common core curriculum that covers topics important to all biomedical sciences graduate programs. In addition, they begin training in the responsible conduct of research, and they conduct three short lab experiences to assist in the selection of a faculty mentor for dissertation research. The intended outcomes the first year in graduate school are to match with a faculty investigator who will guide the student to completion of dissertation research, and to successfully transfer into one of the Ph.D. degree-granting biomedical sciences programs.

By the end of the first year students will:

• Integrate molecular, cellular, and integrative systems concepts
• Identify the relevant scientific literature for their proposed area of research
• Conduct and optimize select laboratory procedures
• Develop an oral presentation on a topic that is new to them
• Discuss relevant scientific ethical issues presented as case studies
• Apply responsible research practices to the conduct of their experiments
• Engage with fellow students and faculty and demonstrate teamwork

PhD in Biochemistry & Molecular Biology

Students will:

• Identify and summarize the basic concepts of biochemistry and molecular biology including: molecular genetics, protein structure and function, metabolism, cell biology and biophysics.
• Discuss, interpret and critique the research literature in biochemistry and molecular biology.
• Demonstrate deep insight when discussing research in their specific field of study.
• Integrate broad, fundamental knowledge in the basic concepts of biochemistry and molecular biology with detailed knowledge of the student’s specific field of study.
• Identify the major questions and gaps in their specific field of study. When challenged, be able to identify significant gaps in our collective knowledge of biochemistry and molecular biology.
• Acquire, develop and use standard biochemical laboratory techniques as well as those necessary to successfully perform state of the art experiments in the student’s area of research.
• Design experimental protocols and conduct self-directed research that is well-controlled, rigorous and produces results with unequivocal interpretation.
• Conduct research to produce novel results that are presented at scientific meetings and published in peer-reviewed journals.
• Demonstrate oral, written and visual communication skills that result in clear and organized dissemination of material at a level appropriate for the audience.

PhD in Cancer Cell Biology

Student learning outcomes in the CCB Graduate Program have been partially adapted from the guidelines set forth by Cancer Biology Training Consortium (CABTRAC), along with recommendations from the CCB Scholarship Committee and Faculty.

Students will:

• Independently plan and implement a research project that emphasizes cancer in the context of human disease and health.
• Understand cancer biology at the population, individual, cellular and molecular levels.
• Demonstrate knowledge of subject-specific techniques and methods in self-directed bench science that incorporates scientific rigor and transparency in the application of knowledge.
• Analyze and critique experimental questions, to become proficient at technical troubleshooting, and to objectively evaluate scientific data (their own and that published in the literature) with high ethical standard.
• Evaluate the scientific literature with scholarly aptitude within their chosen discipline.
• Apply their skills in written, oral and visual communication to foster effective communication of research.
• Apply and expand their knowledge while engaged in experiential learning in areas outside of their discipline.

PhD in Cellular & Integrative Physiology

The student learning and programmatic outcomes of the Cellular and Integrative Physiology Graduate Program are similar to those put forth by the Human Anatomy & Physiology Society (HAPS) and the American Physiological Society (APS). They are as follows:

** Fundamental Content & Process Goals **

1. Recognize the anatomy and explain physiological functions of body systems.
2. Recognize and explain the principle of homeostasis and the use of feedback loops to control physiological systems.
3. Use anatomical knowledge to predict physiological consequences, and use knowledge of function to predict the features of anatomical structures.
4. Recognize and explain the interrelationships within and between anatomical and physiological systems of the body.
5. Synthesize ideas to make a connection between knowledge of anatomy and physiology and real-world situations, including healthy lifestyle decisions and homeostatic imbalances.

** Broader Process Goals **

6. Demonstrate information literacy skills to access, evaluate, and use resources to stay current in the field of physiology.
7. Examine issues related to physiology from an evidence-based perspective.
8. Communicate clearly and in a way that reflects knowledge and understanding of physiology and demonstrates the ability to adapt information to different audiences and applications.

PhD in Exercise Physiology

Students will:

• Attain a comprehensive understanding of the biophysical, biomechanical and biochemical processes that contribute to movement production and disease progression
• Learn to apply theories and methodologies to address fundamental questions in health-specific issues related to exercise physiology
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• Obtain independent and critical thinking skills requisite for designing, conducting, and interpreting research data in an effort to advance knowledge related to health and disease through creative and innovative research
• Effectively communicate knowledge through oral and written means by disseminating research findings that have the potential to improve health and quality of life
• Demonstrate principles of ethics associated with appropriate research conduct
• Acquire technical skills requisite for conducting experimental procedures

PhD in Immunology and Microbial Pathogenesis

Students will:
• Identify and summarize the basic concepts of microbiology, microbial pathogenesis, and immunology.
• Integrate detailed knowledge in microbiology, microbial pathogenesis, and immunology with the knowledge of student’s area of research.
• Discuss, critique, and interpret primary research literature in microbiology, microbial pathogenesis, immunology, and in the student’s area of research.
• Identify meaningful problems and questions for research in microbiology, microbial pathogenesis, and immunology.
• Acquire expertise and use laboratory techniques required to perform experiments in the student’s area of research.
• Design experimental protocols and conduct self-directed research that results in presentations at scientific meeting and publications.
• Demonstrate oral, written, and visual communication skills that result in clear and organized dissemination of material at a level appropriate for the audience.

PhD in Neuroscience

Students will:
• Independently design experimental protocols, conduct the experiments, analyze the results, and defend the experimental approach to other scientists.
• Develop and plan the test of hypotheses regarding significant problems in neuroscience.
• Ability to effectively reference the relevant literature in support of the student’s research project. Ability to identify significance gaps in knowledge on a scientific topic in neuroscience. Ability to critically evaluate the strengths and weaknesses of the scientific literature.
• Effectively communicate research in abstracts written for research presentations, manuscripts for publication, research grant proposals, and the final dissertation.
• Effectively communicate both the student’s research and general scientific topics in both informal and formal settings.
• Develop experimental rigor and strategies for conducting reproducible research.
• Demonstrate principles of ethics associated with appropriate research conduct.

PhD in Pharmaceutical & Pharmacological Sciences

Students will:
• Demonstrate competency in the 5 content areas of pharmaceutical and pharmacological sciences:
  • Drug Chemistry
  • Pharmacokinetics
  • Principles of Drug Action
  • Approaches to Drug Discovery
  • Biopharmaceutics
• Independently design experimental protocols that include the principles of rigor and reproducibility, conduct the experiments, analyze the results, and defend the experimental approach to other scientists.
• Develop and plan the test of hypotheses regarding significant problems in the student’s chosen area of specialization
• Demonstrate critical thinking/problem solving ability by effectively criticizing the neuroscience literature and by asking relevant questions in seminars.
• Ability to effectively reference the relevant literature in support of the student’s research project. Ability to identify significant gaps in knowledge on this scientific topic.
• Effectively communicate scientific information in written abstracts for research presentations, manuscripts for publication, research grant proposals, and the dissertation.
• Effectively communicate scientific information in both formal and informal oral presentations.
Doctoral Degrees

Policies for the Doctor of Medicine (MD) degree may be found in the MD Degree Student Handbook. This includes but is not limited to policies for evaluation and advancement as outlined in the Policy on Academic and Professional Standards Governing the MD Degree program.

The policies for the Doctor of Philosophy degree in the School of Medicine include program specific requirements, School of Medicine specific requirements and University wide requirements. Students should become familiar with the WVU graduate catalog and the handbooks provided to them by their graduate program and upon entry into graduate school.

Required Research Participation

Because the Doctor of Philosophy is a research degree, students will be expected to be involved in research from the beginning of their programs. Doctoral students participate in research rotations with faculty during the first, and if necessary, the second semester of enrollment. Students may choose a dissertation advisor in the first semester of study or by the end of year one. With the aid of the student’s advisor a dissertation committee is chosen in the second year of enrollment. Students should work with their dissertation advisor to design appropriate pilot studies and with the data identify a dissertation project and appropriate research questions/hypothesis to be tested by the proposed research. All approved research projects must be hypothesis-based, and whenever possible, the research questions should address mechanistic questions that explain biological phenomenon relevant to the field of study.

Research is conducted throughout the doctoral program with the requirement that one manuscript, based on the student’s dissertation research, is accepted for publication in a peer-reviewed scientific journal before defense of PhD dissertation research. Students should strive to present their research findings at a minimum of one national/international meeting annually beginning in the second year of enrollment in the doctoral program.

Directed Research

All preliminary research must be collected under the supervision and approval of the dissertation chair, which is most graduate programs is the student’s advisor. The student is expected to engage in directed research under the supervision of the dissertation advisor to learn techniques and collect pilot data that will be the basis of a future dissertation project. Studies to obtain pilot data should be presented to the dissertation committee to demonstrate the student’s competency in research skills and that his/her research ideas and hypotheses are appropriate and justified. This process facilitates progression through the program in a timely and efficient manner. Nevertheless, the dissertation committee may require the student to obtain additional pilot data or research skills prior to approving the research proposal as a dissertation topic. The student’s directed research efforts should be progressing towards approval of a dissertation topic from the members of the dissertation committee, once they have been identified (before the end of the first semester of year two). This research training will provide the student background data/information from which to base a pre-doctoral grant proposal and dissertation topic as part of the requirements for completing the defense of the Dissertation Proposal.

Comprehensive/Qualifying Examination

The comprehensive (qualifying/candidacy) examination is usually given after most formal coursework has been completed and, in general, will test the scientific knowledge pertinent to the student’s chosen Ph.D. training program. The individual graduate programs conduct these examinations at different times and use different formats. Depending on the graduate program, the qualifying exam is scheduled either at the end of year one or year two or in association with the proposal defense.

Requirements of the Dissertation Proposal/Candidacy Examination

Graduate students are admitted to Ph.D. candidacy after successfully defending the Dissertation Proposal. The candidacy examination consists of writing a grant proposal, formatted similar to a National Institutes of Health pre-doctoral grant, and orally defending the dissertation proposal to the student’s dissertation committee. Advancement to candidacy means that in the judgment of the faculty, the doctoral student has an adequate knowledge of their research area, knows how to use academic resources, and has potential to do original independent research. In other words, the student is qualified to complete the doctoral dissertation. No student with a grade point average of less than 3.0 will be eligible to take this examination.

Failure to successfully complete the Comprehensive Examination or the Dissertation Proposal by the end of the third year in graduate school is grounds for dismissal. A student has two attempts to pass the exam. Failure on the first attempt requires the student petition and receive approval from the dissertation committee to retake either exam a second time.

General Dissertation Requirements

The student must complete a dissertation in which they have obtained original data that makes a novel and important contribution to knowledge in the field of study and submit all manuscripts containing these data to peer-reviewed journals. At least one manuscript with the student as first author must be accepted for publication prior to defense of the dissertation. The dissertation must be constructed in a format suitable to the graduate school and the advisor. Preferable formats will include writing the data chapters as if they have been submitted to peer-reviewed journals (including abstract, introduction, methods and materials, results, discussion, and literature cited in each chapter). In addition, the final one to two chapters of the dissertation should include an integrative discussion concerning the total research project and evaluation of hypotheses that were tested.
Completion of the PhD degree requires a written dissertation that is presented orally in front of a public forum and defended in private to the student's dissertation committee. To pass, the student must receive the approval of 4 of the 5 members on the dissertation committee.

**Student Evaluations**

Students are formerly evaluated annually by the dissertation committee and the program faculty with respect to courses, research, teaching, professional development, and progress through the program. The student also annually completes an Individual Development Plan that is reviewed by the student's advisor.

**Certificate Program**

- Clinical and Translational Science (http://catalog.wvu.edu/graduate/graduatecertificates/clinicalandtranslationalscience/)

**Accreditation**

The MD program within the School of Medicine has specialized accreditation through the Liaison Committee on Medical Education (LCME).

The following list are Residency specialty training programs for MD degree holders include:

- **Addiction Medicine and Addiction Psychiatry** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and the Residency Review Committee for Psychiatry.

- **Anesthesiology** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Anesthesiology.

- **Adult cardiothoracic anesthesiology** has specialization accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and the Residency Review Committee for Anesthesiology.

- **Child and Adolescent Psychiatry** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Psychiatry.

- **Dermatology** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Dermatology.

- **Emergency Medicine** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Emergency Medicine.

- **Family Medicine** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) with Residency Review Committee for Family Medicine.

- **Forensic Psychiatry** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Psychiatry.

- **Hematopathology** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review for Pathology.

- **Neonatology/Perinatal Medicine Fellowship** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Pediatrics.

- **Neurology** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Neurology.

- **Neuroradiology Fellowship** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Radiology.

- **Neurosurgery** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) with Residency Review Committee for Neurological Surgery.

- **Obstetrics and Gynecology** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Obstetrics and Gynecology.

- **Ophthalmology** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Ophthalmology.

- **Ophthalmic Plastic and Reconstructive Surgery** within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Ophthalmology.
Orthopedic Surgery within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Orthopedic Surgery.

Otolaryngology within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Otolaryngology.

Pathology within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review for Pathology. In addition there are accredited fellowships in Hematopathology and Cytopathology linked to this core program also accredited by the ACGME.

Pediatrics within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Pediatrics.

Plastic Surgery within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Plastic Surgery.

Psychiatry within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Psychiatry.

Radiation Oncology within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Radiation Oncology.

Radiology Diagnostic within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Radiology.

Rural Family Medicine (Harper's Ferry) within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) with Residency Review Committee for Family Medicine.

Regional anesthesiology and acute pain medicine within the School of Medicine has accreditation through the Accreditation Council for Graduate Medical Education (ACGME) with the Residency Review Committee for Anesthesiology.

Surgery within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Surgery.

Sports Medicine within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Emergency Medicine.

Transitional Year within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) with Residency Review Committee for Transitional Year.

Urology within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) with Residency Review Committee for Urology.

Vascular Surgery within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Surgery.

Thoracic Surgery within the School of Medicine has specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Thoracic Surgery.

The following programs within the School of Medicine have specialized accreditation through the Accreditation Council for Graduate Medical Education (ACGME) and Residency Review Committee for Internal Medicine: Core Internal Medicine, Cardiovascular Disease, Critical Care Medicine, Gastroenterology, Endocrinology, Hematology/Oncology, Hospice/Palliative Care, Infectious Diseases, Interventional Cardiology, Nephrology, Pulmonary/Critical Care Medicine, Sleep Medicine and Rheumatology.

Audiology

The Doctor of Audiology (Au.D.) education program in audiology at West Virginia University is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2200 Research Boulevard, #310, Rockville, MD 20850, 800-498-2071 or 301-296-5700.

Athletic Training

West Virginia University’s Master of Science in Athletic Training degree program was awarded accreditation by the Commission on Accreditation of Athletic Training Education (CAATE) in April 2020 and will undergo its next comprehensive review in the 2028-2029 academic year. CAATE accreditation allows students to be eligible to sit for the national Board of Certification (BOC) exam and earn the credential of certified athletic trainer.

Occupational Therapy (MOT)
WVU's Master of Occupational Therapy Program, is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 6116 Executive Blvd, Suite 200, North Bethesda, Maryland 20852-4929. ACOTE's telephone number c/o AOTA is (301) 652-AOTA and its web address is www.acoteonline.org. The OT Program at WVU was awarded re-accreditation in 2013. The next scheduled onsite visit for accreditation will be 2023-2024. More information about accreditation can also be found at the AOTA web site: http://www.aota.org.

Occupational Therapy (OTD)
The entry-level occupational therapy doctoral degree program has applied for accreditation and has been granted Candidacy Status by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 6116 Executive Boulevard, Suite 200, North Bethesda, MD 20852-4929. ACOTE's telephone number c/o AOTA is (301) 652-AOTA and its web address is www.acoteonline.org. The program must have a preaccreditation review, complete an on-site evaluation, and be granted Accreditation Status before its graduates will be eligible to sit for the national certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy (NBCOT). After successful completion of this exam, the individual will be an Occupational Therapist, Registered (OTR). In addition, all states require licensure in order to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination. Note that a felony conviction may affect a graduate’s ability to sit for the NBCOT certification examination or attain state licensure.

Pathologists’ Assistant
The MHS in Pathologist’s Assistant program within the School of Medicine has specialized accreditation through the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

Physician Assistant
The ARC-PA has granted Accreditation-Provisional status to the West Virginia University Physician Assistant Program sponsored by West Virginia University. Accreditation-Provisional is an accreditation status granted when the plans and resource allocation, if fully implemented as planned, of a proposed program that has not yet enrolled students appear to demonstrate the program’s ability to meet the ARC-PA Standards or when a program holding Accreditation-Provisional status appears to demonstrate continued progress in complying with the Standards as it prepares for the graduation of the first class (cohort) of students. Accreditation-Provisional does not ensure any subsequent accreditation status. It is limited to no more than five years from matriculation of the first class.

The program’s accreditation history can be viewed on the ARC-PA website at http://www.arc-pa.org/accreditation-history-wv-university/.

The Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) requires programs to define, publish and make readily available to enrolled and prospective students general program information regarding the most current annual student attrition information. Please find annual student attrition data as of January 27, 2021 HERE (https://medicine.hsc.wvu.edu/media/368895/arc-pa-student-attrition-template-1-27-2021.pdf).

Physical Therapy
The Doctor of Physical Therapy Program at West Virginia University is accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE), 3030 Potomac Ave., Suite 100, Alexandria, Virginia 22305-3085; telephone: 703-706-3245; email: accreditation@apta.org; website: http://www.capteonline.org. If needing to contact the program/institution directly, please call, (304) 293-3610, or e-mail mmandich@hsc.wvu.edu.

Speech-Language Pathology
The Master of Science (M.S.) education program in speech-language pathology at West Virginia University is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2200 Research Boulevard, #310, Rockville, MD 20850, 800-498-2071 or 301-296-5700.