

# **M.S. IN MEDICAL PHYSIOLOGY STUDENT HANDBOOK**

**2016 - 2017 Academic Year**

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**DEPARTMENT OF  
PHYSIOLOGY AND BIOPHYSICS**

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**CASE WESTERN RESERVE UNIVERSITY  
CLEVELAND, OH**

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## OVERVIEW

The Physiology and Biophysics Graduate Program provides comprehensive training leading to the Ph.D. and Master's degrees for applicants with backgrounds in the biological and/or physical sciences.

This Handbook focuses on the MS in Medical Physiology (MSMP) program. The program is administered by the MS in Medical Physiology Administration Committee, appointed by Dr. Walter Boron, Chair of the Department of Physiology and Biophysics. Member of the committee are:

Thomas M. Nosek, Ph.D. - Chair of the committee and Director of the program  
Joseph C. LaManna, Ph.D.  
Andrea Romani, MD, Ph.D.  
Carole Liedtke, Ph.D., MBA  
Stephen Jones, Ph.D.  
Julian Stelzer, Ph.D.  
Michael Simonson, Ph.D.  
William Schilling, Ph.D.

All student begin this program as a Type B, non-thesis student. It is designed for individuals who are preparing for admission to professional schools (medical, dental, veterinary, physician assistant, pharmacy, etc.), graduate programs in biophysical sciences, or careers in biomedical sciences. Students may take this program as either resident or internet students. This program can also be combined with courses at the CWRU Weathered School of Management for a combined MS/MBA degree (see details below). Students particularly interested in research may switch to a Type A thesis program at the end of their first spring semester (see details below).

The MSMP program is designed to be taken over two academic years. In the first year of the program, all students enrol in 18 hours of required core physiology courses presented in a lecture format (Medical Physiology I and II, Translational Physiology I and II, and Physiology Seminar A and B). In the second year, students take 12 hours of elective courses at the 400 level or above. These courses may be taken in any department of the university. Students have options as to how they will fulfill the 12 hour elective requirement:

By May 1<sup>st</sup>, after the first year of study, students can petition to:

1. switch to the Type A (thesis) option (described below);
2. choose their elective courses from a prescribed list to have an Elective Area of Concentration (AOC). AOC's are currently available in: 1) Clinical Investigation (this is a certificate program through the Office of Clinical Investigation); 2) Physiological Research; 3) Clinical Neuroscience; 4) Clinical Nephrology; 5) Nutrition, 6) Clinical Pulmonology; 7) Bioethics; and 8) Evolutionary Medicine. Details of these AOC's can be found on the MSMP program web site:

<http://physiology.case.edu/education/graduate-programs/master/post-baccalaureate-program-ms-in-medical-physiology/>;

3. enroll in the MS/MBA Dual Degree Program offered in conjunction with the CWRU Weatherhead School of Management (see details below).

Students who would like to take more than 12 hours of elective courses should consider doing so through the “Fellowship” program where courses above the 30 credits required for the MS degree can be taken tuition free as long as a student registers and pays for at least a one credit hour course. Details about this program can be found at: <http://www.case.edu/gradstudies/media/caseedu/gradstudies/documents/Fellowship-Course-Application.pdf>

Although designed to help guide students to earning the MS degree, there may be questions not addressed in this document. The faculty and staff have an open door policy and are committed to providing whatever assistance students may need if answers to specific questions are not found here. The names and contact information for individuals that can answer your questions are provided in the preceding section. More detailed information about our department, faculty, students, and educational programs is available on our web site: <http://physiology.case.edu>.

## **TRAINING PHILOSOPHY**

The faculty have developed a challenging course of study aimed at preparing students with all of the necessary tools to compete effectively for admission to the best professional medical program as well as for academic and non-academic positions in the biomedical sciences. Our goal is to educate future health science professionals in the area of physiological and biophysical sciences who demonstrate integrity, think critically, and communicate effectively. The faculty affiliated with the MSMP program strongly believe that this is best achieved by partnerships between faculty mentors/advisors and individual students that are mutually beneficial. Faculty and students both prosper when students are treated as promising junior colleagues deserving of the best training possible in an environment where freedom of inquiry and expression is valued and encouraged. As such, faculty and students each have important obligations to prepare students to be life-long scholars. Admission to our graduate program is a privilege that will provide lasting opportunities for growth throughout your professional career. A graduate student’s success depends on everyone involved. This includes Department and University administrators, as well as faculty. But most importantly, it depends on you, the student, taking primary responsibility for your educational and research progress.

## **WORK ETHIC**

Science is a profession that requires dedication and drive, and a strong work ethic that does not involve watching a clock. All students are held to a high standard of accountability.

## **UNIVERSITY REGULATIONS FOR GRADUATE STUDENTS**

It is the responsibility of each student to become familiar with the specific rules that apply to the MSMP program of graduate study, as well as the general rules and regulations of the University. Any requirements not specifically addressed in this document conform to the regulations for the MS degree specified in the School of Graduate Studies (SGS) section of the General Bulletin of Case Western Reserve University (available online at <http://gradstudies.case.edu> ). This website also contains down-loadable forms that must be filed with the SGS as the student advances through their graduate career. All students are encouraged to contact the SGS office directly (Tomlinson Hall 2<sup>nd</sup> floor, telephone 368-4390) to discuss any concerns or questions they may have. That office is particularly helpful when it comes time to apply for graduation. It is expected that students will be proactive in seeking information regarding University regulations.

## **PRACTICAL MATTERS**

### *Financing the MS Program*

There is no financial aid support administered through the Department of Physiology and Biophysics for MSMP students. All Financial Aid is obtained through the University's Financial Aid Office (<http://financialaid.case.edu> ).

The department hires Teaching Assistants from the rising second year MSMP class, paying \$15/hour for up to 20 hours of work/week. Students interested in one of these positions should apply by May 1<sup>st</sup> by submitting a brief explanation to the MS in Medical Physiology Administration Committee of why you would like to serve as a TA, your ideas for improving our program, and what in your background has prepared you to be a TA. The TA's for 2016/2017 are:

Laura Binkowski

Patricia Campos

Chioma Elechi

Sebastiano Porcu

Malavika Sengupta

Benjamin Reece

Leonardo Villarroel

Andrew Shevitz – MS grad, Senior TA

Katherine Morrow – MS grad, CWRU Med Student, Senior TA

We strongly discourage first year MSMP students from working even part time during their first year in the program. If at all possible, we recommend that first year students concentrate on their studies and get off to a great start in our program, realizing that to achieve their career goals, students **MUST** do well in our program.

During the second year of the MSMP program, students are expected to take 6 credit hours of electives/semester. This affords students the ability to take a part time job that enhances their health care credentials. Many students find positions related to the thousands of clinical trials that are going on at any one time in the Cleveland

area. These positions, at our 4 affiliated hospitals (the Cleveland Clinic Foundation, University Hospitals, MetroHealth, and the Cleveland Veterans Administration) are found in innumerable ways. However, all paid positions are listed on the web sites of the Human Resources departments of each of these institutions.

Students who cannot enroll in our program without the resources garnered from working should consider what we call the “Tech Master’s” program. We term this the “Tech Master’s” program because it was designed years ago to help research technicians working in CWRU labs to further their education by enrolling in our Master’s program. In the “Tech Master’s” program, students work full time, employed by CWRU, and take advantage of CWRU’s very generous tuition benefit - CWRU employees, with their supervisor’s permission, are entitled to take up to 6 credit hours of courses/semester (fall, spring, and summer) tuition free. In this way, students can complete the MSMP program in 5 semesters, graduating in May of their second year of studies along with the majority of the students in the MSMP program. Each of our 4 affiliated hospitals have a tuition benefit but none are as generous as that of CWRU. The details of CWRU’s benefit can be found at:

<http://www.case.edu/finadmin/humres/policies/compensation/tbp.html>

### International Students

International students often face additional challenges especially if they are first-time visitors to the US. The University has two offices whose primary job it is to help ease the transition to life at an academic institution in the U.S. *International Student Services* (ISS). It is located in Tomlinson Hall, room 143 and provides information for incoming and current international students. ISS provides assistance to a population of more than 1,000 international students from over 80 countries around the world. Please visit the ISS website (<http://studentaffairs.case.edu/international>) for further description of their services. Another important resource for the foreign student is the office of *Foreign Faculty and Scholars* (FFS), which is the University's liaison with federal agencies that are concerned with visa-related matters. FFS facilitates immigrant/permanent resident status and is responsible for employment eligibility verification (I-9) and W-4 tax status confirmation, and determines whether or not to file tax treaty exemption forms with the Internal Revenue Service. The University's global outreach initiative is supported through FFS by providing technical visa services required in connection with visiting scholars and researchers who come to the University from all parts of the world for various purposes including research, teaching, and training. In addition, FFS provides information and services that international faculty, visitors, and their families may require. The FFS office is located in Tomlinson Hall (8 a.m. to 4:30 p.m.). They may be reached by calling 216-368-4289 or by visiting the *Human Resources* website (<http://www.cwru.edu/finadmin/humres/ffs>).

### Health Insurance

Students registered for one or more credit hours are automatically billed the Student Medical Plan fee. The university has contracted with Aetna Student Health in order to offer enhanced services that are easy to use, affordable and adaptable to your

health care needs. Detailed information about the plan can be found online (<http://students.case.edu/wellness/medicalplan/>)

UHS is staffed by several qualified professionals with an interest in student health. These include physicians, nurse practitioners, psychologists, psychiatrists, social workers, and registered nurses. A number of the physicians are affiliated with University Hospitals of Cleveland and with the CWRU School of Medicine. More information may be obtained by visiting the UHS website (<http://students.case.edu/departments/health/>) or by calling one of the numbers listed below.

|   |          |
|---|----------|
| General Information:                          | 368-2450 |
| After Hours EMERGENCY SERVICES:               | 368-2450 |
| General/Specialty Clinic Appointments:        | 368-4539 |
| Women's Health Clinic Appointments:           | 368-2453 |
| Counseling/Mental Health Clinic Appointments: | 368-5872 |
| Student Medical Plan                          | 368-3049 |

Students are encouraged to utilize resources through University Health Services before utilizing other in-/out-of-network providers as many preventative and regular well-person examinations can be provided at no cost to you through UHS.

### Dental Care

The CWRU School of Dental Medicine manages several in-house dental clinics to provide training for pre-doctoral dental health professionals. Participants in the Student/Dependent Medical plans are eligible receive the following services through the School of Dental Medicine, including:

- Two oral exams and evaluations, including one dental and medical history per medical Plan Year at 100% coverage
- Two oral cleanings per Plan Year at 100% coverage
- Periodic Bite Wing X-rays per Plan Year at 100% coverage
- Up to a 40% discount on certain dental services offered at the Case Western Reserve University School of Dental Medicine

Treatment is administered by pre-doctoral dental students under the close supervision of experienced dental health professionals. Services through the School of Dental Medicine are often significantly less expensive than going to a private practice dentist. The clinics are open from 8:30 a.m. to 5:00 p.m. Monday through Friday throughout the school year, excluding holidays. Emergency care is available for existing patients by calling 216-368-3200

(<http://dental.case.edu/patients/emergency>). General appointments can be made by phone at 216-368-8730, or in person at the School of Dental Medicine ground floor main clinic reception area. More information regarding health insurance and dental care is available at: <http://students.case.edu/wellness/medicalplan/>



### University Counseling Services (UCS)

Graduate School marks a time of tremendous self-exploration and change. At times these changes are intentional and understandable; at other times they are unpredictable, chaotic and upsetting. Each year over 1100 students seek out the staff of the University Counseling Services to help them gain perspective and to lay the groundwork for personal change. For many, the change can become a ‘Turning Point’ in their lives.

University Counseling Services (UCS) and its divisions of Collegiate Behavioral Health (CBH) and Prevention & Recovery Services (PRS) offers students help with their personal counseling and behavioral health needs, including individual, couples and group counseling, psychiatric medication management, stress management and recovery support. Its offices are staffed with psychologists, social workers and consulting psychiatrists: <http://students.case.edu/counseling/>

Most services are provided without cost but some specialty services may require a fee.

University Counseling Services  
201 Sears Library Building 2nd Floor  
Monday – Friday 8:30 – 5:00  
Phone: 368-5872 Phone: 368-2510  
Fax: 368-1972 Fax: 368-8530  
<http://studentaffairs.case.edu/counseling>

Center for Collegiate Behavioral Health  
2145 Adelbert Road – Health Services 2nd Floor  
Mon., Tues., Wed., & Fri. 8:30 – 4:30  
Thursday 9:30 to 4:30  
<http://studentaffairs.case.edu/counseling/mindbody>

If instead you are experiencing problems of an academic nature that may affect your performance, we would encourage you also to talk confidentially to your advisor, chair of your thesis committee, program director and/or the director of education.

### Legal Services

The *Milton A. Kramer Law Clinic Center* at CASE provides legal services to members of the community unable to afford legal counsel. Third-year law students act as the primary legal counsel in matters related to civil, community development, immigration, and health law.

### Housing

Most graduate students elect to rent housing in one of the many nearby neighborhoods. The *Office of Housing, Residence Life & Greek Life* publishes the *Off-Campus Housing Bulletin*. The Bulletin contains apartment and housing listings, roommate wanted advertisements, etc. that are located within a short distance from

campus. The bulletin is updated each Friday at noon and can be viewed online by incoming graduate students. In addition, the School of Graduate Studies has housing information available online (<http://students.case.edu/living/housing/graduate> ) and includes a listing of off campus housing (<http://gradstudies.case.edu/prospect/area/housing.html>). Many neighborhoods also have housing offices as well as guided tours of available rental properties. Contact local city governments for further information. Another alternative is the Steiner House Cooperative, which is a student-run organization offering housing for graduate students from Case Western Reserve University, the Cleveland Institute of Music, the Cleveland Institute of Art, Cleveland State University, and the Montessori Institute. Vacancy information as well as applications can be obtained by contacting the Admissions Manager of Steiner House, 11408 Bellflower Rd, Cleveland, OH 44106 or by visiting their website (<http://www.case.edu/affil/steiner> ).

### *Parking and Shuttle Services*

The *CWRU Office of Access Services* manages the University's parking program and is responsible for implementing its policies and procedures. All commuter students are eligible for parking permits upon enrollment. Students who need parking should contact *Access Services* at 368-2273, online at <http://parking.case.edu> or by e-mail at [parking@case.edu](mailto:parking@case.edu) for questions related to parking. Most graduate students park in surface lots 42 or 44 or the Veale Garage (S-53) which are the most cost-effective lots nearest the School of Medicine.

University Circle, Inc. (UCI) operates a fleet of buses to provide free transportation service for employees, students, and visitors in the University Circle area. Established bus routes allow riders to travel from designated areas to central drop-off points. Visitors may use UCI's public routes to reach various University Circle institutions. Service is provided approximately 18 hours per day Monday through Friday, with reduced service on weekends and holidays. Bus route schedules and maps are available at various locations or they may be viewed on-line at the *Busing and Shuttles* website (<http://greenie.case.edu> ).

Additionally, should you find yourself working on campus late and do not feel safe walking back to your vehicle or nearby apartment and cannot utilize the shuttle services described above, CWRU offers the Safe Ride Program to provide safe transportation around campus and the surrounding CWRU community between 7pm and 3am. You can learn more about this program at its website (<http://police.case.edu/saferide.html>) or request a pickup here: <http://saferide.case.edu> or call at:216-368-3000.

### *Safety*

If you need help related to your personal safety when you are on campus, contact the Emergency/Police dispatch at: 216-368-3333.

Rape Aggression Defense (RAD) classes and street smarts self-defense presentations for women are available to MSMP students. To take advantage of these resources, contact: [radprogram.case.edu](http://radprogram.case.edu)

### Telephones

Students may make campus and other local calls from telephones in the Department as well as appropriate lab-related long distance calls. There is no specifically designated student telephone.

### Library Resources

A comprehensive collection of biomedical periodicals and books are available in the Allen and Cleveland Health Sciences Libraries. An online catalogue of resources available to CASE and its affiliated institutions can be found on the EuclidPLUS website (<http://www.cwru.edu/uclibraries.html>). The department maintains a small collection of periodicals and textbooks in E-504 along with information about various medical, dental, PA, etc. programs.

### Poster Printing

The department has a large format printer for printing posters for meetings. Students are allowed to print one poster in their first year, charged to the Department. After this, posters are charged to their faculty advisor. A copy/fax machine is located in the Administration office area.

### Building and Department Access, Campus Security

Nearly all University buildings require ID card access. The Department also requires ID card access between 5 pm and 7:45 am daily and on the weekends. The Department office personnel will submit information to the University requesting card access once you have your University ID. This usually takes 24 to 48 hrs. If you have forgotten your ID or your ID will not activate the card reader during evening hours, you can call the CWRU Police Department at 368-3333, and an officer will be dispatched to let you in. However, you will still need to present a picture ID.

The University provides a variety of security and safety programs to help ensure a safe educational environment. These programs are directed by *the CWRU Police Department* (<http://police.case.edu>), located at the North Campus Security Office (11320 Juniper Rd). The Security Communications Center is located in the basement level of the Health Services Building, 2145 Adelbert Road (the old Law building). The University's professionally trained security officers patrol the campus facilities and grounds on a 24 hour-a-day basis throughout the year. In addition to basic patrol, security personnel respond to emergencies, fire alarms, and routine security incidents. The Police Department Central Dispatch Center is staffed continuously and can be reached at extension 368-3333 for emergencies and 368-4630 for non-emergencies. The campus is also patrolled by the *University Circle Police Department* (UCPD), a private police agency consisting of fully trained and commissioned police officers. The UCPD also patrols on a 24 hour-a-day, and they respond to all emergencies. They can be reached at 368-2222.

### Student Computers

Once you are formally enrolled at the University, you will be able to activate your network/e-mail account by following the instructions on the Information Technology Service's website (<http://www.case.edu/its/students.html>). Since all official departmental communication is conducted electronically, it is imperative that you check your e-mail at least once a day to stay informed of all required graduate student activities and other events. Please contact Paul Zawolowycz ([pxz21@case.edu](mailto:pxz21@case.edu)) for help with any computer related questions.

## **GETTING STARTED**

As soon as possible after arriving on campus, incoming students should contact Dr. Michelle Monasky, the Manager of Graduate Education for the Department of Physiology and Biophysics. The necessary registration materials for the first semester will be emailed to students in their welcome packet. Students should plan to arrive in August in order to attend the University and Department Orientation sessions scheduled the week before the beginning of the fall semester. Students will register for their first semester and all subsequent semesters using the Student On-Line Academic Registration (SIS) system. Late fees, which are the responsibility of the student, are assessed beginning the first Tuesday after classes start.

During the week prior to the beginning of classes, there will be a general orientation sponsored by the School of Graduate Studies. There will be additional orientation sessions specifically for first year MSMP students.

## **COURSEWORK**

The MSMP program is a 30 credit hour program that can be completed in as little as 9 months or as long as 2.5 years. (Students must receive permission from their Academic Advisor and the MS in Medical Physiology Administration Committee in order to complete the program in 9 months.) The program consists of 18 credit hours of required courses in Physiology and Biophysics and 12 credit hours of electives.

Required core physiology courses:

### Year One, Fall

- PHOL 481 Medical Physiology I (6 cr)
- PHOL 483 Translational Physiology I (2 cr)
- PHOL 498-A Departmental Seminar (1 cr)

### Year One, Spring

- PHOL 482 Medical Physiology II (6 cr)
- PHOL 484 Translational Physiology II (2 cr)
- PHOL 498-B Departmental Seminar (1 cr)

Students are required to complete 12 credit hours of electives at the 400 level or above. These elective courses can be taken in any department of the university. Up to a total of 6 credit hours may be taken at other institutions with the approval of the student's Academic Advisor and the CWRU School of Graduate Studies. These 12 hours can be taken in specific Areas of Concentration as noted previously.

Students are required to take and pass the National Board of Medical Examiner's Shelf-Exam in Physiology and Neurophysiology in May of their first year of study. If a student does not pass the exam on their first attempt, they have one more opportunity during the summer immediately after the exam to retake and pass it at their own expense (currently \$53 for both exams).

MS in Medical Physiology students are assigned an Academic Advisor at the time of matriculation. They should consult their advisor about the timing of their program and selection of elective courses. A Career Advisor is also assigned to each student to help them determine the best path to achieve their career goals. Peer Advisors from the second year MS in Medical Physiology class will also be provided to each student.

#### Performance requirements:

The Physiology and Biophysics Program considers only grades of "B" or better to be satisfactory. To remain in good standing and to graduate from the MS program, a student must achieve a minimum grade point average (GPA) better than 3.0 (A= 4.0; B = 3.0; C = 2.0). This means that each student must earn a grade of "A" in at least one class during their course of study. Any student who receives a grade of "C" will be placed on probation until they have a GPA that meets the Department standard of better than 3.0. Any student who receives more than one "C" will be dismissed from the program.

No student can graduate until they have met the standard of achieving a GPA better than 3.0 in at least 30 credit hours of coursework and passing the NBME exam.

#### **MS/MBA Students**

We have established a dual degree program with the CWRU Weatherhead School of Management where qualified students who have been admitted to the MS in Medical Physiology program can also apply to the School of Management and earn a combined MS/MBA degree in a total of 5 semesters. MS/MBA students will take the 18 hours of core MS courses their first year of study. The next 3 semesters, the students will complete the requirements for the MBA (60 credit hours at Weatherhead). The MS program will accept 12 hours of coursework at Weatherhead to satisfy the 12 hour elective requirement of the MS degree. Weatherhead will accept 12 credit hours of core courses from the MS program to satisfy their elective requirement for the MBA. In summary, students will take the 18 credit hours of core courses in the MS program and 48 credit hours of courses in the MBA program for a total of 66 credit hours of coursework to earn the dual degree. Details of the program are found at:

<http://physiology.case.edu/education/graduate-programs/master/post-baccalaureate-program-ms-in-medical-physiology/>

and general information for the MBA program can be found at:

<http://weatherhead.case.edu/>

Once admitted to the Dual Degree program and after taking the GMAT exam, students are eligible for financial aid through the Weatherhead School of Management.

### **Switching from the MS in Medical Physiology Program to the full-time Ph.D. Program**

A student who wishes to switch from the MS in Medical Physiology program to a full-time Ph.D. program may petition for a change in status. In order to execute transfer to a full-time Ph.D. student status, the student must do the following:

1. Discuss the possibility of transfer with the Director of the Ph.D. program, apply and be admitted to the Ph.D. program by the Departmental Admissions Committee.
2. Advise the Office of Graduate Studies of their desire, with an endorsement letter from the student's Academic Advisor, the Director of the Ph.D. program, and the Department Chairperson.
3. If the student wishes to convert the credit for PHOL 651 to PHOL 701, they may do so by petitioning the Dean of Graduate Studies. Endorsement by the Department Chairperson is again required.
4. Any additional course work must be completed within the guidelines provided for in the University Bulletin.
5. All other requirements for the Ph.D. degree must be fulfilled - including research rotations, Grade Point Average, timeliness of completion of work, etc.

### **Switching from the MS in Medical Physiology Program Plan B to Plan A**

A student who wishes to switch from the Plan B to the Plan A Masters must do the following:

1. During the first year in the program, the student should make contact with faculty with whom they would like to conduct research. They may either volunteer in the faculty's lab or take a formal research course (PHOL 601) with the faculty.
2. By the first of May, the student will provide a one page description of the research work they plan to conduct in their mentor's lab to the Director of the MS in Medical Physiology program and petition the MS in Medical Physiology Administration Committee to formally switch from the Plan B to the Plan A option.
3. The student should arrange for their proposed research mentor (who may have a primary or secondary appointment anywhere at CWRU) to provide a letter of endorsement for the student switching from the Plan B to the Plan A option. This letter should indicate the mentor's willingness to serve as the student's major thesis advisor, the feasibility of the student's proposed

research being completed within 12 months, and their ability to cover the costs of the student's laboratory experiments.

4. The MS in Medical Physiology Administration committee will consider petitions to switch from the Plan B to the Plan A option the week following the administration of the NBME exam. Permission is typically given to a student in good academic standing, who does well on the NBME exam, and who has a strong letter of support from their proposed thesis advisor.
5. Upon being granted permission to switch from the Plan B to the Plan A option, the student must constitute their thesis advisory committee (as detailed below) with the approval of the Director of the MS in Medical Physiology Plan A program (Dr. William Schilling), present their formal thesis proposal (required format detailed below under "Dissertation/Thesis Proposal") to their thesis advisory committee at its first meeting (no later than July 1<sup>st</sup>), and plan on defending their thesis at the second committee meeting during the spring semester of their second year in the program.
6. During their second year in the program, Plan A students will be allowed to take all their required elective courses as PHOL 651 (Thesis Research). At least 9 hours of PHOL 651 are required to complete the requirements of a Plan A Master's.
7. The Format for the final written thesis must meet the standards of the School of Graduate Studies: <http://gradstudies.case.edu/current/etd/guidelines.html>

### ***PLANNED PROGRAM OF STUDY***

The planned program of study (PPOS) is a graduation requirement and is due immediately when a student begins classes. It is intended to help students develop an individualized plan of action to ensure that everyone is taking the classes that they need to take in order to graduate. You should discuss this with your program advisors, who can help you take classes that meet your specific goals.

See website for instructions how to get started on PPOS in SIS:

[http://www.case.edu/registrar/media/caseedu/registrar/documents/user-guides/students/First\\_Year\\_SGS\\_Students\\_Create\\_Planned\\_Program\\_Study\\_manual.pdf](http://www.case.edu/registrar/media/caseedu/registrar/documents/user-guides/students/First_Year_SGS_Students_Create_Planned_Program_Study_manual.pdf)

- List all required courses for the degree (PHOL 481, 482, 483, 484, 498A, 498B).
- Make sure you have at least 30 credit hours.
- All courses need to be at least 400 level. If you have courses below 400 level, do not list them.
- After you enter your courses, go to "move selected courses to term" and put each of your courses in a term.
- List all courses you are using to court towards your MSMP degree, including courses you have already taken, are taking, and will take in the future.

- If you have transfer credit that has been approved for a certain course, list that CWRU course in your last semester of study, as if you are "taking" that course. This way it will count towards your 30 credit requirement. You can use up to a maximum of 6 graded transferred credit hours. Pass/fail courses are not eligible for transfer.
- List courses that are part of your current program, meaning that if you are thinking to do a different program or combination program (MS/MBA, AOC, etc.) but are not yet approved, list courses for the program for which you are currently approved. If you decide to take different courses later, you will re-submit a new PPOA.
- If you are part of the MS/MBA program, list all the science (PHOL) courses you need, then just enough business courses to get you to 30 credits. Don't list every business course you take. Check with your MBA advisor whether you need a separate PPOA for that part of the program.
- If you later change your mind about what classes you want to take, you can submit a new PPOS at that time.

### **THESIS PROPOSAL FOR STUDENTS IN THE PLAN A PROGRAM**

Plan A Master's in Medical Physiology students must submit their research proposal (in the format described below) to their graduate advisory committee two weeks before its first meeting of the committee. Students may consult with their advisor on the Specific Aims of the proposal but the writing has to be the work of the student and is not to be based on grant proposals written by the advisor. The advisor will be asked to certify the originality of the proposal. The student will give an oral presentation of the research proposal to the advisory committee at its first meeting. The student may consult with the advisor between submission of the proposal and the first committee meeting. The advisory committee members will vote pass/fail on the quality of the proposal, with the majority determining the final grade. The committee may ask the student to rewrite all or parts of the proposal. The research proposal must be approved by the student's graduate advisory committee in order for the student to proceed in the program. For Plan A MS in Medical Physiology students, this approval should take place no later than July 1<sup>st</sup> after their first year of study.

*Important Note: In science, the publication of original work is a highly valued enterprise. Thus, plagiarism of any kind will not be tolerated. The Department defines plagiarism as "the taking and using of even a single intact sentence from another person's proposal, manuscript or review." This includes copying any segment of the Methods section from another source. It also includes the use of diagrams or example data figures without attribution. Any student who plagiarizes will be dismissed from the program. (See Academic Integrity section below).*



## Format of the Research Proposal

The Thesis Research proposal should be in the form of an R01 type NIH grant application and include the following sections: Abstract, Specific Aims, Research Strategy, Literature Cited.

All sections are to be in 12 or 11 point font, single-spaced with one inch margins (top, bottom and sides), and the pages must be numbered and follow consecutively. The body of the proposal may not exceed ten pages. This does not include the literature cited.

**Abstract (approximately 200-250 words).** Summarize the goals of the proposed research, specific hypotheses to be tested and experimental approaches used.

**Specific Aims (1 page).** State concisely the goals of the proposed research and summarize the expected outcome(s), including the impact that the results of the proposed research will exert on the research field(s) involved.

List succinctly the specific objectives of the research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology.

**Research Strategy.** Organize the Research Strategy in the specified order and using the instructions provided below. Start each section with the appropriate section heading – *Significance, Innovation, Preliminary Results, Approach*. The total page limit for all these sections is 12 pages.

### (a) *Significance*

- Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses.
- Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.
- Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved.

### (b) *Innovation*

- Explain how the application challenges and seeks to shift current research or clinical practice paradigms.
- Describe any novel theoretical concepts, approaches or methodologies, instrumentation or interventions to be developed or used, and any advantage over existing methodologies, instrumentation, or interventions.

- Explain any refinements, improvements, or new applications of theoretical concepts, approaches or methodologies, instrumentation, or interventions.

*(c) Preliminary Results*

This section presents results from the student’s work in the advisor’s lab, relevant to the *Specific Aims* of the proposal. Figures and/or Tables may be included. Text in Tables, Figures, and Figure Legends may be smaller than 12 point but should be easily legible.

*(d) Approach*

- Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. Include how the data will be collected, analyzed, and interpreted as appropriate.
- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.
- If the project is in the early stages of development, describe any strategy to establish feasibility, and address the management of any high risk aspects of the proposed work.
- Point out any procedures, situations, or materials that may be hazardous to personnel and precautions to be exercised.

**Literature Cited (2-3 pages)**

This section is to provide a complete list of all literature that is cited in the text of grant proposal. It should consist of no more than 60 references. Each reference should include the names of all authors, as well as the full title of the article, in addition to the title of the journal/book, volume, page numbers, and year of publication. Follow the format used in a leading journal in the field.

**GRADUATE ADVISORY COMMITTEE**

A graduate advisory committee is created specifically for each Plan A Master’s in Medical Physiology student. The members of this committee serve two roles. Firstly, they act as advisors, helping the student to assess research questions and to overcome problems associated with the research. Secondly, the members assess the student’s progress. Committee members are intended to be active participants in all stages of the research project, and students are encouraged to draw on their professional expertise and judgment.

The Director of the Plan A MS Program (Dr. William Schilling) will serve as the chair each of the graduate advisory committees. Membership of the committee includes the chair of the committee, the student’s advisor and at least three other

faculty members: two must have primary or secondary appointments in Physiology and Biophysics; one must have a primary appointment outside of Physiology and Biophysics. The student and his/her advisor will submit a recommendation of the composition of the committee to the Director of the Plan A MS Program who will make the appointments. A quorum for any thesis committee meeting requires the presence of the advisor and at least three other committee members.

For Masters Plan A students are **required** to have only two scheduled meetings of the committee. The first meeting must be held before the end of the first term of research (to evaluate the thesis proposal) and the second to evaluate the completed thesis. At this second meeting, the student presents his/her thesis research to the committee in both an oral and written format. Two weeks before these meetings, the MS students should provide their thesis committee with their thesis proposal/completed thesis.

One week prior to the graduate advisory committee meeting, the student must provide a brief report (~2 pages) to all members of the committee. This report must contain the student's name, that days date, a brief description of the background and significance of the proposed work, the hypotheses being tested, the specific aims, the experimental approach, pertinent experimental results (data), any conclusions, and future plans. If the student's report is not received by the faculty one week before the meeting of the advisory committee, the meeting must be rescheduled.

Thesis committee meetings are to last no more than 1 hour total duration. Each committee meeting is to be conducted in several stages: 1) brief opening discussion of student progress led by the student's advisor (without the student present); 2) presentation by the student of new research findings (approximately 15 min); 3) committee discussion with the advisor present (without the student); 4) private committee deliberation (without the advisor or student present); 5) closing discussion with student alone - verbal discussion of committee report with student, 6) transmission of written report (prepared by the Chair of the Advisory Committee) to the student, all committee members and Jean Davis.

The student presentation is a talk that is limited to approximately 15 min. It must include a title, a schematic description of the experimental system, the physiological and pathophysiological importance of the work, the hypotheses that are being tested, the experimental methods being used, any results obtained, conclusions, and future directions. Faculty members are allowed to stop the student during the presentation to ask questions.

The student's write-up to the committee, the recommendations of the committee, and a record of the thesis meetings will be maintained in the student's official departmental file.

## ***GUIDELINES FOR THESIS RESEARCH***

Thesis research should be the primary focus of students once they have chosen a laboratory in which to complete their research. Although the actual writing of the thesis may be some time off, students should bear in mind the following guidelines during the formative stages of their project.

### ***Goals for Graduate Students:***

- Students must develop, with their advisor, a research project that yields a coherent and original body of work.
- The thesis must be written in a scholarly manner with a detailed historical introduction and a critical discussion.
- The thesis must be the original and individual effort of the student. The final version submitted to the Graduate Advisory Committee should be a polished document developed in consultation with the mentor.

### ***Role of Training Faculty:***

- The advisor will provide the student with intensive training in the scientific method, including the ability to formulate clear research questions, develop feasible experimental approaches to answering them, critically evaluate data from his or her own research and that of others, and discuss the significance of the work in the context of the field as a whole.
- The advisor, in conjunction with the graduate advisory committee, is responsible for developing and implementing a training plan with the student, including the elaboration of an independent research project.
- The advisor is responsible for providing the physical, financial, and intellectual resources necessary for completing the research plan.
- The advisor should work regularly with the student to develop strong communication skills, both oral and written.
- The advisor should encourage the student to think broadly about the research project and not necessarily be limited to approaches/techniques currently used in the advisor's laboratory.

### ***Graduation procedures:***

In order to graduate at the end of any given semester, there are certain forms that must be completed and submitted to the School of Graduate Studies by a particular date. If these forms are not received by the Graduate School by these dates, a student cannot graduate until the next semester. Specific dates for a given semester can be found on the School of Graduate Studies web page (<http://gradstudies.case.edu/current/calendars/calendar.html>).

## ***ACADEMIC INTEGRITY***

The importance of this topic cannot be over-emphasized. The goal of the scientist enterprise is to carry out original work, and throughout the course of their scientific careers, scientists must be very careful to properly allocate credit for data or written

material generated by others. The Office of Research Integrity (ORI), which is the regulatory arm of the National Institutes of Health, considers plagiarism “...the theft or misappropriation of intellectual property and the substantial unattributed textual copying of another's work”.

“Substantial unattributed textual copying of another's work means the unattributed verbatim or nearly verbatim copying of sentences and paragraphs which materially mislead the ordinary reader regarding the contributions of the author.” This and other ethical issues will be covered in IBMS 500 (On Being a Professional Scientist: Ethics and Biomedical Research). More information may also be found by visiting the ORI website at <http://ori.dhhs.gov>.

Other issues concerning research ethics, such as suspected fraud or falsification, mis- or selective presentation or interpretation of data, are best initially discussed in private with the parties concerned, and should this fail, with the Director of Graduate Studies.

The School of Graduate Studies Handbook – page 2 - ([http://gradstudies.case.edu/webfm\\_send/100](http://gradstudies.case.edu/webfm_send/100)) contains the following Statement of Ethics:

“Universities seek to preserve, disseminate, and advance knowledge. At Case, as elsewhere, we recognize that to fulfill these purposes requires a norm of expected conduct shared by all in the University community, governed by truthfulness, openness to new ideas, and consideration for the individual rights of others, including the right to hold and express opinions different from our own. The University’s mission rests on the premise of intellectual honesty in the classroom, the laboratory, the office, and the solitary examination desk. Without a prevailing ethic of honor and integrity not only in scientific pursuits but also in all scholarly activity, the very search for knowledge is impaired. In these respects, each of us—especially but not exclusively faculty — must regard ourselves as mentors for others.

These principles we strive to uphold make it possible for the larger society to place trust in the degrees we confer, the research we produce, the scholarship we represent and disseminate, and the critical assessments we make of the performance of students and faculty, as well as judgments of staff and administrators. To safeguard the standards on which we all depend, each of us must, therefore, accept individual responsibility for our behavior and our work and refrain from taking credit for the work of others. The culture of a university also requires that the rights of all be protected, particularly by those entrusted with authority for judgment of the work of others.

The University being a human community is subject to human failings, ambiguities, and errors. It is, therefore, the responsibility of the bodies regulating the affairs of faculty, students, and staff to maintain processes for judging and resolving instances where these principles may have been violated. However, all such systems depend

for their effectiveness, in turn, on the acceptance of common norms of contact—the ties of trust which bind the university community together.”

More on this topic can be found on page 20 of the School of Graduate Studies Handbook.

The CWRU School of Graduate Studies has a detailed list of Procedures and Rules that will be followed should there be an allegation of a breach in academic ethics. This document is found at: <http://gradstudies.case.edu/downloads/AcadInteg.pdf>

### ***SUGGESTED PROTOCOL FOR ADMINISTRATION OF EXAMINATIONS TO LARGE CLASSES***

**(These guidelines should be appropriately modified for the administration of examinations to small classes.)**

#### ***FACULTY RESPONSIBILITIES:***

The Faculty should take whatever steps are reasonably necessary to discourage academic dishonesty. During the administration of examinations, the faculty member or one of their designated proctors must be present at all times within the examination room to monitor the process. It is recommended that more than one proctor be present, but it is required that one be monitoring the test at all times. It is the responsibility of the Faculty or the designated proctor to ensure that no students are seated adjacent to each other and that all backpacks, handbags, and jackets are placed at the front of the room before each examination, and that those items are monitored throughout the exam. If a cell phone is discovered to be turned on and located on a student’s person, it is the responsibility of the Faculty to confiscate and hold that phone until the examination is complete. If a student takes a break from an examination to use the bathroom or for any other reason, any cell phones or other communication devices should be held by the proctor until the student returns. Above all, the Faculty or designated proctor is responsible for monitoring the exam room throughout the examination for signs of cheating or misconduct.

#### ***STUDENT RESPONSIBILITIES:***

It is the responsibility of the Student to take whatever steps are reasonably necessary to discourage academic dishonesty or any violation of the Case Western Reserve University ethical standards. It is the responsibility of the student to ensure that cell phones and other communication devices are turned off during the examination. It is the student’s responsibility to not communicate in any way with other students during the examination unless under the supervision of the proctor. If a student suspects misconduct on the part of another student taking the exam, s/he should immediately notify the responsible Faculty member or proctor.

## **SEMINARS**

The departmental seminars are considered invaluable components of a student's training experience. These activities provide students (and faculty) with opportunities to learn about the cutting edge of science. In some cases this will be directly relevant to the student's own research interests. In other cases, the subject matter may seem far afield, but these are often times the experiences that are most influential. In order to gain a meaningful perspective and learn how to achieve one's own research goals using the best approach, it is important to be exposed to a wide range of techniques and disciplines. It is for that reason that a great deal of emphasis is placed on not just attendance but active participation in seminars and the journal club.

### **Seminar Requirements**

All first year MS in Medical Physiology students are required to attend at least 75% of all departmental seminars in order to earn a Passing grade in the seminar courses (PHOL 498A and B). The departmental seminars include the Monday Physiology and Biophysics seminars (4:00- 5:00 PM in E-501). For each of these seminars, two papers will be provided for students to read before the seminar. One will be a general paper on the topic of the seminar and the other will be a recent paper by the seminar speaker related to the seminar topic. Before the seminar, students must take a 5 question quiz in Blackboard over these papers. An average score of 4 on all the seminar quizzes for the semester must be achieved in order for the student to Pass the course. Other departmental seminars include Physiology and Biophysics dissertation seminars. Students are also expected to attend the Department's annual *Frontiers Seminar*. Attendance will be taken at all seminars for MS in Medical Physiology Students. MS students taking the course over the Internet should send the Director of Physiology Seminars a list of seminars they have watched online (either as a live stream at: <https://connect.case.edu/physiology> or as a recorded seminar on Blackboard) immediately after the last required seminar of the semester. After their first year of study, MS in Medical Physiology students are encouraged, but are not required, to attend departmental seminars.

## **PROFESSIONAL DEVELOPMENT**

In addition to the requirements described above, students are encouraged to participate in other activities, many of them student-run, in order to further their professional development. Some examples are listed below.

### **Departmental Committees**

Student representatives are encouraged to participate in many Departmental committees. This includes, for example, the seminar committee, where students are given the opportunity to host seminar speakers of their choosing. In the fall of each year, the students should elect one of the advanced graduate students to serve as the student representative to the Graduate Education Committee.

### Departmental Retreat

The Department sponsors an offsite retreat every year. In odd-numbered years, this includes two full days (and evenings) of scientific presentations in a relaxed and friendly atmosphere, usually held at a nearby state park and conference center. In even-numbered years, this includes a single day of activities at a site down-town Cleveland. Activities involving students, postdoctoral fellows, and faculty encourage collaboration and foster collegiality among all members of the Department. Attendance is required of ALL first year MSMP students. Only second year MSMP students who are presenting research posters at the retreat will attend the departmental retreat. Special arrangements will be made for Internet students to view the retreat sessions.

### Biomedical Graduate Student Symposium

The Biomedical Graduate Student Symposium at CASE is an annual meeting organized and led by a student-run committee. It is designed to promote and recognize the exceptional biomedical science research accomplishments of graduate students at Case Western Reserve University and to encourage dialogue between students of diverse interests and fields. We advise that all Physiology and Biophysics students participate in this symposium.

### Research ShowCASE

This annual event is an opportunity for faculty, researchers, undergraduate and professional/graduate students and postdoctoral fellows from CASE and its affiliated research institutions to display their latest research. Affiliated research institutions include the Cleveland Clinic Foundation, the Louis Stokes Veterans Affairs Medical Center, the MetroHealth Medical System and University Hospitals of Cleveland.

### Graduate Student Senate

*"The Graduate Student Senate (GSS) is a representative government for graduate students pursuing advanced degrees in the School of Graduate Studies at Case Western Reserve University. The GSS serves as a forum of graduate students whose focus is to meet, discuss, and take action on academic, social, and professional affairs. The GSS actively represents students' individual and collective interests by pledging to lobby faculty and university administrators on their behalf. All departments under the School of Graduate Studies are afforded senators who regularly attend monthly general assembly meetings of the GSS and help shape university policies directly affecting graduate students through their dialogue with the university administration. All graduate students are members of the GSS and all are welcome to attend its meetings, forums, and sit on its committees."*

The Department of Physiology and Biophysics also has its own student organization for both graduate students and post-doctoral fellows called the Graduate Professional Council of Representatives (GPCR). The GPCR: 1) maintains and develops an intellectually stimulating atmosphere and a high level of academic excellence; 2) promotes and maintains the exchange of information between students and faculty; 3) acts in the best interest of the department and student body, providing a



representative voice through which student's opinion may be expressed. GPCR activities, including their monthly Students and Science Luncheons, will be announced throughout the year.

The GPCR is much more than just a group of people that want to talk to faculty once in a while. Membership is composed of people who want to play an active role in developing our department and solving problems which face us as graduate trainees. This is achieved through representation on a number of departmental committees (New Student Orientation Committee, Seminar Committee, Admissions Committee, Publicity Committee) and interdepartmental organizations (Women in Science, Graduate Student Senate). Any student who is interested in working on some aspect of the department (public outreach, etc.) is welcome to work with the GPCR to make positive change to our department.

### ***Communication & Representation***

Please contact any of the representatives with ideas/issues and/or to become involved:

**GPCR Coordinators:** Amrita Samanta ([axs958@case.edu](mailto:axs958@case.edu))

**Women in Science Coordinator:** Ahlam Salameh ([ais20@case.edu](mailto:ais20@case.edu))

**Graduate Student Senators:** Amrita Samanta ([axs958@case.edu](mailto:axs958@case.edu))

**Postdoctoral Representative:** Adjunct Instructor Dr. Jessica Berthiaume ([Jessica.berthiaume@case.edu](mailto:Jessica.berthiaume@case.edu))

### ***SHADOWING OPPORTUNITIES***

“Shadowing Case by Case” is a student run organization that allows students to sign up on a first come, first serve basis for shadowing rotations in Plastics, Anesthesiology, and Internal Medicine at University Hospitals. The organization also offers attendance to the Morbidity & Mortality talks and many volunteer opportunities. If you have any questions feel free to contact Chang Yoon Doh at [cxd239@case.edu](mailto:cxd239@case.edu).

### ***REQUESTING COMMITTEE LETTERS OF RECOMMENDATION***

#### **I. Applying to AMCAS and AACOMAS:**

- a. May 3<sup>rd</sup> AACOMAS opens, May 4<sup>th</sup> AMCAS opens.
- b. **Before May 3<sup>rd</sup> and 4<sup>th</sup>, here are the things you should have started and near complete:**
  - i. Asking or requesting letters of recommendation from various individuals/committees.

You may have up to ten. You have the option to enter the letter as a committee letter, letter packet, or an individual letter. These need to be listed on your application, but letters do not need to be uploaded prior to the initial submission of your primary, they are needed for secondary applications.

- ii. Take your MCAT, or have it scheduled. MCAT scores take four weeks to report. Your primary application can be verified without the score, but individual schools will not mark your application complete until your score is uploaded to AMCAS/AACOMAS.
- iii. Outline your Personal Statement!
  1. 5300 characters for AMCAS
  2. 4000 characters for AACOMAS
    - a. Try and get it reviewed by as many people as possible. The more eyes the better to see little mistakes.
    - b. Asking advisors to review your statement EARLY gives them more time to give quality feedback.
- iv. Outline your activities section!
  1. Maximum 700 characters per experience description
    - a. When describing them, **use the core competencies** in the explanation to show that you have these and are more prepared for medical school!
      - i. **AMCAS core-**  
<https://www.aamc.org/initiatives/admissionsinitiative/competencies/>
      - ii. **AACOMAS core-**  
<http://www.aacom.org/docs/default-source/core-competencies/corecompetencyreport2012.pdf?sfvrsn=4>
  2. Maximum 15 experiences (AMCAS allows up to 3 to be deemed most meaningful allowing for 1,325 more characters to describe the activity).
    - a. Know the experience type, dates, total hours (approximately), and contact information for someone who can verify this for you
      - i. **AMCAS-** can put hours you expect to complete for each

activity if you're still involved in it.

- ii. **AACOMAS-** cannot put hours expected to complete, only hours you have completed prior to the application, but can explain in the 'description/key responsibilities box about expected time commitment.

3. **DO NOT** use experiences from high school or prior, only college or post-grad.
4. **AMCAS-** if you have publications/awards/scholarships/etc., work and activities is the appropriate section to list them.
5. **AACOMAS-** if you have publications/awards/scholarships/etc., **ACHIEVEMENTS** section is the appropriate section to list them

c. **Once May 3<sup>rd</sup> and 4<sup>th</sup> arrive and the applications open:**

- i. Request your transcripts from all of the necessary schools (undergraduate, graduate, any overseas, etc.)
- ii. Check on letters of recommendation and make sure they are going to be submitted in a timely fashion and send them your AMCAS or AACOMAS ID numbers for uploading.
  1. You can submit your application without your letter uploaded, but need to create a letter entry for your evaluator to be able to upload it.
  2. **By July 15<sup>th</sup> is ideal**, as that is when secondaries are officially submitted and schools will begin looking at your application, which will be complete once those are uploaded.
- iii. Enter in all coursework with grades, credit hours, and anything else needed.

1. Classifications of courses may be different than what you think, **MAKE SURE TO CHECK BEFORE CLASSIFYING IT IN A CERTAIN CATEGORY.**

- a. **AMCAS-** [https://aamc-orange.global.ssl.fastly.net/production/media/filer\\_public/e5/68/e5687e03-f55e-4ce6-a4e4-892eaab328dc/amcas\\_course\\_classification\\_guide.pdf](https://aamc-orange.global.ssl.fastly.net/production/media/filer_public/e5/68/e5687e03-f55e-4ce6-a4e4-892eaab328dc/amcas_course_classification_guide.pdf)
- b. **AACOMAS-** <http://help.unicas.com:8888/aacomasHe>

2. If you mess up one or two of these the application services will change it during verification, but it is not necessarily something you want to show up on your application. **MAKE SURE TO DOUBLE CHECK ONCE ENTERED BEFORE SUBMISSION.**
- iv. Upload all of your supporting documents once they are complete (PS, work and activities, etc.)
- v. **CHOOSE YOUR SCHOOLS:**
  1. **AMCAS**
    - a. When researching schools, make sure you check their **IN-STATE VS. OUT OF STATE PREFERENCE**. Some schools have heavy in-state preference and applications are expensive. Don't waste money on a school that may be way too out of reach.
      - i. Can use MSAR (25\$) or Start class (free) for all the school statistics <http://medical-schools.startclass.com/>
  2. **AACOMAS**
    - a. Again, check in-state and out of state preference to save yourself money and time!
      - i. DO MSAR is FREE! Can also use start class <http://medical-schools.startclass.com/>
- d. **JUNE – APPLICATIONS CAN BE SUBMITTED!!**
  - i. Submit your application as EARLY AS POSSIBLE so it can be verified and sent to schools to get secondaries as soon as possible.
    1. During the peak submission time, verification can take as long as 6-8 weeks, so early submission is best.
  - ii. Once submitted, you can look up some schools secondaries early (potentially on their website or on SDN). Pre-writing secondaries, if possible, will save you time later!
- e. **JULY – APPLICATIONS CAN BE RELEASED TO SCHOOLS!**
  - i. If verified, your application will be sent to the schools you selected.

1. If your application has your MCAT score, schools who screen for secondaries will either send you the secondary or a response. If your score is not up yet, the screening schools will wait until after it is uploaded to send you a secondary.
  2. Schools who do not screen will send secondaries automatically.
- ii. **Secondaries- COMPLETE WITHIN TWO WEEKS OF RECEIVING.**
1. It is important to keep up with these and complete them in a timely fashion.
  2. Schools do not like it if they sent you a secondary in July and do not receive it for a few months, it looks poor on your application and makes you lower on their list of potential candidates to interview.
- f. Once your secondaries are submitted your application process is complete and now the waiting game begins...
- i. Make sure to double check if schools will email you for interviews or upload it onto the site you submitted your secondary.
- g. If you do not hear from schools by December for their decision, it is always a good idea to send an update letter of what you've been doing since you submitted your application!
- i. Most schools accept these and will add them to your file, but double check to make sure they do, as a few will not accept them.

## II. Applying to AADSAS (Dental school)

- a. Applications open beginning May for registration, what you should have done BEFORE THEN:
  - i. Request letters of evaluation from evaluators as early as possible, giving them about four weeks to work on it.
  - ii. Request from all post-secondary institutions you've attended your transcripts to get uploaded as soon as possible.
  - iii. Begin researching schools to get an idea of where you plan on applying to.
  - iv. Take the DAT or register for it. Unofficial DAT scores are reported right after the exam is taken at the testing center, but official ones take approximately 3-4 weeks to be reported to the schools you've applied to.
  - v. Begin writing your personal statement and your experiences section.
    1. Personal statement can have 4500 characters

2. Experiences categories:
  - a. Academic enrichment programs
  - b. Awards, honors, scholarships (limit of 5)
  - c. Dental experience (limit of 10)
  - d. Extracurricular/volunteer/comm. Service (limit of 10)
  - e. Research experience (limit of 5)
  - f. Work experience (limit of 5)
    - i. Only document hours you have already completed, not hours you plan to during the year.
  - g. No place for publications in this section, please put these in 'Achievements'
- b. **What to do during May before Submission opens June 1<sup>st</sup>:**
  - i. Request transcripts to be uploaded to AADSAS from all any undergraduate or graduate programs you attended prior to.
  - ii. Request your letters officially on the site. Make sure to send the individuals or committees that you've already asked to write your letters your AADSAS ID number for their letter to upload it.
  - iii. Upload all supporting documents once complete! (PS, experiences, etc.)
  - iv. **CHOOSE YOUR SCHOOLS:**
    1. Make sure to check for in-state vs. out-of-state preference to save yourself time and money!
      - a. First dental school is \$245 and every other one added on is \$98, so it can be pricey!
        - i. Some questions to ask when choosing schools to apply to: <http://www.asdanet.org/predental/choosing-a-dental-school.aspx>
      - b. <http://dental-schools.startclass.com/> this site will give you all the information necessary on each dental school to see if you are a good candidate to apply or not!
- c. **JUNE – APPLICATIONS CAN BE SUBMITTED:**
  - i. Submit your application AS EARLY AS POSSIBLE, verification of your application by AADSAS and everything you've put in your application can take some time.

1. Up to 10 business days is usually what it takes to process an application, but can be longer if in peak submission time!
- ii. Some schools require supplemental applications
  1. Research each school to see if this is required and if so, try and find the supplemental application to complete it early!
- d. **JULY-DECEMBER – prepare for interviews**
  - i. Sometime before December 1<sup>st</sup> you will hopefully be going on interviews, to which you should prep for by looking up information about the school
    1. Refer to Dr. Liedtke’s powerpoint on interviewing!
  - ii. After December 1<sup>st</sup>- decisions come out for the schools you have interviewed for.
  - iii. If you are waiting on a school that you have not heard from yet in December → SEND UPDATE LETTERS
    1. Make sure to check and see if the school allows update letters, and if they do, send them something short and sweet about what you’ve been doing since you applied and your continued interest in their program.

### III. **Applying to TMDSAS (Medical and Dental):**

- a. **REMINDER:** All of these schools are HIGHLY SELECTIVE for Texas residents. If you are not a Texas resident, I would suggest making sure your averages are at least equal to or higher than the schools to increase your chances of landing an interview and potential spot in their class.
- b. Applications open on May 2<sup>nd</sup>. Here are things you should have started before then:
  - i. Request letter(s) of evaluation.
    1. Applicants may submit either one committee letter or three individual letters.
  - ii. Write your employment and activities sections, dividing these up by the following categories: academic recognition, non-academic recognition, employment, research activities, healthcare activities, community service, extracurricular & leisure activities, and planned activities.
    1. If you have activities that fit more than one of these categories, you should list it under multiple categories.
  - iii. Write your Medical Personal Statement → “Explain your motivation to seek a career in medicine. Be sure to

- include the value of your experiences that prepare you to be a physician.” Limited to 5000 characters.
- iv. Write your Personal Characteristics Statement → “Learning from others is enhanced in educational settings that include individuals from diverse backgrounds and experiences. Please describe your personal characteristics (background, talents, skills, etc.) or experiences that would add to the educational experience of others.” Limited to 2500 characters.
    1. There is also an optional essay after these.
  - v. Take the MCAT by this date! Makes uploading your scores a lot easier.
  - vi. Select the Schools you’re applying to!
    1. Check the schools in Texas you plan to apply to via the application service. You can review stats about the schools for free with sign up via <http://medical-schools.startclass.com/>
- c. Things to do in between May 2<sup>nd</sup> and September 30 (submission deadline – all sections must be complete by this date).
    - i. Make sure all of your supporting documents (transcripts, letters of evaluation, test scores) have been submitted. Monitor the status of your application after you submit it.
    - ii. Admissions are **ROLLING**, so submitting your application as early as possible past May 2<sup>nd</sup> is ideal to get an earlier decision as possible.
    - iii. Application fee must be received in their office by October 7<sup>th</sup>, any submissions via mail that get their after will be sent back.
  - d. Secondary Applications
    - i. The schools you choose to apply to may send you secondary applications. Complete these within **2 WEEKS** of receiving them.
  - e. Invitations to interview post secondary applications are typically from August 1<sup>st</sup>-December 31<sup>st</sup>.
    - i. February 1<sup>st</sup> at 8:00am → matches or rejections to any medical school you interviewed at are announced.

#### IV. Applying to CASPA (PA)

- a. Applications open in mid to late-April (for most schools but this does vary for PA schools), so before April you will want to...
  - i. Request your transcripts from all undergraduate and graduate programs attended prior to your application.
  - ii. Request letters of recommendation



1. You should do this **PRIOR TO APRIL** to give your evaluators plenty of time to write your recommendation
  2. CASPA allows 3 letters of recommendation.
- iii. Take the GRE!
1. GRE is required for most programs, so give yourself time to have taken it and get your scores back to report on your application
- iv. Start writing your Personal Statement, Experiences, Achievements, and Memberships/documents:
1. PS- Allowed up to 5,000 characters.
  2. Experiences section all defined here → <https://portal.caspaonline.org/caspaHelpPages/frequently-asked-questions/additional-information/work-and-volunteer-experience/index.html>
    - a. Patient care experience
    - b. Healthcare experience
    - c. Employment
    - d. Shadowing
    - e. Research
    - f. Volunteer Work
  3. Achievements/Certifications
    - a. Achievements → professional/academic awards, honors, and scholarships
    - b. Health-related certifications only
  4. Memberships → any relevant membership in a professional organization
  5. Documents (optional) → ONLY 1 containing a course description you want your PA program to review.
- v. Research schools you wish to apply to and **CHECK DEADLINES FOR EACH:**
1. <http://www.mypatraining.com/physician-assistant-programs-by-state> → gives you the breakdown of each program in the US
  2. <https://portal.caspaonline.org/caspaHelpPages/participating-programs/index.html>
    - a. this website gives you the breakdown for every deadline of each program
- vi. <http://www.mypatraining.com/forum/> → this website is great for any unanswered questions you have going into the application cycle
1. this site allows you to talk with other PA school applicants!
- b. **Once the application cycle opens in April on CASPA:**

- i. Make sure your transcripts are being uploaded to CASPA
- ii. Check on letters of recommendation for each individual
  - 1. Supply them your ID number to upload the letter to your application
- iii. Upload all other required documents (PS, Experiences, etc.)
  - 1. make sure these are all edited and complete before uploading, you do not get to make any changes once you have submitted your application.
- iv. Double check coursework entered → verification will change any grades or any hours that are incorrect, but you do not want a lot of these changes made, as it makes your application look sloppy and not well done.
- v. **SUBMIT YOUR APPLICATION AS EARLY AS POSSIBLE!**
  - 1. Verification of your application can take some time after you submit it, and schools will not see your application until it is verified.
  - 2. Once verified, you will start having the option to fill out secondaries
    - a. The earlier these are filled out, the earlier you are likely to hear back about an interview.
- c. **Once you've submitted your primary CASPA application:**
  - i. Pre-write some of the schools secondaries!
    - 1. Some of the schools may have already linked you with the secondary on their website, and writing these as soon as you can get them is important for increasing your chances of early interviews.
  - ii. Prep for interviews
    - 1. Refer back to Dr. Liedtke's powerpoint on interviews
    - 2. She only referred to medical school interviews, but this also applies to PA school interviews!
  - iii. Depending on submission deadlines for each school...
    - 1. If you have not heard anything for a significant time post submission, you can do an academic update on your CASPA application, so any new grades or coursework completed can be updated on your application.

V. **Applying to CAASA (Anesthesia Assistant)**

- a. **APPLICATIONS OPEN IN MARCH, so before March:**

- i. Request your transcripts for all undergraduate and graduate institutions attended prior to.
  1. Official transcripts should be mailed to the CASAA address
- ii. Take one of the two required exams: MCAT or GRE
  1. Either is accepted, but both should be completed prior to starting your application so you are able to upload your scores before submission.
- iii. Collect all information about your coursework:
  1. Questions about your coursework and how it should be entered onto your application once opened in March can be answered here:
    - a. <http://help.unicas.com:8888/casaaHelpPages/frequently-asked-questions/coursework-completed-in-progress-and-planned/index.html>
- iv. Request your letters of recommendation:
  1. Give substantial time prior to March to your evaluator to compose your letter.
  2. CASAA allows up to three evaluations, so request from those who you think will give your strongest evaluation
  3. Evaluations from your evaluator will be uploaded to CASAA, so provide them with your ID number to upload the letter directly to your application.
- v. Research the programs you wish to apply to!
  1. <http://www.anesthetist.org/faqs#educationprograms>
    - a. this provides links to each accredited program and their individuals requirements
- vi. Some of them will require a personal statement and an updated CV or resume
  1. Make sure to have these ready to send to each accredited program that requires it
- b. **ONCE APPLICATIONS ARE OPEN IN MARCH:**
  - i. Make sure your letters of recommendation are requested on the application and your ID Number is given to each evaluator
  - ii. Upload all coursework information!
  - iii. Upload scores for standardized exam!
  - iv. If schools require it → upload your Personal Statement and any other documents necessary for them to see (CV, Resume, achievements, etc.)
  - v. **SUBMIT YOUR APPLICATION EARLY**

1. That way you are able to get verified early, your application will reach schools sooner, and any secondary information or secondary applications needed to be filled out early can be done.
  2. Once secondaries are complete, you can begin prepping for interviews
- c. **ONCE SUBMITTED (most schools open for submission in April):**
- i. **SUBMIT SECONDARY INFORMATION/DOCUMENTS FOR EACH SCHOOL**
    1. Each school is different - if secondaries are required or not, so make sure to research this to know once you've submitted your primary application
  - ii. **PREP FOR INTERVIEWS:**
    1. Interviews are done typically September-February of the application cycle
    2. Refer to Dr. Liedtke's interview powerpoint, which talks about the medical school interview, but is still fitting to review for AA school interviews!