# UNIVERSITY OF DELAWARE

## DEPARTMENT *of* MEDICAL AND MOLECULAR SCIENCES

# MEDICAL DIAGNOSTICS PRE-PA STUDENT HANDBOOK

(2025-26)

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# MISSION STATEMENT

The Department of Medical and Molecular Sciences is committed to providing skilled, critically-thinking practitioners equipped to be future leaders in health sciences. In this pursuit, the Department is committed to active engagement of undergraduate and graduate students in experiential learning, to forming collaborative partnerships with educational, clinical, industrial, and research experts locally and globally, to discovering innovative breakthroughs in research that contribute to the health and basic sciences body of knowledge, and to functioning as an expert resource regarding all issues related to Medical and Molecular Science.

# ADMINISTRATIVE OFFICIALS

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# GOALS

A central tenet of the University of Delaware is to encourage students to achieve their highest standard of scholarship and to help them assume responsibility for developing and achieving their own goals and objectives. Moreover, the mission of the College of Health Sciences (CHS) is, in part, to educate the next generation of healthcare professionals in a collaborative and interprofessional learning environment. In accordance with this, the aim of the Medical Diagnostics Pre-PA track is to prepare students to function in professional positions as competent practitioners for the healthcare environment of the 21st century, and to prepare students to be life long learners remaining current with advances in medical science.

The curriculum is designed to prepare students for entry into a Physician Assistant Program through challenging and comprehensive didactic instruction in the areas of hematology, immunology, immunohematology, clinical physiological chemistry, medical microbiology and mycology, genetics, healthcare ethics, nutrition, and molecular diagnostics. The capstone course, MMSC462 Interdisciplinary Healthcare Perspectives, is a continuum of specialized, medical education and designed to broaden the student's education and experience.

Goals:

- Utilize scientific principles (e.g. physiology, immunology, biochemistry, molecular biology, genetics, microbiology, hematology, etc.) as applicable for the healthcare arena
- Interpret clinical significance, laboratory test data, and test utilization accurately
- Utilize principles of quality assurance and quality improvement for all phases of laboratory services, i.e., pre-analytical, analytical, and post-analytical, focusing on patient safety
- Communicate through oral and written skills effectively and professionally to enable consultative and educational interactions with healthcare personnel, the public, and patients in order to function successfully as a member of the healthcare team
- Demonstrate ethical behavior and professionalism, maintain confidentiality of patient information, and participate in continuing education for one's own professional career development
- Function in a culturally diverse, global society that demonstrates variations in intellectual expression and human creativity
- Build a portfolio for applying to Physician Assistant (PA) School and participate in information sessions and symposiums on all aspects of the PA Application Process

## General Education Goals of the University

After successfully attending lectures and completing assignments in the liberal arts courses, the student will be able to:

1. Read critically, analyze arguments and information, and engage in constructive ideation
2. Communicate effectively in writing, orally, and through creative expression 3. Work collaboratively and independently within and across a variety of cultural contexts and a spectrum of differences
4. Critically evaluate the ethical implications of what they say and do
5. Reason quantitatively, computationally, and scientifically

## ESSENTIAL FUNCTIONS

As a Medical Diagnostics major (Pre-PA track) you have chosen to pursue a healthcare profession, where honesty and integrity are critical personal characteristics required both in academic and studies and in the practice of the medical profession. Successful students are self-sufficient, problem-solvers who like the challenge and responsibility that careers in healthcare provide. In order for graduates to maintain their competence, they need to be life-long learners. That entails developing skills such as resourcefulness and thoroughness. The principles that embody the Essential Functions are applicable to the many career opportunities that exist in healthcare including PA's. The following Essential Functions are comprised of emotional and professional/intellectual demands and are the expectations for a student who plans to pursue the PA profession.

The ***emotional demands*** required of students include the ability to:

1. Maintain composure and professionalism, while providing appropriate services under stressful situations, such as time constraints, emergencies, rudeness, etc…

2. Utilize independent judgment and act logically in the performance of one's duties.

3. Organize and accept responsibility for one's work, including acknowledgement of errors

or uncertainty and acceptance of constructive criticism.

4. Employ sufficient psychological stability to consistently and dependently utilize critical thinking in order to formulate and implement safe and ethical healthcare decisions in a variety of healthcare settings.

The ***professional/intellectual demands*** required of students include the ability to:

1. Communicate in a professional, positive, tactful manner with patients, physicians, nurses, and other healthcare and non-healthcare employees.
2. Communicate in a competent manner and follow directions in English as evidenced by verbal, written, and reading skills.
3. Communicate, through the use of assistive devices (hearing aids, phone receivers, etc…) if needed, so as to converse in a competent manner in English.
4. Maintain patient confidentiality and exercise ethical judgment, integrity, honesty, dependability, and accountability in the performance of one's responsibilities. 5. Demonstrate the intellectual skills required to comprehend scientific and medical information, perform mathematical calculations, analyze information, evaluate information, and use critical thinking to solve problems.
6. Maintain a well-groomed, neat, professional appearance.

# HEALTH AND SAFETY REQUIREMENTS

## Health Requirements

**While the Medical Diagnostics Pre PA Program does NOT procure opportunities for shadowing or earning patient contact hours**, students pursuing these activities independently are advised to safeguard the health and safety of staff and patients when performing activities in the clinical setting; students may be required to have a routine physical examination before the start of volunteer or employer-related activities. The physical examination provides verification that the student appears to be free from disease or any impediment which would interfere with normal activity, study, or physical effort.

## Immunizations

**While the MDD Pre-PA Program does NOT procure internships for students** many students pursue internships on their own with the goal of gaining patient contact hours for PA school. Before starting any clinical activities, students may be required to have specific testing

and/or immunization (or documentation thereof) for hepatitis B, tetanus, measles (rubeola), mumps, and rubella (MMR), varicella (chicken pox), influenza, COVID-19, and tuberculosis. Students might be required to submit documentation of immunity as evidenced by positive immune titers for several of these diseases. For the safety of patients, healthcare institutions have the right to refuse students participation, if the student is unwilling to comply with immunization requirements.

Healthcare personnel are among those at increased risk for acquiring hepatitis B virus infection due to their frequent contact with human blood and other body fluids. A student who wishes to be immunized may receive the injections from his or her primary care provider. Such immunizations should begin at least six months prior to volunteer activities. Alternatively, the vaccine is available through Student Health Services paid for by the student. The vaccine is administered as a series of three injections given at appropriate intervals over a six-month period. If a student has been vaccinated previously, most hospitals will require a blood test to determine antibody titer to the hepatitis B virus.

**Drug Screening and Criminal Background Checks**

Before starting clinical activities, a student may be required to complete a urine drug screening and a criminal background check. There are some requirements that may be specific to certain healthcare institutions, including but not limited to 1) child abuse registry investigation, and 2) adult abuse registry investigation. For the safety of patients, healthcare institutions reserve the right to request a urine drug screening and such criminal/abusive background checks at the commencement of clinical activities.

Students should be aware that results from the aforementioned criminal background check, urine drug screening, child abuse registry and adult abuse registry investigation could prevent the student from participating in clinical activities at healthcare institutions. In addition, candidates applying for employment in healthcare are typically required to undergo a criminal background check and urine drug screening. Each student should use sound judgment and avoid situations which could result in poor decisions. Failure to do so could jeopardize the student's ability to complete a post-graduate PA program as well as impacting future career goals.

# ACADEMIC REQUIREMENTS

NON-CORE REQUIRED COURSES, UNIVERSITY AND DEPARTMENT BREADTHS AND OTHER REQUIREMENTS FOR GRADUATION CAN BE FOUND IN THE UD CATALOG AS WELL AS THE CORE COURSES LISTED BELOW

**MAJOR Core COURSES**

**HLTH 241 Ethical Aspects of Healthcare (3)**
Study of basic ethical thought and principles and their applications to selected contemporary issues in healthcare

**MMSC 415 Clinical Immunology and Medical Virology (3)**
Introductory immunology concepts and use of immunological assays, such as enzyme immunoassays and fluorescent antibody assays, for diagnosis of infectious diseases and immunological disorders. Study of viruses, diseases they cause, and methods used to diagnose viral infections.

**MMSC 402 Body Fluid Analysis (2)**
Overview of protocols, technical and clinical correlations involved in body fluid analysis of non blood body fluids, including urine, synovial, cerebrospinal, seminal, serous, amniotic and gastric fluids.

**MMSC 407 Clinical Physiological Chemistry I (3)**
Application and theory of manual and automated techniques used in diagnostic and therapeutic medicine. Emphasis on clinical procedures for carbohydrates, proteins, lipids, nonprotein nitrogenous compounds, blood gases and pH, and electrolytes.

**MMSC 436 Clinical Physiological Chemistry II (3)**
Application and theory of methodologies in enzymology, endocrinology and toxicology. Relationship of normal and abnormal laboratory findings in organ functional tests.

**MMSC 423 Hematology I (2)**
Quantitative and qualitative study of the formed elements of blood with emphasis on the normal state, as well as the study of normal and abnormal coagulation and hemostasis.

**MMSC 433 Hematology II (2)**
Study of the pathophysiology of erythrocytic and leukocytic disorders and the laboratory findings of these disorders.

**MMSC 428 Medical Microbiology and Parasitology (3)**
Study of the occurrence and pathogenesis of human infections and microorganisms associated with humans in health and disease.

**MMSC 409 Immunohematology I (2)**
Study of antigen and antibody systems of human red cells and compatibility testing of blood for transfusion.

**MMSC 420 Immunohematology II (2)**
Study of blood and component transfusions, their risks, complications and quality assurance. Blood component therapy and testing of the neonate and adult is also covered.

**MMSC 438 Diagnostic Bacteriology and Medical Mycology (3)**
Diagnostic bacteriology, emphasizing the correlation of in vitro and in vivo findings in the diagnosis and treatment of infectious disease, including human mycoses. Identification of pathogenic and nonpathogenic bacteria and fungi in clinical specimens.

**MMSC 462 Interdisciplinary Healthcare Perspectives (3)**
Final reflective component of the volunteer experiences accumulated throughout the student's undergraduate years in preparation for a graduate program in a healthcare field. Evidence of critical thinking and knowledge of healthcare concepts will be demonstrated through various assignments.

**MMSC 490 Clinical and Molecular Cell Biology (3)**
Molecular diagnostics topics emphasize DNA, RNA and protein structure and function, including detailed review of the central dogma. Genetic topics emphasize cell development, chromosome structure and function, and disease inheritance patterns.

**MMSC 491 Human Molecular Genetics (3)**
Molecular processes required to diagnose inherited disorders, cancer, hematological disorders, and infectious agents. Additionally, the employment of DNA identity based testing in transplantation, paternity testing and forensics will be discussed.

**BISC 401 Molecular Biology of the Cell (3)**
Introduction to the molecular biology of eukaryotes and prokaryotes. Topics include structure and function of proteins and nucleic acids, replication and repair of DNA; biosynthesis of RNA and proteins, membranes, transport, composition and function of the eukaryotic cell, chromosomes, viruses, the immune system and recombinant DNA.

**BISC 403 Genetics (3)**
The physical and chemical basis of heredity, the nature and mechanisms of gene action. Note that **BISC303 is now a pre-req for BISC403**.

**NOTE: STUDENTS EITHER TAKE THE SEQUENCE OF MMSC 490 AND MMSC491 OR BISC401 AND BISC403.**

**Virtual Lab Courses**

**Note that PA Programs may not accept virtual labs for Pre-requisites. It is best to check with admissions of PA Programs you are planning on applying to concerning virtual labs.**

**Grading**

Students must obtain a grade of C- or higher in each of the Department of Medical and Molecular Sciences (MMSC) courses to progress in the Medical Diagnostics major. A grade of C- requires attainment of a minimal grade of 70%. **Most MMSC courses are offered only once a year.** To avoid issues that may impede progression in the major, a student who finds himself/herself/zirself in academic difficulty is encouraged to seek assistance from the Center for Academic Success and the Center for Counseling and Student Development. NOTE: In accordance with University policy, courses taken at another institution must be graded C- or better to transfer. Students must request approval from the Course Instructor and Program Director to take a course at another institution to ensure the syllabus (course content) is comparable and may only do so after taking the respective UD course. See http://www.udel.edu/registrar/transfer/transins.html

**Computerized Testing**

The Department of Medical and Molecular Sciences utilizes a variety of computerized testing platforms (ExamSoft®, Testing Center) to administer in-class examinations in several MMSC courses. Students will be required to bring a laptop or tablet to the classroom to take computerized examinations. ExamSoft will not run on Chromebook, Android, or Linux operating systems.

**Attendance**

As the MDD Pre-PA concentration is intended as a gateway for applying to accredited PA programs after graduation, attendance is tacitly expected in all major courses listed above. Students should review each course manual for procedures to follow for absenteeism and tardiness. In general, absence from class due to illness, death of a family member, a personal emergency,

military duty, or observance of a religious holiday will constitute cause for an excused absence. Examples of unexcused absences include but are not limited to scheduling routine medical and dental appointments during class time, expanding spring break beyond its allotted time, or scheduling other travels for personal reasons.

**Policy on Academic Integrity**

The Department of Medical and Molecular Sciences holds academic integrity across all of our academic programs in the highest regard. Honesty, professional ethics, and reliability are essential in professions graduates of the Medical Diagnostics (MDD) major pursue. These qualities are emphasized in both the MDD and MDD Pre-Physician Assistant (PA) Programs. Students should become familiar with the Student Guide to University Policies. Any incidence of personal misconduct, suspected cheating on an examination, plagiarism, or any other form of academic dishonesty by a student will be communicated to Community Standards & Conflict Resolution. If warranted, the incident may be adjudicated as indicated by the Student Conduct Process. Determination of misconduct may result in a failing grade in the course and automatic dismissal from the MDD/MDD Pre PA Program.

**Center for Health Profession Studies**

The Center for Health Profession Studies (CHPS) focuses on assisting students who are interested in careers in health professions. The CHPS helps students achieve success in career areas or roles including physician assistants, medicine, dentistry, optometry, podiatry, pharmacy, physical therapy, and occupational therapy. For additional information about the CHPS, students are referred to https://sites.udel.edu/healthpro.

**Disability Support Services**

The University of Delaware Office of Disability Support Services (DSS) provides accommodations and services to incoming and current UD students with disabilities, psychological or medical conditions, or temporary injuries that limit their access to the UD environment. DSS provides a variety of academic accommodations and services to ensure accessibility to University classes and programs, including testing accommodations, alternative print media, assistive technology and interpreter services for academic purposes. Students should contact DSS as soon as possible to determine what accommodations are appropriate through consultation with a DSS representative. For more information about DSS and its processes please visit https://sites.udel.edu/dss

**Patient Contact Hours and Healthcare Experiences**

Students typically satisfy patient contact hours for PA school through healthcare experiences such

as military corpsmen or medic, certified nursing assistant (CNA), patient care technician, medical assistant, EMT, RN, phlebotomist, radiation therapist, physical therapist assistant, or athletic trainer. Experiences as a medical scribe or shadowing are typically not recognized as patient contact hours by PA programs; therefore, it is best to check with the PA school(s) of interest regarding acceptability of healthcare experiences. Below is a link to a form that can be used for documenting patient contact hours as well as other experiences (non-healthcare employment, research, volunteer, healthcare experience, shadowing, leadership, extracurricular, teaching).
https://www.udel.edu/content/dam/udelImages/chs/Documents/MMS/CHS_MMS-experiences Form-for-MDD-Pre-PA.pdf

**Applying to PA Programs**

It is strongly recommended that students view websites for the PA programs they are interested in applying to and ascertain if the **program(s) require additional courses for admission to respective PA programs**, that are not required for the MDD Pre-PA program at the University of Delaware. Note that 95% of PA programs are members of CASPA (https://caspa.liaisoncas.com). If you are applying to a program that is not a member of CASPA you must follow application procedures on the PA programs' website. There is a link to FAQs on the MDD Pre PA website on applying to PA School.

**Arcadia University MMS-PA (4+2) Articulation Program**

MDD Pre-PA students may apply for assured admission to the Master of Medical Science Physician Assistant (MMS-PA) program (Newark, DE Campus) if they fulfill the following requirements:

- Overall GPA of 3.5 or higher
- Pre-req GPA of 3.5 or higher (attain a grade of C or higher in pre-reqs) • Minimum of 200 *direct* patient contact hours
- Three letters of recommendation (one from MD or PA)
- Recommendation from the MMSC Pre-PA Committee
- Complete at least 12 credits per semester (excluding winter/summer) over the last four semesters at UD

**Students apply to this program January of their Junior year, and if recommended by the MMSC-PPA Committee will send a letter of intent to the Arcadia PA Program Director by April 15th of their junior year, and submit their CASPA application by June 1st (junior year).**

**NOTE: The Arcadia University PA Program currently holds the status of Accreditation Probation by the ARC-PA (ARC-PA.org) accrediting body. For more information on Arcadia's accreditation status please visit https://www.arcadia.edu/majors-and programs/physician-assistant/#update**

**Widener University MS-PA (4+2) Articulation Agreement**

MDD-PPA Students may apply for admission to the Widener University PA Program per the UD-Widener University Articulation Agreement in September of their Senior Year. Criteria for admission include:

- Maintain at least a 3.0 GPA throughout the MDD PPA Program; and attain at least a 3.2 GPA by the end of the fall semester of the senior year
- Earn a B or higher in all pre-req courses (B- not accepted)
- Minimum patient contact hours: 500
- Recommend 40 hours of shadowing a PA
- Three Letters of Recommendation (UD Professor, Clinical Practioner)
- Submit CASPA application by Dec 1 of senior year

## BS IN MEDICAL DIAGNOSTICS (PRE-PA)/MS IN MEDICAL SCIENCES (4+1) PROGRAM

This is an accelerated degree program providing high performing students with the opportunity to complete a Bachelor's degree in Medical Diagnostics and a Master's degree in Medical and Molecular Sciences (non-Thesis) in less time and a reduced cost than completing both programs individually. With a combined degree, students will have specialized, in-depth professional skills knowledge and will be prepared to succeed within the increasingly complex biomedical science sector. The BS in MDD/MS in Medical and Molecular Sciences 4+1 program will allow students to specifically tailor their graduate program of study to meet their specific career goals, whether it be laboratory administration, research settings or laboratory science education. While completing the BS in Medical Diagnostics degree (Pre-PA), students will take six (6) credits of graduate-level courses in lieu of regularly required undergraduate courses in the major (MMSC690 and

MMSC603 instead of BISC401 and STAT200, respectively). The six credits will be counted toward both the Bachelor of Science degree and the Master of Science degree. Following completion of the Bachelor of Science degree students will complete an additional 26 credits of coursework for the Master of Science in Medical and Molecular Sciences degree.

Admission Requirements include a minimum cumulative GPA of 3.2, a written personal statement of goals and objectives that clearly explains how admission to the program will facilitate his/her professional objectives, and two letters of recommendation (one of which must be from an MMSC faculty member); the GRE is not required. Students apply to the program by May 15$^{th}$ of their sophomore year. Application materials are evaluated by the MMSC Graduate Program Committee.

# STUDENT SIGNATURE PAGE

It is the student's responsibility to read and understand the policies in this Handbook

MY SIGNATURE ATTESTS THAT I HAVE READ AND UNDERSTAND ALL OF THE POLICIES AND INFORMATION RELATED IN THE MDD PRE-PA STUDENT HANDBOOK FOR PROGRESSION IN AND COMPLETION OF THE MEDICAL DIAGNOSTICS MAJOR

Student Signature:_____ Date: _____

Print Student Name: _____

Witness Signature: _____ Date: _____

Print Witness Name: _____