



USU

Uniformed Services University

Physician - Scientist Training Program

(MD-PhD Program)
Handbook 2022 - 2023

**Uniformed Services University of the Health Sciences
(USU)**

F. Edward Hébert School of Medicine

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Program Mission and Overview

The Physician-Scientist Training Program (MD - PhD Program) at Uniformed Services University of the Health Sciences (USU) has been established to train outstanding, dedicated military officers as independent physician-scientists to carry out both clinical investigations and biomedical research in the basic sciences. The Program combines a rigorous basic science graduate curriculum with outstanding clinical training, and special integrated MD - PhD activities that qualify students for careers in academic medicine, biomedical and clinical research, as well as clinical practice.

As international and domestic threats to our national security transform the role of the military and military medicine, an increasing need has arisen to train physician-scientists in the broad basic science and clinical medicine aspects of public health policy, bioethics, bioterrorism, global public health, and tropical diseases. A major emphasis of this MD - PhD Program is to integrate these fields in a comprehensive fashion. This program will prepare physician-scientists who will lead the military biomedical research community and make valuable contributions to the advancement of their respective fields through research, patient care, and teaching. The training provided uniquely qualifies students to become leaders at the forefront of both military medicine and scientific advancement—from the bench top to the battlefield.

Admissions

Application Procedure

The USU MD - PhD Program is a highly selective program that seeks highly motivated students with outstanding research and academic potential. Applicants interested in the MD - PhD Program must apply directly to the F. Edward Hébert School of Medicine, Bethesda, MD using the Association of American Medical Colleges Application Services (AMCAS) and indicating interest in the MD - PhD Program. Applicants must take the Medical College Admission Test (MCAT) and provide scores from tests taken within three years of desired matriculation. When a secondary application is sent to a prospective student, instructions for completing an online application to one of four USU Graduate Programs in Biomedical Sciences and Public Health (Emerging Infectious Diseases [EID], Molecular and Cellular Biology [MCB], Neuroscience [NES], or Public Health [PMB]) will be sent to the applicant. A USU Graduate School application must be submitted for applicants to be considered for admission to the USU MD - PhD Program. Applicants for a PhD in Public Health must have a Master's in Public Health (MPH) prior to admission to the MD - PhD Program.

Admission Requirements

The following outline delineates the admission requirements to both the School of Medicine and Graduate Programs at USU. For additional information on admission requirements, please see the individual school websites and handbooks.

School of Medicine Admission

Candidates for admission to the USU School of Medicine must:

- Be citizens of the United States.
- Meet the requirements for holding a commission in the uniformed services
- Meet the academic, intellectual, and personal qualifications of the School of Medicine as outlined in the admission requirements of the School of Medicine in the USU Medical School Website (<https://medschool.USU.edu/admissions/application-requirements>).

Graduate Program Admission

Each applicant must complete a baccalaureate degree from an accredited academic institution before matriculation at USU. A strong undergraduate training in science with completion of courses in biochemistry, biology, chemistry, mathematics, physics, physiology, and psychology is desirable. Individual graduate programs may have additional requirements (see the USU Graduate Program website; <https://medschool.USU.edu/geo/admissions>).

Admission Process

The Admissions Committee for the Medical Program at USU initially will review the application and determine if they would like to invite the student to interview with the F. Edward Hébert School of Medicine Admissions Committee. MD - PhD applicants invited to interview with the School of Medicine will be interviewed by the MD - PhD Program Director as a part of their School of Medicine interview. The School of Medicine Admissions committee will then make a determination if they would like to admit the student into the F. Edward Hébert School of Medicine. If the candidate is

chosen for admission into the F. Edward Hébert School of Medicine, they will be notified as part of the rolling admissions process. At this time, the applicants file will be forwarded to the Graduate Education Office for evaluation.

The Admissions Committee of the appropriate Graduate Program, in consultation with the USU MD - PhD Program Director, will review the application and determine if the MD - PhD Program would like to interview the applicant. A memorandum of the Graduate Program's decision to interview will be placed in the applicant's admission file in both the Graduate Education Office and the Medical Program Admissions Office. If an applicant is chosen for an interview with the MD - PhD Program, they will interview with at least two members of the USU MD - PhD admissions committee and at least two members of the admissions committee for the individual graduate program. If an applicant is selected for admission to the MD - PhD program, they will be notified jointly by the USU Graduate Education Office and the USU School of Medicine.

Financial Support

Students admitted to MD - PhD Program will receive a stipend from the USU Graduate Program for the first three years that is administered as a federal salary at the level commensurate with USU PhD graduate students. This income is taxable and subject to Social Security, Medicare and retirement (FERS) withholding. As federal employees, students receive full federal benefits including standard federal contributions towards health insurance, Thrift Savings Plan (TSP), and transit benefits. There are no tuition or fee charges for graduate students at USU, nor is there any requirement in the form of government or military service. Textbooks are provided to students without charge.

M.D./PhD students commission into the United States military as an O-1 when they have four years remaining in the Program. For most students, this will be at the end of their third year in the Program. Commissioning will mark the beginning of the student's military service, and financial support will then be provided by the student's military branch. Students who commission with the Army, Navy, or Air Force have a seven-year service obligation after the completion of their (medical) residency and/or fellowship training. Students who commission with the Public Health Service or Coast Guard have a ten-year service obligation after the completion of their (medical) residency and/or fellowship training.

Students who have graduated from a US Military Service Academy (West Point, Naval Academy, USAFA) are commissioned as US Military Officers prior to enrolling at USU, and will be paid as Military Officers for the entirety of their training. As a result of being paid as a Military Officer for the entire seven years of their training, these students have a nine-year service obligation after the completion of their (medical) residency and/or fellowship training.

Students who require additional time to complete all academic requirements for their MD and/or PhD training may incur additional service obligations to cover these circumstances. Any additional service obligation will be determined by the student's sponsoring military branch.

Special Considerations / Medical Examination

Due to the unique nature of USU, special considerations need to be made to ensure that the applicants to this MD - PhD Program will become dedicated US military officers. Matriculants to the MD - PhD Program must maintain all requirements necessary to be commissioned into the United States military throughout the PhD portion of their training. The applicant must understand that they will be required

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to take two physical exams. The first exam will occur during the initial application process to determine fitness for duty, and the second exam will occur prior to commissioning. This process will ensure that the high standards and expectations of the military service are maintained.

When an applicant is accepted into the MD - PhD Program, one slot will be reserved in the Medical School class at the time of their commissioning as an officer, usually three years after the student's entrance into the MD - PhD Program. The student may commission with the Army, Navy, or Air Force at this time. Students interested in commissioning with the Public Health Service must directly apply for this competitive commission to become eligible for this track; this process occurs during the student's third year in the MD - PhD program. Prior to commissioning, the student must pass a second physical examination to ensure that they have remained fit for Military duty. If the student is determined to be unfit for commissioning, the slot reserved for the student will be returned to the pool for first year Medical School applicants. In this case, the student will be allowed to complete their PhD as a civilian graduate student if they are in good academic standing.

MD - PhD Curriculum

The curriculum combines and integrates the requirements for both the MD (medical doctor) and the PhD (doctor of philosophy). The Program is broken into three phases and is designed to be completed in seven years. The three phases are a *pre-clerkship* phase, a *graduate* phase, and a *clinical* phase. The training for MD - PhD students will follow one of two timelines (traditional vs alternative tracks) depending on the graduate (PhD) program to which the student is admitted. Students admitted into EID, MCB, or NES will follow the traditional track, whereas students pursuing a PhD in Public Health will follow the alternative track. Any deviations from this timeline, including requests for extension of one or more phases of the student's training, can be requested and may be approved at the discretion of the MD - PhD Advisory Committee.

Expectations and Academic Oversight

The goal of the MD - PhD is for trainees to achieve excellence in both medicine and science through their education. Thus, the expectation of trainees in the program is that they will strive for excellence in each aspect of their training.

Academic oversight for the entire program lies with the MD - PhD Program Director and the MD - PhD Advisory Committee in collaboration with either the Associate Dean for Student Affairs (ADSA) or the Associate Dean for Graduate Education (ADGE), depending on the specific stage of the student's training. Any changes to an individual student's training program must be approved by a majority of the MD - PhD Advisory Committee.

- Academic oversight for medical training (pre-clerkship and clinical phases) lies with the Associate Dean for Student Affairs (ADSA), in collaboration with the MD - PhD Director and the MD - PhD Advisory Committee. Students with academic difficulties will be referred to the School of Medicine Medical Student Promotions Committee (SPC) during these phases of the student's training.
- Academic oversight for graduate training lies with the Associate Dean for Graduate Education (ADGE), in collaboration with the MD - PhD Director and the MD - PhD Advisory Committee. Students with academic difficulties will be referred to the Graduate Education Committee (GEC) during the student's graduate training as outlined by the individual graduate program handbooks.
- MD - PhD Advisory Committee: The MD - PhD Program Advisory Committee will be composed of 8-10 USU faculty appointed by the Dean of the School of Medicine, USU. Committee Members will have a mixture of MD, PhD, and MD - PhD Degrees and have primary appointments in either a basic science or clinical department at USU.

Traditional Track (EID, MCB, NES Students)

The timeline for USU MD - PhD students following the traditional track is shown below:

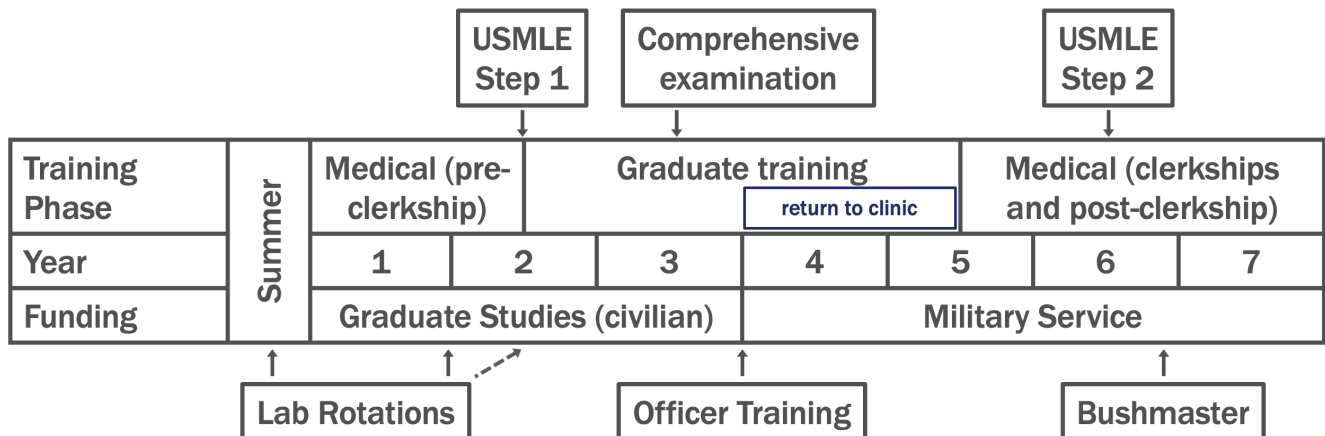


Figure 1: Traditional Track timeline

Laboratory Rotations

The purpose of the laboratory rotations is to permit students the opportunity to become involved in several different research programs within the University and to facilitate their choice of a thesis mentor and a project. Due to the accelerated nature of the PhD portion of their training, MD - PhD students are encouraged to finish their laboratory rotations prior to completion of their pre-clerkship coursework, so that a full three years can be dedicated to completing their thesis work. Students will be encouraged complete a minimum of two laboratory rotations, with an optional third rotation if they have not yet found an appropriate mentor for their thesis work. MD - PhD students will begin their training the first week of June, prior to the start of their preclinical training, in order to complete at least one laboratory rotation prior to the first year of medical school. Students have the option of either one long rotation or two short rotations at the discretion of the Director of their specific Graduate Program. An additional laboratory rotation will be scheduled for the summer after the first year of medical school as the students Summer Operational Experience. If necessary, a third rotation can be scheduled at the end of the student's pre-clerkship training after consultation with the MD - PhD Program Director and the Director of their specific Graduate Program.

Pre-Clerkship Phase

The pre-clerkship phase consists of seven academic modules and two military training courses (MFP 101/2) over a 17-month period. After finishing their summer laboratory rotation(s), students join the first-year medical school class for orientation and will attend all orientation activities with the exception of mandatory CHR functions. Students will then complete all of the required pre-clerkship modules. After their first year of study, USU medical students complete a 2–3-week elective summer operational experience (SOE), which for MD - PhD students will be a second laboratory rotation. Medical school classes taken during this phase will satisfy the required classes for the medical school and will also satisfy most of the required and/or elective classes for the Graduate Program (as determined by individual Graduate Programs and outlined in the individual program handbooks). The pre-clerkship curriculum is outlined below.

Year I - Fall (August – December)

Military and Academic Orientation

PRC1001		Foundations in Medicine Module	7 credits
PRC2007		Military Medical Practice and Leadership (MPF101)	6 credits
PRC2001		Musculoskeletal Module	8 credits

Year I - Spring (January – June)

PRC2002	Cardio/Pulmonary/Renal Module		9 credits
PRC2003	Neuroscience Module		8 credits
PRC2004	GI/Hepatobiliary/Metabolism/Nutrition Module		8 credits

Summer (July – August)

Summer Operational Experience (Research Rotation)

PRC2007	Military Medical Practice and Leadership (MPF101)		6 credits
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Year II - Fall (August – December)

PRC2005	Reproductive/Endocrine Module		7 credits
PRC2006	Multi-systems and Complex Diseases Module		8 credits

Academic Oversight (Pre-Clerkship Phase):

Academic oversight during the pre-clerkship phase will lie with the Associate Dean for Student Affairs (ADSA) in collaboration with the MD - PhD Program Director and MD - PhD Advisory Committee. Academic deficiencies will be adjudicated by the School of Medicine Medical Student Promotions Committee (SPC) as outlined in the policy document USU SOM DPM-010-2022.

USMLE Step 1 (January/February of Year II):

With the integrated medical school curriculum at USU, medical students take USMLE Step 1 following their required clerkship rotations. However, for MD - PhD students, this would represent a substantial time between completing their pre-clerkship coursework and taking Step 1. Because of this, MD - PhD students following the traditional track are required to spend 4-6 weeks at the end of their pre-clerkship phase studying for Step 1, and then take the Step 1 exam prior to beginning their graduate phase in January/February of their second year. Upon completion of the USMLE Step 1 examination, students will enter the Graduate Phase of their training.

Graduate Phase

The graduate phase will normally last three years, although specific accommodations may be made to extend this time if necessary (see below). As referenced above, medical school classes taken during the pre-clerkship phase satisfy many of the required classes for the student's graduate work. As such, MD - PhD students will take a small number of additional classes as determined by individual Graduate Programs; these requirements are outlined in the individual program handbooks (EID, MCB, NES). The student, their thesis advisor, and the Director of their Graduate Program determine the specific course requirements, electives, and the sequence of courses to be taken.

By the end of their first year, MD - PhD students will take the qualifying examination for advancement to candidacy. This process is specific to each Graduate Program and is outlined in the individual program handbooks (EID, MCB, NES). Upon successful completion of their qualifying examination, the student will assemble a Thesis Advisory Committee in collaboration with his/her mentor and approved by the Graduate Program Director. This Committee will decide when the experimental findings are satisfactory for the preparation of a dissertation. In general, the student will devote three years to dissertation research. Students will present their dissertation research in a public seminar and will defend the dissertation to their advisory committee. The thesis research and dissertation must be in compliance with the requirements of the USU Office of Graduate Education and specific Program/Departmental guidelines. The student is usually awarded the PhD degree at the completion of the entire MD - PhD Program, and is separately hooded for each degree at this time.

Commissioning and Extension of Graduate Training

At the beginning of the student's second year of graduate studies, a preliminary determination will be made whether the student has made sufficient progress to complete their PhD within the allotted three-year timeline. The MD - PhD Program Director will meet with the student, the student's thesis advisor, as well as the student's thesis committee Chair, to ascertain the student's progress to date. If all parties agree that the student has made appropriate progress, the student will be sworn-in as a uniformed military officer at the end of their third year of the program and will complete all requirements to be commissioned in the United States military. This includes the student attending Officer Basic Training at the beginning of their fourth year of training as determined by their respective service. Once the student has been commissioned with the military, they have four years to complete their MD - PhD training.

- *Requests for extensions in PhD timeline prior to military commissioning:* If it is determined prior to the student's military commissioning that the student needs an extension in their training for a fourth year of PhD work, the MD - PhD Program Director will send a memorandum requesting an extension of the student's training time to the Associate Director of Graduate Education (ADGE), who will make a determination on the request based on the student's academic standing and the recommendation of the MD - PhD Program Director. The student's stipend for the fourth year will be paid by the student's Thesis Advisor. If the extension is approved, a memorandum will be sent jointly by the ADGE and the MD - PhD Program Director to the Associate Dean for Medical Education (ADME) and the Associate Dean for Admissions and Recruitment to allow the School of Medicine to adjust the number of slots available for the incoming classes. The School of Medicine will then hold a spot for the MD - PhD student to re-join the medical students during their clinical rotations at the appropriate time.

- *Requests for extensions in PhD timeline after military commissioning:* In unusual circumstances, it may be necessary for the student to request a fourth year of graduate training after they have been commissioned with the US Military. In this case, the MD - PhD Program Director will meet with the student, the student's thesis advisor, and student's thesis committee chair to determine the need for an extension, and if appropriate, will send a memorandum requesting an extension of the student's training by one year to the student's military command via the Associate Dean of Medical Education (ADME). If the extension is approved, the student's military service obligation will be extended by one year.

PhD Thesis Requirements

Specific requirements for the dissertation and thesis defense are outlined in the individual program handbooks (EID, MCB, NES). It is expected that all MD - PhD students will complete their bench research project(s) prior to the start of the required one-week orientation to clinical rotations that occurs in the 3rd week of December prior to students leaving for their clinical rotations. Depending on the individual student's progress toward completing their thesis, they have the option of submitting their thesis and holding their defense (private and public defenses) at any point between October 1 of their final year of graduate training and January 31 of their terminal year in the program. There are two preferred/recommended time(s) for students to write and defend their thesis which include:

- October 1 – December 15 of their final year of graduate training.
- After they have finished their required clerkships, while their medical school classmates are studying for and taking the USMLE STEP 1 examination.

Any student who does not complete their thesis defense prior to December 15 of their final year of graduate training will present a thesis completion plan, which has been approved by their thesis advisor, to the MD - PhD Program Director prior to beginning the clerkship phase of their training. They will again meet with the MD - PhD Program Director at the completion of their required clerkships to review and modify, if necessary, their plan for completion of their graduate thesis.

Once students have completed their thesis defense, the Graduate Education Office will submit their package for approval by the Board of Regents (BOR) for the next graduation cycle. Once the PhD is approved by the BOR, the student can officially use their doctorate title in all communications, however, the PhD degree will be ceremonially conferred at the end of the entirety of their training.

Academic Oversight (Graduate Phase)

Students must remain in good academic standing as outlined by their specific graduate program handbook. Academic oversight during the graduate phase will lie with the Associate Dean for Graduate Education (ADGE) in consultation with the individual graduate Program Director, the MD - PhD Program Director, and the MD - PhD Advisory Committee. Any academic or professionalism difficulties will be reported to the MD - PhD Advisory Committee, which will make specific recommendations to the MD - PhD Program Director prior to discussing the student with the Graduate Education Committee (GEC). Academic deficiencies will be adjudicated by the Graduate Education Committee (GEC) as outlined in the policy document USU OUR 1306.

Return to Clinic Curriculum

The return to clinic curriculum is designed to re-integrate students in the second half of their graduate studies to clinical medicine prior to entering the clerkship phase of their training. After the student has commissioned with the military and has completed officer training, they will (with assistance from the MD - PhD Program Director) identify clinical mentor(s) with whom they can re-integrate to clinical medicine. Ideally, these clinical mentors will be in a primary care field (Internal Medicine, Family Medicine, Pediatrics), although alternative clinical mentors may be appropriate depending on the specific field of medicine the student intends to pursue. The return to clinic curriculum includes:

Clinics: Students will attend monthly clinic with their mentor(s) once the student has commissioned. These clinics will increase in frequency starting in July of their terminal year in graduate school. The goal is for each trainee to have a weekly medical experience (clinic, rounds, or SIM center visit) during the last four months of their PhD training.

- Rounds: Starting in August of their terminal year in graduate school students will go on inpatient rounds at least twice, with the goal of once/month. If this is not possible with their clinical mentor, the trainee will round with one of the Internal Medicine teams at Walter Reed.
- Clinical Skills Review: Students will attend the clinical skills review sessions with the current second year medical school class. These are held in the fall at the Simulation (SIM) Center.

Clinical Phase

The third and final phase of the MD - PhD Program will be the clinical phase. This phase aligns with the clerkship and post-clerkship curriculum in the School of Medicine. This phase will typically begin in mid-December of the student's fifth year in the Program with one week of clinical orientation, and will last the remaining 2 ½ years. At this point the student will begin full participation in the Medical School class. This phase consists of one year of required clerkships, a USMLE STEP 1 study block (at which time students can complete any additional requirements for their graduate thesis and/or use this time as a study block for USMLE STEP 2), the B3 module, 12 clinical rotations, and Military Medicine 200. The third phase of training will be completed at graduation where the student will be awarded both a PhD degree and an M.D. degree. Specific requirements for the clinical phase are outlined in the University Academic Catalog.

Academic Oversight (Clinical Phase)

Academic oversight during the pre-clerkship phase will lie with the Associate Dean for Student Affairs (ADSA) and the MD - PhD Program Director. Academic deficiencies will be adjudicated by the School of Medicine Medical Student Promotions Committee (SPC) as outlined in the policy document: USU SOM DPM-010-2022.

Alternative Track (PhD in Public Health)

The timeline is for USU MD - PhD for students pursuing their PhD in Public Health. The timeline for the alternative track is shown below:

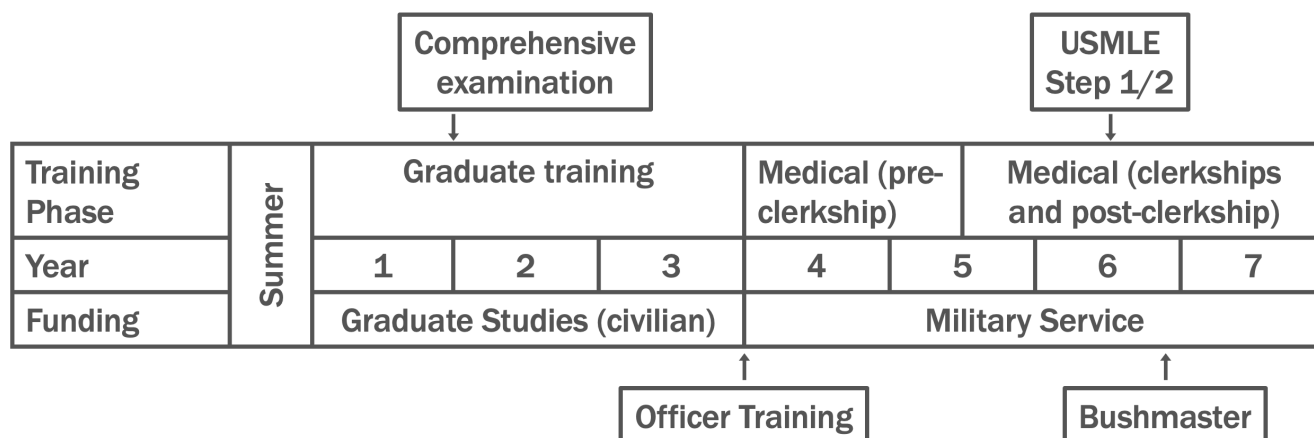


Figure 2: Alternative Track timeline

All students pursuing a PhD in Public Health will have earned a Masters' degree in Public Health (MPH) prior to matriculation at USU. Due to the timing of the specific course requirements for the PhD in Public Health, students will complete PhD training first, followed by completion of their medical (M.D.) training. Students will begin their coursework in July, and complete one year of required courses. At the end of their first year, students will take their comprehensive examinations as outlined in the PMB handbook. Students will first take a written comprehensive examination. If the student successfully passes the written examination, they will take an oral comprehensive examination. The student must pass both portions of the comprehensive examination to advance to candidacy. Students who fail the comprehensive examination will complete a tailored one-year remediation plan outlined by their graduate program examination committee. At the end of the one-year remediation, the student can re-take the comprehensive examination. The student must pass both the written and oral comprehensive examinations to advance to candidacy and remain in the MD - PhD program.

The curriculum for the student's medical (M.D.) training are outlined above. Students will take part in all aspects of the medical school training with their classmates, and take the USMLE STEP 1 examination after their required clerkships. Specific requirements for the pre-clerkship and clerkship phases are outlined in the School of Medicine handbook.

Academic Oversight (Graduate Phase)

Students must remain in good academic standing as outlined by their specific graduate program handbook. Academic oversight during the graduate phase will lie with the Associate Dean for Graduate Education (ADGE) in consultation with the individual graduate Program Director and the MD - PhD Program Director. Any academic or professionalism difficulties will be reported to the MD - PhD Advisory Committee, which will make specific recommendations to the Graduate Education Committee (GEC). Academic deficiencies will be adjudicated by the GEC as outlined in the policy document: USU OUR 1306.

Academic Oversight (Pre-Clerkship and Clinical Phases)

During the pre-clerkship and clinical phase of training, students in the MD - PhD Program will be judged by the same grading criteria as all other medical students. Educational problems that arise during the clinical phase, be they cognitive or non-cognitive, will be addressed. Academic oversight during the pre-clerkship phase will lie with the Associate Dean for Student Affairs (ADSA) and the MD - PhD Program Director. Academic deficiencies will be adjudicated by the School of Medicine Medical Student Promotions Committee (SPC) as outlined in the policy document: USU SOM DPM-010-2022.