



# West Virginia University Health Sciences Center

Welcome to the

## **MD/PhD Medical Scientist Program**

This document provides general information about

- 1) Orientation
- 2) Overview and Administration
- 3) Timeline of Activities by Years and Registration
- 4) Research Rotations and Selection of Mentor and Graduate Program
- 5) Survival Skills
- 6) Scientific Integrity and Social Justice
- 7) Academic Probation and Appeal
- 8) Graduation Requirements
- 9) Eight PhD Training Programs
- 10) WVU and Health Sciences Center
- 11) Addendum:
  - a. Compact between Biomedical Students & Their Research Advisors
  - b. Advanced Graduate Student Individual Development Plan Annual Review
  - c. Research Compliance Information

Office of Research and Graduate Education  
West Virginia Health Sciences Center  
August 2010

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**Orientation**

Orientation commences on July 1 when you start your first research rotation. Senior MD/PhD students oversee orientation; topics include goals and expectations of the MSP, online certification of Compliance Training, obtaining the I-9 and tax forms (if not done before July 1), student ID, parking pass, finalizing course registration, and information about Morgantown. Orientation for Medical School starts the 2<sup>nd</sup> week of August and for the PhD programs in the Biomedical Sciences and Public Health Science the 3<sup>rd</sup> week of August. During the PhD orientation, you will have the opportunity to attend the dinner/social on Tuesday night and the student/faculty picnic on Wednesday afternoon.

Date/Time	ORIENTATION Topic	Instructor	Room	Comments
<i>Monday July 1</i> 9:30 a.m.	Welcome	<b>The MSP Team</b>	RESOFF conference room	Introduction <i>*Continental Breakfast* provided</i>
10:00 a.m.	Overview of MD/PhD Medical Scientist Program (MSP)	<b>MD/PhD students</b>	RESOFF conference room	Curricula and Graduation Requirements
11:30 a.m.	United Healthcare Insurance	<b>Noel</b>	John Jones B	Health insurance info. <i>*Lunch provided*</i>
1:00 p.m.	I-9 & Tax Forms	<b>Noel, Human Resources</b>	2271 HSS	Bring original SS card
2:00 p.m.	Student ID Cards	<b>Noel</b>	Bennett Tower Room G118	Obtain student ID cards
<i>Tuesday August 17</i> 9:15 a.m.	Introduction to Research Rotations	<b>Minnear</b>	John Jones C	2 laboratory rotations required
10:15 a.m.	Social Justice	<b>Morris</b>	John Jones C	Appropriate Conduct
11:05 a.m.	Computer-based Learning Center	<b>Smyth</b>	LC1	Computer-based resources and electronic thesis submissions
1:00 p.m.	Graduate Student Pictures	<b>Beverly</b>	Biomedical Commun.	Individual pictures for group display
1:30 p.m.	Alumni Office	<b>Nine</b>	2267 HSS Conf. rm.	Alumni Affairs
6:30 p.m.	GSO Dinner/Social		Minnear's residence	MD/PhD, PhD, MS students & friend, faculty (casual attire)
<i>Wednesday August 18</i> 7:30 a.m.	<i>*Continental Breakfast* Provided</i>		2267 HSS Conf. rm.	
8:00 a.m.	Radiation Certification	<b>Razmianfar</b>	LC1	Online, 3-hour initial certification
11:00 a.m.	Biohazards Chemicals	<b>Cockburn, Graham-Sims</b>	John Jones 3	Safe laboratory practices & intro. to online certification
12:00 p.m.	Goals & Expectations	<b>Minnear</b>	John Jones C	Achievable goals and expectations
12:30 p.m.	Study Skills	<b>Minnear</b>	John Jones C	Survival Skills
1:00 p.m.	Online training and exam for Research involving Humans, Transgenic Animal Facility	<b>Minnear</b>	John Jones C	Human Research Ethics, HIPPA Research Module, Tour of animal facility
4:00 p.m.	Picnic	Catered	Krepps Park	Students & Faculty

## **MD/PhD Medical Scientist Program**

The Medical Scientist Program (MSP) is affiliated with the School of Medicine at the West Virginia University Robert C. Byrd Health Sciences Center. The MSP is designed to prepare you for an academic career that combines the practice and teaching of clinical medicine with investigation of mechanisms of disease. The long range goal is to train you to be an independent investigator and function as a physician scientist. The PhD portion of training will provide you with the research skills and knowledge to complete an original PhD project and publish in peer-reviewed journals. Original research is defined as obtaining original data that makes novel and important contributions to knowledge in the broad field of biomedical sciences.

As an MD/PhD student, you will spend four years in medical school, the first two years (MED1&2) taking the basic medical curriculum and the last two years (MED3&4) in medical clerkships. The PhD portion of training encompasses the years in between taking approximately four years (GRAD1-4). In summers before MED1&2, you will conduct two research rotations with the objectives of selecting a faculty mentor and one of eight Ph.D. degree-granting programs; seven programs are in the Interdisciplinary Graduate Programs in the Biomedical Sciences and one program is in the Interdisciplinary Graduate Program in the Public Health Sciences.

### **Administration of the MSP**

Director:	J. Michael Ruppert, M.D., Ph.D. Professor of Biochemistry 212 Erma Byrd Biomedical Research Building Phone: (304) 293-5246 Cell: (205) 249-3119 Email: <a href="mailto:mruppert@hsc.wvu.edu">mruppert@hsc.wvu.edu</a>
Administrative Coordinator:	Fred L. Minnear, Ph.D. Assistant Vice President for Graduate Education 2267 Health Sciences Center South Phone: (304) 293-6229 Cell: (304) 692-2860 Email: <a href="mailto:fminnear@hsc.wvu.edu">fminnear@hsc.wvu.edu</a>
Administrative Assistant:	Penny Phillips 2271 Health Sciences Center South Phone: (304) 293-6231 Email: <a href="mailto:pPhillips@hsc.wvu.edu">pPhillips@hsc.wvu.edu</a>
Internal Advisory Committee:	G. Anne Cather, M.D., Associate Dean of Student Services Laura Gibson, Ph.D., Professor of Microbiology and Immunology and Deputy Director of Mary Babb Randolph Cancer Center Charles Rosen, M.D., Ph.D., Professor of Neurosurgery Uma Sundaram, M.D., Professor of Medicine and Chief of Digestive Diseases

Administrative Assistant: Beth Ann McCormick

### **MSP Admissions Committee**

Includes the Director, Administrative Coordinator, Internal Advisory Committee, Alan Ducatman, M.D., Chair, Community Medicine, and Student Representatives – Audrey Jajosky, PhD 2 and Daniel Vanderbilt, PhD 1

### **Office of Research and Graduate Education**

Fred L. Minnear	2267 HSS	293-6229 692-2860 (cell)	<a href="mailto:fminnear@hsc.wvu.edu">fminnear@hsc.wvu.edu</a>
Claire Noel	2271 HSS	293-7116	<a href="mailto:cnoel@hsc.wvu.edu">cnoel@hsc.wvu.edu</a>
Lea Ann Defenbaugh	2271 HSS	293-4437	<a href="mailto:ldefenbaugh@hsc.wvu.edu">ldefenbaugh@hsc.wvu.edu</a>
Penny Phillips	2271 HSS	293-6231	<a href="mailto:pPhillips@hsc.wvu.edu">pPhillips@hsc.wvu.edu</a>

**NOTE:** We will communicate with you throughout your training via your mix email address.

### **Directors of the 8 Graduate Programs**

Biochemistry & Molecular Biology	Lisa Salati, Ph.D.
Cancer Cell Biology	Scott Weed, Ph.D.
Cellular & Integrative Physiology	Robert Brock, Ph.D.
Exercise Physiology	John Hollander, Ph.D.
Immunology & Microbial Pathogenesis	John Barnett, Ph.D.
Neuroscience	Albert Berrebi, Ph.D.
Pharmaceutical & Pharmacological Sciences	Jason Huber, Ph.D.
Public Health Science	Keith Zullig, Ph.D.

### **Admission into the MSP**

Admission into the MSP requires acceptance into both the MD program and the MSP. Applicants initially apply via the AMCAS (American Medical College Application Service) application process, identifying on the application form their interest in the MD/PhD degree and describing their reasons for obtaining this dual degree and their past research experiences. Students already enrolled in the WVU School of Medicine may apply directly to the program. Concurrently, applicants fill out the online application to the MSP, which is sent with the secondary application for medical school. The Director and Administrative Coordinator screen all applications to the MSP based on GPA, MCAT scores, personal statement, letters of references, past research experience, and a clear career vision as a physician scientist. Qualified applicants are invited for a fully paid, 2.5-day visit/interview to the Health Sciences Center from October through December. Visits include a tour of Morgantown and WVU, dinner and social with faculty and resident students, tour of facilities at the Health Sciences Center, meetings with prospective student-selected faculty, and interviews with the members of the MSP Admissions Committee and MD Admissions Committee. Evidence of passion for research and patient care are qualities expected of successful interviewees. Following the visit/interview, the MSP Admissions Committee reviews the application and interview of each invited student and makes the final decision on acceptance into the MSP. The Director and Administrative Coordinator of the MSP Admissions Committee and the

Associate Dean for Student Services sign the letter of acceptance. Acceptances are made on a rolling basis from October through February.

### **Financial Support**

You will receive a stipend (currently \$25,000), full tuition coverage, and WVU student health insurance, the latter includes hospitalization and disability. The Office of Research & Graduate Education pays the stipend for the 1<sup>st</sup> three years. By May of Year 2, students are required to select a faculty mentor who has sufficient monies from extramural sources such as NIH and NSF to pay the stipend and research supplies. The 2<sup>nd</sup> year after acceptance into a mentor's laboratory, the stipend will be paid from the mentor's grant, a pre-doctoral fellowship, which you are expected to write, a T-32 institutional training grant, or from a combination of all three types of support. If these financial sources become unavailable, your department, your specific graduate program, or the Office of Research & Graduate Education will provide your stipend support.

This financial support is reviewed annually and is available for the seven- to eight-years of your training period, requiring that you remain in good academic standing with regard to academics and research performance and demonstrate continuous progress toward completion of the MD/PhD degree. More specifically, you must obtain all satisfactory grades and narrative evaluations by faculty in the MD portion of your training and maintain a GPA of 3.00 or greater and perform at a high level in research in the PhD portion. We expect our MD/PhD students to achieve in the top half of the medical class. In addition, you must successfully defend the dissertation proposal and dissertation research.

**NOTE:** Continued stipend support is reviewed annually and is dependent on good academic standing and demonstration of excellent in research and progress toward completion of dissertation research.

**NOTE:** It is essential to have a faculty mentor to conduct PhD dissertation research. Lack of fulfillment of this requirement may lead to dismissal from the MSP.

**NOTE:** The MSP is a full-time commitment. Any outside employment will detract from academic efforts. The first day in the MSP is the first day of your career as a physician scientist!

### **Health Insurance**

Coverage of health insurance starts on August 12. We will provide a temporary health insurance card the week of orientation. Students should receive an official health insurance card in the mail later in the year. We will submit a list of names to the insurance company on ~September 20. Students can also go online at [www.uhcsr.com](http://www.uhcsr.com) later in the year to print off Coverage Receipts, ID Cards, Claims Status, and other services. The insurance only covers you. If you wish to add family, you can purchase extra insurance. The insurance covers up to \$100,000 for illness or injury with a \$350.00 deductible per insured. The cost (we pay) per student is \$947.00 and covers from August 12, 2010 – August 11, 2011. An on-campus representative can be contacted at 304-293-2315.

Submit all claims or inquiries to:  
United HealthCare Student Resources at [customerservice@uhcsr.com](mailto:customerservice@uhcsr.com)  
1-800-767-0700

**Fees**

You must pay fees each semester. Payment may be made by credit card or using banking information (account & a.b.a/routing numbers) for an electronic check payment.

### Timeline of MD/PhD Activities

#### Admissions

January Interviews completed  
 February Acceptance letters sent (decision made by MD/PhD Admissions Committee)

#### Year 1

July 1 MED1 Stipend paid by Office of Research & Graduate Education  
 Orientation & Matriculation  
 1<sup>st</sup> research rotation - 6 weeks with potential mentor  
 Selection of Big Sister/Big Brother  
 August Orientation with MD's - 2<sup>nd</sup> week  
 Begin medical school classes – 3<sup>rd</sup> week  
 Orientation (partial) with PhD's – 3<sup>rd</sup> week  
 Monthly MD/PhD forums for all years of training - research, career development, alumni visits, etc.  
 May 2<sup>nd</sup> research rotation - 7 weeks with potential mentor

#### Year 2

August MED2 Stipend paid by Office of Research & Graduate Education  
 Begin 2<sup>nd</sup> year medical school classes – 2<sup>nd</sup> week  
 Selection of an Academic Physician Career Advisor – Grand Rounds, physician shadowing, residency selection assistance, career advice  
 April/May Selection of faculty mentor for dissertation research. Mentor must have an active research program with extramural support. Mentor must be in-house or an adjunct faculty from NIOSH.  
 June/July USMLE Step1 examination. Must pass Step1 before entering PhD portion of training

#### Year 3

GRAD1 Stipend paid by Office of Research & Graduate Education  
**USMLE Step1 substitutes for the graduate qualifying (comprehensive exam)**  
 July Begin PhD portion of training. Director meets with student and mentor to outline pertinent criteria for successful completion of the PhD degree and successful reentry to the 3<sup>rd</sup>-year clerkships  
 August Enrolled in advanced courses required by graduate program  
 Enrolled in 13-week ethics course “Discussions on Scientific Integrity”  
 December Submission of the Plan of Study form  
 Selection of dissertation committee – one member must be an academic physician. Committee must meet 2x/year with the student. Dissertation Committee and Graduate Program Committee write student assessments.  
 May Enrolled in “Scientific Writing” - preparation of NIH predoctoral fellowship

#### Year 4

GRAD2 Stipend paid by faculty mentor or training grant or fellowship  
 Defense of research proposal and submission of NIH predoctoral fellowship  
 Manuscript preparation and submission

#### Years 5&6

GRAD2 Stipend paid by faculty mentor or training grant or fellowship  
 Manuscript preparation and submission

April	1 <sup>st</sup> -author manuscript based on dissertation research must be in press or published before qualified to defend dissertation research Presentation of Case Study to MD/PhD monthly forum Defense of Dissertation Research. Must defend a quality PhD dissertation before entering 3 <sup>rd</sup> -year clerkships Preference for re-entry is July (Block 1) Clinical shadowing & physical diagnosis - preparation for entry into clerkship years. Must spend at least a month shadowing preceptors and practicing physical diagnosis
<u>Year 7</u>	MED3 Stipend paid by Office of Research & Graduate Education or fellowship
July	3 <sup>rd</sup> -year clerkships
<u>Year 7</u>	MED4 Stipend paid by Office of Research & Graduate Education or fellowship
July	4 <sup>th</sup> -year clerkships, electives, residency interviews
December	Pass School of Medicine CKF,
March	Pass USMLE Step1 CK and CS
May	Residency match <b>Graduate with M.D., Ph.D.</b> – second week

### Policy Changes and Activities since 2003

2004	Stipend. Paid by faculty mentor starting year 4 or the second year in the laboratory
2004 (fall)	STEP1 examination. Must pass STEP1 before entering PhD portion of training
2005	First-author manuscript. Must have a first-author manuscript based on dissertation research in press or published before defense of dissertation research. For those students who entered the program after 2005.
2005	Return to 3 <sup>rd</sup> -year clerkship. Clerkship at the Morgantown campus. First clerkship is not Internal Medicine or Surgery
2006 (spring)	Clinical shadowing & physical diagnosis - preparation for entry into clerkship years. Must spend at least a month shadowing preceptors and practicing physical diagnosis
2006 (fall)	Pay-back clause stated in acceptance letter
2006	Dissertation Committee. One member must be an academic physician
2007 (spring)	Defense of Dissertation Research. Must defend a quality PhD dissertation before entering 3 <sup>rd</sup> -year clerkships. July (Block 1) is preference for entry.
2007 (fall)	Director meets with student and mentor. This meeting outlines pertinent criteria for successful completion of the PhD degree and successful reentry to the 3 <sup>rd</sup> -year clerkships
2009 (spring)	New Director of MD/PhD Scholars Program. J. Michael Ruppert, M.D., Ph.D. appointed director
2009 (spring)	MSTP submitted, May 29, 2009. Dr. Ruppert principal investigator



MED1:, continued

Winter Module: 15 weeks

Human Structure	NBAN 703	17 credits
PBL	continuation from Fall	
PDCI-1	CCMD 746	

**Human Structure (NBAN 703)**, 17 credits. Integrated approach combining human gross anatomy, microanatomy and embryology. Human cadaver dissection, microscopic anatomy of cells, tissues and organs with application to human health and disease.

**Problem Based Learning.** Continuation from Fall Module.

**Physical Diagnosis & Clinical Integration-1 (CCMD 746).** Second-semester PDCI-1 course.

Spring Module: 7 weeks

Neurobiology	CCMD 775	7 credits
PBL	continuation from Winter	
PDCI-1	CCMD 746	continuation

**Neurobiology (CCMD 775)**, 6 credits. Introduction to basic structure and function of the human nervous system with a focus on clinical application of basic information. Emphasizes the normal neurobiology (at the cell and systems level) essential to understanding human behavior and to recognizing abnormality seen in clinical practice.

**Problem Based Learning.** Continuation from Winter Module.

**Physical Diagnosis & Clinical Integration-1 (CCMD 746).** Continuation of second-semester PDCI-1 course.

2<sup>nd</sup> Summer:

Starts 3<sup>rd</sup> week in May. 2<sup>nd</sup> summer rotation  
 Research                      BMS 797                      6 credits

### MED2 Activities

MED2:

Medical school classes start 2<sup>nd</sup> week of August

Fall Semester: Integrated Courses Throughout the Year:

Immunity, Infection, & Disease	MICB 701	12 credits
Mechanisms of Human Disease	PATH 751	12 credits
Medical Pharmacology	PCOL 761	7 credits
PDCI-2	CCMD 721	6 credits

Non-integrated Course – Fall Semester:

Behavioral Sci & Psychopathology	CCMD 740	5 credits
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**Immunity, Infection, and Disease (MICB 701)**, 12 credits. Integrated approach to the study of infectious disease in humans, with focus on innate and acquired immunity, mechanism of pathogenesis of infectious microorganisms, transmission, and treatment.



research – consult with mentor and graduate director

Fall Semester:

Specific Graduate courses

Introduction to Biomedical Research

BMS 700 1 credit (S/U)

Ethics course – Discussions on Scientific Integrity

Tuesdays 11:30 pm 201 Erma Byrd

Spring Semester:

Specific Graduate courses

Summer Semester:

Scientific Writing BMS 720 2 credits

Wednesdays 1:00 pm 2094 HSN

Weekly lectures and complete assignments in two separate writing skills: a scientific journal article and an NIH pre-doctoral fellowship grant.

### **GRAD2 Activities**

GRAD2: Dissertation Proposal Defense  
Submission of Pre-doctoral Fellowship  
Graduate Program Courses - seminar, journal club, and research – consult with mentor and graduate director  
Fall, Spring, and Summer Semesters:  
Specific Graduate courses

### **GRAD3-4 Activities**

GRAD3&4: Manuscript preparation and submission  
Submission of 1<sup>st</sup>-author manuscript  
Presentation of Case Study to MD/PhD monthly forum  
Graduate Program Courses - seminar, journal club, and research – consult with mentor and graduate director  
Fall, Spring, and Summer Semesters:  
Specific Graduate courses

April Defense of Dissertation Research.  
May Clinical shadowing & physical diagnosis  
July 3<sup>rd</sup>-year Clerkships (Block 1)

### **MED3 Activities**

MED3: 3<sup>rd</sup>-year Clerkship. Registration with Office of Student Services

You will conduct the 3<sup>rd</sup>- and 4<sup>th</sup>-year clerkship in Morgantown. You must spend a designated period of time in each of the major clinical disciplines. The order in which you will take the clerkships is determined for each individual student – your first clerkships will not be in Internal Medicine or Surgery. You may enter the 3<sup>rd</sup> year of the curriculum only during Block #1 (summer semester), Block #2 (fall semester), or Block #4 (spring semester).

Clinical Clerkship	Length of Time
OB/GYN	8 weeks
Pediatrics	8 weeks – 4 weeks of inpatient & 4 weeks of outpatient
Psychiatry/Neurology	8 weeks – 6 weeks of Psychiatry & 2 weeks of Neurology
Family Medicine	8 weeks, includes 4 weeks of <a href="#">rural/community RHEP experience</a>
Internal Medicine	8 weeks
Surgery	8 weeks

### MED4 Activities

Med 4: 4<sup>th</sup>-year Clerkship. Registration with Office of Student Services  
 By December 31 Deadline for taking USMLE Step 2 CK (clinical knowledge) and CS (clinical skills) for the 1<sup>st</sup> time for May graduation

The 4<sup>th</sup>-year is partially structured and partially elective. You will work with a faculty/professional staff advisor to select the program best suited to your abilities and goals. Thirty-four weeks (8.5 blocks, where a block is defined as 4 weeks) of 4<sup>th</sup> year is required, and elective rotations and two weeks of preparation for USMLE Step 2 are required and must be successfully completed to graduate. Time for interviewing and vacation is in addition to the required 34 weeks. Sixteen weeks (4 blocks) of the 4<sup>th</sup> year are committed to required rotations that must be completed with WVU faculty or at an approved RHEP site in West Virginia. The remainder of the 4<sup>th</sup> year or 16 weeks (4 blocks) is elective. Selected, in-state elective rotations must be approved by the MD Curriculum Committee. You are limited to no more than 12 weeks (3 blocks) of elective rotation time in the same specialty or subspecialty area. Elective research rotations (internal or external) are limited to 4 weeks (one block) and must have prior approval of the Committee on Academic and Professional Standards (CAPS).

Study Item	Length of Time	Comments
Sub-internship	4 weeks	<b>Internal Medicine or Surgery or Pediatrics or Family Medicine</b>  Surgery must be completed in an area of general/oncology or trauma/emergency. Surgical subspecialties will not fulfill this requirement.
Critical Care	4 weeks	2 weeks of Anesthesiology and 2 weeks of one of the following: MICU, PICU, SICU, or NICU
RHEP, Rural Health	8 weeks	In an approved <a href="#">RHEP site in WV</a> with a clinical faculty member. One month MUST be in a primary care discipline defined as Family Medicine, Pediatrics, Internal Medicine, Ob/Gyn, or Emergency Medicine. The two 4-week blocks in RHEP do not need to be consecutive.
Electives	16 weeks	
USMLE Step 2 Prep	2 weeks	Taken prior to the deadline for testing set by the Committee on Academic and Professional Standards or no credit will be given. If this time is not used prior to the test date, then you will be required to complete an additional 2-week elective to meet the graduation requirements. This time may not fall during one of the required rotations.

Other	4 weeks	Interviewing for residency, vacation, etc.
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Questions about scheduling should be addressed to: [Brenda Michael](#)

### **Cellular Methods - CCMD 793T**

Cellular Methods, syllabus outlined below, is taken by 1<sup>st</sup>- year PhD students in the Interdisciplinary Graduate Programs in the Biomedical Sciences. The course highlights Basic laboratory techniques. If you would like to learn more of these techniques, it is encouraged that you sit in on this course during the 1<sup>st</sup> semester of GRAD1.

**NOTE:** We are in process of organizing a blog on SOLE for graduate students to talk to and learn from each other about methodologies and other research items.

Fall Semester, 1 credit (S, U)

Course Coordinator: William Wonderlin, 293-3159, [wwonderlin@hsc.wvu.edu](mailto:wwonderlin@hsc.wvu.edu)

When: Wed., 11:00 – 11:50 a.m.

Where: 1905 Learning Center

Date	Week	Title	Instructor
08/26	1	Electrophoresis/SDS PAGE/Western Blot	Sokolov
09/02	2	Protein quantitation	Graber
09/09	3	RNA isolation and quantitation	Salati
09/16	6	Fluorescence methods	Wonderlin
09/23	4	Light Microscopy I	Martin
09/30	5	Light Microscopy II	Martin
10/07	7	Immunohistochemistry	Berrebi
10/14	8	Electron Microscopy	Berrebi
10/21	9	Cellular fractionation and organelle separation	Wonderlin
10/28	10	Expression systems/Transfection	Rajendran
11/04	11	Tracking trafficking in cells	Wonderlin
11/11	12	Protein purification	Gunther
11/18	13	Protein-Protein and Protein-Nucleic Acid interactions	Rupert
11/25		<i>Thanksgiving break</i>	
12/02	14	Proteomics	
12/09	15	X-Ray crystallography	Shiemke

### **Grading System and Reporting of Grades**

**Medical education:** You must obtain all satisfactory grades and narrative evaluations by faculty in the MD portion of your training. Grades given are Honors, Satisfactory, or Unsatisfactory. For most courses, passing requires a percentile score of 75 or higher and a passing percentile on the Shelf exam. Please be aware that the baseline percentiles for passing has been slowly increasing in the past years. We expect our MD/PhD students to achieve in the top half of the medical class.

**PhD education:** All approved courses are graded as follows: A, B, C, D, or F and S (satisfactory) or U (unsatisfactory). The Course Coordinators may submit letter grades

with + or -, but the GPA is calculated using only the basic letter grade. Grades of D and F are not acceptable for course credit toward a graduate degree but will be used in calculating the GPA.

The grade of I (incomplete) is given only when the instructor believes that the course work is unavoidably incomplete. All incompletes must be removed within the next semester of the calendar year. However, an individual instructor may require their removal within a shorter time period. If you receive an incomplete grade, you must contact the faculty member who issued the incomplete to discuss its removal. If an incomplete is not rectified within the next semester, it will be changed to a grade of F. Incomplete grades require a Grade Modification Form that should be submitted within one academic year to the Office of Research and Graduate Education. The instructor of the course, the director of the graduate program, and the Assistant Dean for Graduate Studies must sign these forms.

**NOTE:** You cannot graduate with a D, F, or U grade on your transcript. You must retake the course and improve the grade to graduate. A grade of U is calculated into the GPA and equals an F or O quality points.

### **Evaluation of Student Progress**

**Medical education:** At the end of each semester of MED 1&2, your progress is evaluated by the Course Coordinators and members of the Committee on Academic and Professional Standards (CAPS) for the 1<sup>st</sup>, two years of medical school. The same occurs during the 3<sup>rd</sup>- and 4<sup>th</sup>-year clerkships (MED 3&4), except Clerkship Directors replace the Course Coordinators. At the meetings, the name of each student is read. If a student has an Unsatisfactory grade due to a poor performance on the course exams or the shelf exam or has a professionalism issue, then the roll call stops and the Committee discusses the student's issue. The Committee votes on Findings of the issue then on Action. With the latter, students may be placed on the 'May' or 'Will' Probation, the latter leading to possible dismissal if an infraction is repeated, or may be recommended for dismissal to the Dean of the School of Medicine. Poor student performance in coursework may result in the student having to retake an entire year of the curriculum. On a positive note, the Committee also acknowledges the excellent performances of the students, albeit having a certain number of honors or having demonstrated excellence in some other fashion.

The Administrative Coordinator of the MSP is a member of this committee.

**NOTE:** If an MD/PhD student is placed on probation and has to repeat a year of medical school, the student is suspended from the MSP with loss of stipend and tuition coverage. Following successful passage of the repeated year, the student may be fully reinstated upon successful petition to the Admissions Committee of the MSP.

**PhD education:** When you have successfully completed and passed the USMLE Step 1, you are eligible to enter one of eight graduate programs – seven in biomedical sciences and one in public health sciences.

Evaluation during the PhD portion of training will occur at multiple levels, by the course coordinators, mentor, director of your graduate program, and the Director and Internal Advisory Committee of the MSP. Also, your progress is monitored every six months by the Academic Standards Committee of the biomedical and public health sciences

programs. The Office of Research and Graduate Education keeps data (University requirements) on your progress, and twice a year provides this information to the Director and Internal Advisory Committee of the MSP as well as the graduate directors of each of the eight Ph.D. training programs.

The members of your Dissertation and Graduate Program Committees meet 2x and 1x, respectively a year to evaluate your research performance. The chairs of these committee writes a letter of evaluation, with emphasis on your performance at the committee meeting, and discusses the evaluation with you. After agreement, you sign and date this letter of evaluation. The letter is provided to the program director and mentor (if not the chair) and is put in your file in the program's office and in the Office of Research and Graduate Education.

Starting in July of Year 2 of the program, you will be required on an annual basis to fill out an Advanced Graduate Student Individual Development Plan. In this development plan, you will identify your progress-to-date, outline your plans for the coming year, and state your career goals & how you plan to attain them. This development plan will be evaluated by your mentors, program graduate director, program graduate committee, and the Director and Internal Advisory Committee of the MSP.

**NOTE:** Failure to maintain a GPA of 3.00 or demonstrate satisfactory progress toward completion of Ph.D. dissertation research may lead to loss of stipend and/or dismissal from the MSP.

### **USMLE Step1&2**

**Step1** : Upon completion of MED2, you are required to take the Step1 examination in the month of June. Upon notification of passage of Step1 (in August), you have officially started GRAD1 or the PhD portion of training, although we expect you to start conducting research before notification of passage of Step1. If a successful Step 1 score is not attained after the first try, you will have a second (and last) opportunity: if taken before September and passed, you will remain in good academic standing in the MD/PhD program. If you choose to retake the examination after September, you will be suspended from the program without stipend to thoroughly prepare for the examination. Upon successfully passing Step 1, you will be reinstated in the program with stipend. If you fail Step 1 after the second attempt, you will be dismissed from the MD/PhD program.

**Step 2:** This examination is taken at the end of the 3<sup>rd</sup>-year clerkships. It is the opinion of the MD/PhD Advisory Committee that you should not fail Step 2 of the USMLE. Thus, if you fail this examination, you will be immediately suspended from the program without stipend for a period of time not to exceed three months. Upon successful passage of Step 2 within the three-month time period, you will be allowed to return to the program with stipend. If you are unsuccessful on your second attempt, you will be dismissed from the MD/PhD program.

**NOTE:** MD students are allowed three attempts at passing the Step exams. However, you are allowed two attempts.

**NOTE:** You are required to have taken and passed Step 1 USMLE before starting GRAD1 or the 3rd year of the curriculum. A passing score is required to remain in the third year of the curriculum.

**NOTE:** You are required to have taken Step 2 CK and CS USMLE for the first time no later than December 31st for those students planning on a May graduation, no later than January 15th for a June graduation, no later than March 15th for an August graduation, and no later than July 15th for a December graduation. This includes both Step 2 CK and CS.

**NOTE:** You must also take and pass the School of Medicine Clinical Competency Exam (CPX). This exam will be scheduled by the Office of Student Services. The exam is designed to be comprehensive of all the clinical disciplines covered during the 3<sup>rd</sup> year of the curriculum, and will be administered during the 4<sup>th</sup> year of the curriculum. It is an OSCE style examination, using standardized patients.

**[NOTE]<sup>2</sup>:** You will have 10 years, from the date of your 1<sup>st</sup> take of USMLE Step1, to complete all Step exams, 1-4.

## Research Rotations and Mentor Selection

### Research rotation

Your first rotation begins July 1 and lasts until the first week of August, a week before orientation for medical school, the second week of August. The second rotation will occur during the summer after the first year. To assist you in selection of your 1<sup>st</sup> rotation mentor, we had you visit us for a second time during spring before enrollment. At this visit, you spent time with faculty who you were interested in rotating with. During the 1<sup>st</sup> year of medical school, you will have the opportunity to check-out the research of faculty who will, some of them, discuss their research at our monthly MD/PhD forums and who are often available to discuss research. Also, you will have the opportunity to participate in the rotation forums the 1<sup>st</sup>-year PhD students attend during the month of September. The Office will inform you of those dates, usually the 2<sup>nd</sup> and 3<sup>rd</sup> week of September, and the time in the afternoon or evening. A third rotation is also possible after completion of the USMLE Step 1 examination, in June of Year 2. While it is recommended that you conduct two rotations, if you match well with your first rotation mentor you may select that faculty member as your dissertation mentor.

Before each of your research rotations, we will ask you to submit three names of faculty with whom you would like to work with to complete your research dissertation. While you will most likely receive your first choice, we reserve the option to match you with your second or third choice based on criteria including faculty funding, research interests, and the willingness of the faculty member to accept a new student in his/her laboratory. .

The objectives of these research rotations are:

1. to aid in choosing a laboratory for your dissertation research,
2. to learn the research area of other laboratories in the Health Sciences Center  
so that you can interact scientifically with the members of that laboratory,
3. to aid you in selecting faculty members for your dissertation committee, and
4. to learn techniques involved in laboratory research.

Before the start of each rotation, you should meet with the faculty member and set up a daily work schedule. At this time, you may also receive additional materials to read in preparation for your experiments. Remember, faculty members have other obligations - do not wait until the last minute to meet with them.

**Expectations:** During the laboratory rotation, you will be expected to

- keep a regular work schedule in the laboratory,
- spend at least 10 hours per week in the laboratory, and
- read the literature pertinent to that laboratory.

By the end of the rotation, you should

- know what the major questions are for that laboratory,
- explain how your work fits into the goals of the laboratory,
- describe the assays you did including knowing the purpose for all steps and reagents,

- appropriately interpret your data, and
- know what the major pitfalls are in arriving at these interpretations.

You are expected to leave your laboratory notebook with the laboratory at the end of the rotation. Paper and notebooks for this purpose will be provided to you by each of the laboratories. The laboratory notebook should document your activities in sufficient detail so that your experiments can be repeated without your consultation.

**NOTE:** That now and during your dissertation work, the laboratory notebook(s) is the property of the laboratory. It should not leave the laboratory at any time. With permission of the laboratory mentor, you may make copies of the notebook for your personal use.

**NOTE:** Before your second visit in spring, we will provide you a list of faculty who are available for research rotations.

**Grading:** Laboratory rotations are graded A, B, or C and include a narrative evaluation of your strengths and weaknesses.

The criteria for assigning a letter grade include keeping a regular work schedule as agreed upon at the start of the rotation, enthusiasm for research, understanding the research questions addressed by the laboratory, excellent work-ethic, reading the literature relevant to the laboratory research, conducting experiments in an appropriate and timely manner, analyzing the data, maintaining records in your laboratory notebook of the experimental procedures and outcomes, summarizing and discussing results in the form of figures, tables, and text, and interacting well with others in the laboratory.

If you fulfill these criteria, you deserve an A. If you satisfy most of these criteria, you deserve a B, and if you do not perform up to these expected standards, you will receive a C. A grade of B or C is probably an indication that the faculty mentor is not interested in accepting you into the laboratory. A grade of C in graduate studies is considered failing, in practical terms.

During each rotation, you will regularly attend seminars and a journal club pertinent to the work in the laboratory or approved by the laboratory mentor. The letter grade for research rotations includes active participation in a journal club.

**NOTE:** At the end of the rotation, your rotation mentor will give you a letter grade and write an assessment/evaluation of your performance. He/she will discuss this with you and both you and your mentor will sign and date the evaluation form.

**How to choose your Ph.D. dissertation laboratory:** After your 2<sup>nd</sup> rotation, you will select a laboratory for your dissertation work. You should discuss the research project you will be undertaking with the appropriate faculty. By early May, you must submit to the Internal Advisory Committee of the MSP at least two names of faculty who you would like for a dissertation mentor.

**NOTE:** Acceptance into a laboratory must be by mutual consent of you and that faculty member and that the faculty member has the final say. In some cases, a faculty member's schedule may change and thus they may no longer be willing to take on a student. This should not be taken personally.

**REMEMBER:** It is a requirement to match with a faculty mentor, who will guide you to completion of your Ph.D. dissertation research. You are responsible to find/match with a faculty mentor. Lack of fulfillment of this requirement may lead to dismissal from the MSP.

### **Selection of Faculty Dissertation Mentor**

By May of Year 2, you will have acquired the necessary didactic knowledge and research experiences to make an informed selection of a faculty mentor and specific graduate program. You will be asked to submit in rank order, two names of faculty mentors. The Director and Internal Advisory Committee will assist you in the selection of a mentor. Remember the final decision rests with the faculty mentor.

Graduate Faculty available to become Dissertation (Research) Mentors are selected by the Assistant Dean for Graduate Studies in consultation with the graduate directors and the financial officer in the Office of Research and Graduate Education. Potential mentors must: 1) have an active research program that is supported extramurally by federal funds; 2) have financial support for supplies; 3) have financial support for your stipend from GRAD2 to completion of the Ph.D. degree; and 4) want to mentor a new student.

**NOTE:** It is a requirement to match with a faculty mentor, who will guide you to completion of your Ph.D. dissertation research. You are responsible to find/match with a faculty mentor. Lack of fulfillment of this requirement may lead to dismissal from the MSP.

### **Selection of Graduate Program**

You should make the selection of a graduate program based on your individual career interests and the advice of your faculty mentor. You can select anyone of the eight graduate programs available to MD/PhD students. The Graduate Directors ask that two criteria, in addition to good academic standing be fulfilled for entry into a graduate program: 1) your research broadly fits with the research theme of the program and 2) your mentor participates in some way in the activities of the program. Successful entry into a graduate program requires approval of the Academic Standards Committee based on the recommendation of the graduate program of choice.

Upon entry into a specific Ph.D. training program, you are now under the auspices of that graduate program until completion of the Ph.D. degree.

### **SOLE**

Many of the faculty teaching the courses in the first-year and throughout your graduate program use SOLE to convey course material to you and your fellow students. At the beginning of Year 1, we (Office of Research and Graduate Education) will provide you the necessary information (login - email address - and password) to access SOLE via the address below.

<http://intranet.hsc.wvu.edu>

### **Transfer of Graduate Credits/Courses**

For the PhD, you may transfer all graduate credits with a B- grade or better that apply directly to your graduate training. Only graduate credits earned at academic

institutions accredited at the graduate level may be transferred. WVU HSC Admissions & Records must receive an original transcript from the transferring institution. Transferred credits/courses may substitute for courses required by our eight Ph.D. training programs.

When transferring, please provide information about the course(s) you want to transfer and include the name of the institution with address and zip code, the course number and name, and course description as published by that institution. Please make reference to the WVU course it may replace if it meets a course requirement. Attach the original transcript from the transferring academic institution to this form and deliver in hand to the Office of Research and Graduate Education (2271 HSS) for final approval. Your Graduate Program Scholarship Committee with the assistance of the Administration of the MSP will make final decisions regarding substitution of required courses with transferred courses.

While in the research-portion of training, you must register for a minimum of 9 credits in the fall and spring semesters and for a minimum total of 6 credits in summer semesters to receive a stipend and full tuition coverage. You must be registered in every semester until completion of the dissertation defense, or request a leave of absence.

### **Work Schedule, Vacations, Sick Leave**

The first day of your research rotation (in the summer of before the start of medical school) is the first day of your career as a physician scientist. It is a big step-up from your undergraduate years and requires your ultimate commitment. Your first two years of study in medical school focuses primarily on didactic education. Therefore, there are essentially set times for classes and holidays that follow the medical school calendar. In the second and third summer semesters after the first and second years of medical school, you will conduct your second research rotation and take the USMLE Step 1 examination and the second part of Scientific Writing, so extended vacations during the summer are not permitted.

If you are sick for a journal club, class, or exam, please inform the faculty member in charge of that activity. This can be accomplished by phone or email or in person and should be done before the class or meeting. Do not assume that informing your mentor or a single faculty member of your absence will result in that absence being communicated to other faculty. Each faculty member with whom you have a class or other obligation must be informed individually for each absence.

Please become familiar with any policies with regard to absenteeism in the syllabi of your courses in medical school, your chosen Ph.D. graduate program, and in your clerkships. Once you have entered a specific graduate program, the vacation schedule for the undergraduate University no longer applies. Discuss the expectations on vacation and sick policy with your mentor. These expectations are likely to vary among research laboratories so it is important to establish these expectations upon entry in the laboratory. You should be aware that these decisions are made in your best interest and for safety and efficient conduct of experiments. Please note that the Ph.D. degree is awarded based on completion of original dissertation research and not based on length of time in the program. Thus, undue time spent away from the University will hamper your progress in research.

## SURVIVAL SKILLS

For a successful start to your Scientific Career as a Physician Scientist

**I am your Advocate – my door is always open**

**First day of your first research rotation is the first day of your career as a Physician Scientist**

**Plan a year or more in advance**

**You are responsible for your own education – we are here to guide you**

### SURVIVAL SKILLS

- 4 key words – communication, assertiveness (actively seek assistance from older students and faculty), passion, drive
- Key mottos – write early-write often; read-read-read

### **MED1-4**

- Study continuously – individually/in groups – read ahead.
- Network – study groups, older students, faculty – education and science is all about collaborations
- If your didactic foundation is poor, you are expected to catch up – ask for help from faculty and students – read the required text, etc. – ask for a tutor
- Be an information producer as well as an information consumer – teach others if you know it – teaching is the best way to learn
- Do not assume if you had the subject before that you will do well at the medical and graduate levels without studying
- Take personal time – do not reach diminishing returns
- Rotations – communicate, know what is expected
- Primary goal is to pass the medical school curriculum – you are expected to be in the top half of the class
- At the beginning of medical school, you will be asked to complete a survey on possible physical and mental issues. Please let us, Director and Internal Advisory Committee, know upfront if you have a physical or mental problem. Let us help you proactively – works better than retroactively.

### **GRAD1-4**

- Be assertive, communicate
- Learn the concepts – synthesize information – THINK
- Science is not fact
- Be creative, curious, imaginative, original
  - MAKE A CONTRIBUTION
- Be a team player – collaborate
- Challenge your mentor – above all communicate with your mentor
- Read-Read-Read
- Write early-write often - writing helps you formulate ideas and papers.
- Submit a Pre-doctoral Fellowship
- Write a review article with your mentor

- Work with your Dissertation Committee
- Publish – We require at least one First-Author manuscript based on dissertation research – publish more – quality
- In your 1<sup>st</sup> years in the laboratory, ideas and knowledge are 95% mentor and 5% student – when you finish this ratio should be reversed – a goal to strive for is to know more than your mentor in your area of research
- Ph.D. – based on original research accomplished and not on time served
- Research sites to know
  - <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?DB=pubmed>
  - [www.pubcrawler.ie](http://www.pubcrawler.ie)
  - <http://highwire.Stanford.edu>

### **Celebrations**

- Research Induction Ceremony
- Investitures – School of Medicine, School of Pharmacy

### **ADDITIONAL INFORMATION TO KNOW**

#### **Ground Rules**

- Vacation – arrange with mentor – informal rule, not more than 2 weeks.  
Difference between University breaks/vacations
- Sick – your responsibility to notify all appropriate faculty. Notify faculty before and not after.
- WVU policy of honesty and social justice

#### **Graduate Room**

- Evacuation routes
- Desk assignment and keys and card access
- Keep clean
- Textbooks in Graduate Room
- Card access to building
- Wireless

#### **Pay FEES every semester**

**Addresses and contact information – keep current in our Office**

#### **FINAL TRANSCRIPTS**

**REMEMBER: You are responsible for your own education – we are here to guide you**

## Scientific Integrity & Social Justice

The following are direct statements of WVU Policy.

Academic Dishonesty: Academic Dishonesty is defined to include, but is not limited to, any of the following:

1. Plagiarism: Plagiarism is defined in terms of proscribed acts. Students are expected to understand that such practices constitute academic dishonesty regardless of motive. Those who deny deceitful intent, claim not to have known that the act constituted plagiarism, or maintain that what they did was inadvertent are nevertheless subject to penalties when plagiarism has been confirmed. Plagiarism includes, but is not limited to, the following:
  - a. Submitting as one's own work the product of someone else's research, writing, artistic conception, invention, or design; that is, submitting as one's own work any report, notebook, speech, outline, theme, thesis, dissertation, commercially prepared paper, musical piece or other written, visual, oral or electronic/computerized material that has been copied in whole or in part from the work of others, whether such source is published or unpublished.
  - b. Incorporating in one's submission, without appropriate acknowledgement and attribution, portions of the works of others; that is, failing to use the conventional marks and symbols to acknowledge the use of verbatim and near-verbatim passages of someone else's work or failing to name the source of words, pictures, graphs, etc., other than one's own, that are incorporated into any work submitted as one's own.
2. Cheating and dishonest practices in connection with examinations, papers, and projects including, but not limited to:
  - a. Obtaining help from another student during examinations
  - b. Knowingly giving help to another student during examinations, taking an examination or doing academic work for another student, or providing one's own work for another student to copy and submit as his/her own.
  - c. The unauthorized use of notes, books, or other sources of information during examinations
  - d. Obtaining without authorization an examination or any part thereof
3. Forgery, misrepresentation, or fraud:
  - a. Forging or altering, or causing to be altered, the record of any grade in a grade book or other educational record.
  - b. Use of university documents or instruments of identification with intent to defraud.
  - c. Presenting false data or intentionally misrepresenting one's records for admission, registration, or withdrawal from the university or from a university course. Knowingly presenting false data or intentionally misrepresenting one's records for personal gain.
  - d. Knowingly furnishing the results of research projects or experiments for the inclusion in another's work without proper citation
  - e. Knowingly furnishing false statements in any university academic proceeding.

Social Justice: West Virginia University is committed to social justice. The faculty join with our colleagues throughout this campus to promote learning in a positive environment based on open communication, mutual respect, and non-discrimination. We

support open inquiry and communication between faculty and students in every aspect of our course. Discrimination of any kind violates the principles of mutual fairness and respect that are necessary to maintain a positive learning environment. We welcome suggestions on ways to improve, enhance or protect the rights of our students and faculty. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color, or national origin.

Disability: If you are a person with a disability and anticipate needing any type of accommodation in order to participate in the BSGP, please advise us and make appropriate arrangements with Disability Services (304-293-6700).

Academic Rights and Responsibilities: WVU courses follow the WVU Code of Student Rights and Responsibilities available online at <http://www.arc.wvu.edu/rightsa.html>.

## **Academic Probation and Appeal**

### Academic Probation, Suspension, & Dismissal

MSP students are in good academic standing if they achieve a 75 or better and satisfactory narratives on all medical courses and have a 3.00 GPA or better and A's and B's in research in the PhD portion of training, **note** – a "B" in research is a warning grade. A student is on academic probation if he/she has a GPA less than 3.00 or receives a C in research. Students must retake any course with a grade of D or below. You have one semester to achieve good academic standing if you are placed on probation.

Graduate programs have the authority to place a student on probation. Recommendations of suspension or dismissal from a graduate program are submitted by the Graduate Program Committee in writing to the Assistant Dean for Graduate Studies. The Academic Standards Committee of the Interdisciplinary Graduate Programs in the Biomedical and Public Health Sciences, comprised of the graduate directors, after discussions with the student, graduate director, and the Director and Internal Advisory Committee of the MSP will accept, modify, or reject the recommendation. Dismissal from a specific graduate program may lead to dismissal from the MSP, if no other program or faculty member will accept the student in question.

### Academic Suspension and Reinstatement

The following information is taken from the Graduate Catalog of the Health Sciences Center.

In Year 1, students are subject to suspension at any time if their GPA is below the allowable level. The Associate Dean for Graduate Studies has the authority to waive suspension in favor of probation if in his/her judgment the circumstances of individual cases so warrant.

Academic suspension identifies the status of a student who has failed to meet the University minimum standards and who has been notified formally of academic suspension by the Dean. If suspended, a student will not be permitted to register for any classes, including those in summer sessions, offered by the University for academic credit until the student has been officially reinstated. Minimum time for suspension is one academic semester but will not exceed one calendar year from the date of a student's first suspension. A student who has been suspended for academic deficiencies and who takes courses at other institutions during the period of suspension cannot automatically transfer such credits toward a degree at WVU upon readmission to the University.

During the semester immediately following the effective date of suspension, suspended students may petition in writing for reinstatement. The school petitioned shall establish the terms of reinstatement for successful student petitions. The school that reinstates the student removes the student's suspension restriction in Admissions & Records and accepts the student.

### Appeal of Dismissal for Failure to Meet Academic Standards

A decision to dismiss a student for failure to meet academic standards can be made only after the appropriate program committee or representative has counseled the student. Counseling should take place as soon as possible after discovery of the problem. After

the student is given a reasonable opportunity to correct deficiencies, there shall then be a formal review of the student's status by the appropriate program committee to determine whether the student shall be retained or dismissed. The student may provide the committee written documentation of his/her efforts to correct deficiencies.

A committee recommendation for dismissal, including any documentation provided by the student to the committee, shall be forwarded to the student's dean and to the student. Within 15 calendar days of receipt of the committee's recommendation, the dean shall inform the student and the student's program of his/her decision. A decision to dismiss shall specify whether the dismissal is from the program or school. The dean may also dismiss a student from the institution if the student does not meet institutional standards.

In Step 1 of the appeal, the student shall prepare and sign a document stating the facts constituting the bases for the appeal. A copy of this document must reach the dean within 30 calendar days of receipt of written notice of dismissal. The student shall be given an opportunity to discuss the appeal with the dean at any time. If the matter is not resolved satisfactorily within 15 calendar days of the dean's receipt of the student's appeal, the student may proceed to Step 2. In Step 2, the student will forward a copy of the appeal to the appropriate vice president within 15 calendar days of failure to resolve the matter at the level of the dean. Prior to the decision of the vice president, the student will be given an opportunity to discuss the appeal with the vice president. The decision of the vice president, as the president's designee, shall be rendered within 15 days of receipt of the student's appeal and is final.

## Graduation Requirements

Successful Completion of the M.D. Degree Requires: The following requirements are set by the faculty in the School of Medicine and are subject to change. This list may not be complete, but is a fair representation of what is expected. Please check with the Office of Student Services for any recent changes. The School is in the process of defining the graduation competencies that will be expected before awarding the MD Degree.

1. Satisfactory completion of all course work in the curriculum
2. Satisfactory completion of Step 1 and Step 2 CK and CS of the USMLE (within three attempts each). Two attempts for MD/PhD students
3. Satisfactory completion of the school based [Clinical Performance Exam \(CPX\)](#) (within three attempts). Two attempts for MD/PhD students
4. Satisfactory demonstration of professional behavior
5. Completion of 100 hours of community service
6. Be recommended to the faculty for the MD Degree by the Committee on Academic and Professional Standards
7. Be affirmed by a majority vote of the faculty of the School of Medicine as worthy of being awarded the MD Degree

Successful Completion of the Ph.D. Degree Requires: The following requirements are set by the faculty in the School of Medicine, most notably the Administration of the MSP and are subject to change.

1. 3.00 GPA and A's, B's, or S in research
2. Registration requirements
3. Passage of the
  - a. USMLE Step1,
  - b. Dissertation Proposal, and
  - b. Dissertation Defense
4. First-Author manuscript
5. Submission of required Approval Forms: All forms are online at: [www.hsc.wvu.edu/resoff/education/forms.aspx](http://www.hsc.wvu.edu/resoff/education/forms.aspx)
  - a. Plan of Study
  - b. Dissertation Committee (Committee Approval Form)
  - c. Dissertation Proposal
  - d. Dissertation defense
  - e. Shuttle Request and Form
6. Electronic Submission of Dissertation
7. Application for Graduation and Diploma Form
8. Exit interview with Assistant Dean for Graduate Studies
9. Attendance at the Investiture for the School of Medicine

### Registration

To receive a stipend, you are required to register for a minimum of 9 credits for the fall and spring semesters and 6 credits for the summer semester. Remember, fees are based on the number of credits you take.

### Ph.D. Examinations and Defense

The three main examinations that must be passed for partial completion of the Ph.D. degree are the USMLE Step1 examination, the research proposal, and the dissertation defense. The medical school conducts Step1, and the individual graduate programs conduct the latter two examinations. For the dissertation proposal defense, you will be required to write a pre-doctoral NIH grant and defend it orally in front of your dissertation committee. With successful completion of the dissertation proposal, you have advanced to candidacy for the PhD degree, and also have started the 5-year clock for completion of the degree. University rules state that if you do not successfully defend your dissertation research within 5 years of reaching PhD candidacy, you must retake the qualifying examination. Completion of the Ph.D. degree requires a public presentation and private defense of the dissertation research in front of the dissertation committee as well as electronic submission of the dissertation.

**NOTE:** USMLE Step 1 is conducted in June of MED2.

### First-Author Manuscript

You must have at least one First-Author manuscript, based on your Ph.D. dissertation research, published or accepted for publication in a peer-reviewed journal before you defend your dissertation research. Please note that the order of authors in some chemical journals is different than in most biological journals. Therefore, it is important for you and your faculty mentor to identify that the content of the journal article is based on your dissertation research and that you were the primary author.

### Approval Forms

#### Plan of Study

This form should be completed within the 1<sup>st</sup> semester of GRAD1. List all courses taken in the MED and GRAD curriculum plus those to be taken, but list only those GRAD courses that meet the graduate standards for certification for graduation. After completion, committee members must sign the form. Return the signed form to the Office of Research and Graduate Education (2271 HSS) – a copy will be returned to your chosen graduate program. Any changes in the Plan of Study must be made through mutual agreement, between the student and committee members - you must submit a memorandum of changes to the HSC Research and Graduate Education.

#### Dissertation Committee (Committee Approval Form)

This form should be completed by the first semester of GRAD2. Complete the form with the required information. Obtain signatures from faculty who have agreed to serve on the committee and submit the form to the Office of Research and Graduate Education. A copy of the approved form will be returned to your graduate program.

The Dissertation Committee serves as a testing committee, examining you during the proposal defense and dissertation defense, and as a research committee assisting the dissertation mentor with guiding you through the GRAD portion of the M.D., Ph.D. degree. You and your mentor should organize this committee within the 1<sup>st</sup> semester of GRAD1. This committee consists of no fewer than five graduate faculty members, the majority of which must be graduate faculty with regular status, including the dissertation mentor (chair). No more than one person may be a nonmember of the graduate faculty. An academic physician must be a member of the committee and can be a non-member of the WVU Graduate Faculty. The dissertation mentor is usually the chair of the committee, an exception is the Cancer Cell Biology program. All faculty on the

committee are voting members, except for the Cancer Cell Biology program - the mentor is a non-voting member of the committee.

All committee members are to be present at the final examination (dissertation defense). If an examination cannot be scheduled at a time convenient to all committee members, the dean or his/her designee may permit another faculty member to substitute for the original committee member - provided that the original committee member is not the chair. There can be no substitute for the chair. Another option is that one member may participate through tele- or video-conferencing. Only one substitute is allowed, and the request for a substitute must be made in writing to the Office of Research and Graduate Education before the examination. You, the committee chair, and both the original faculty member and the substitute faculty member should sign the request form for a substitute. A substitute faculty member must have the same or higher graduate faculty status as the original faculty member and should represent the same academic discipline or specialization. \*A form for this substitution/replacement is online.

#### Dissertation Proposal Defense

You should defend your research proposal toward the end of GRAD1 and no later than December of GRAD2. For this defense, you write a NIH pre-doctoral fellowship grant outlining your proposed research project for the dissertation requirement and defend it to your dissertation committee. Portions of this grant were initially written during the Scientific Writing course. Before or usually after defense of the proposal, you should submit your fellowship to a national funding agency. After successfully completing this exam, you have achieved candidacy for the PhD degree. University rules state that doctoral candidates are allowed no more than 5 years to complete the remaining requirements for the Ph.D. degree. If you fail to complete the doctorate within 5 years after admission to candidacy, an extension of time can be obtained only by taking the qualifying exam in your graduate program and meeting any other requirements specified by your committee.

#### Review Article

During your graduate training, we recommend that you write a review article with your mentor. Publication of a review article can lead to scientific recognition in your research area, can be a significant part of your Introduction (Background and Significance) of your dissertation, and can assist you in obtaining a postdoctoral fellowship.

#### Shuttle Sheet Request

The "Request for Shuttle Sheet" must be submitted no later than 3 weeks before the dissertation defense. This form requires signatures from the members of the dissertation committee, chair of the committee, and program graduate director. The Chair of the Dissertation Committee forwards this form to the Office of Research and Graduate Education. This is a requirement of all dissertations. The date of the dissertation defense should be scheduled in a timely manner so that you meet all deadlines necessary for graduation.

#### Shuttle Sheet

Return the Shuttle Sheet form within 24 hours of the dissertation defense to the Office of Research and Graduate Education. This form is a checklist of requirements that must be met before you graduate. The Office of Research and Graduate Education will send this form directly to your Chair of the Dissertation Committee for signatures by

the other members of Committee and program graduate director upon conclusion of the dissertation defense. The Alumni Information Sheet will be attached to Shuttle Sheet and should be completed and returned to Office of Research and Graduate Education. If employment is uncertain at the time of graduation, complete the form as soon as possible and return it at a later date.

#### Dissertation Defense

You complete your dissertation work by writing a dissertation, presenting it orally in front of a public forum, and defending it in private to your dissertation committee. Your dissertation work must be original and make a contribution to the scientific literature.

#### Electronic Submission of Dissertation

As of August 15, 1998, WVU requires the electronic submission of all dissertations (ETD's). See <http://www.wvu.edu/~thesis/> for one-stop-shop information regarding electronic submission of ETD's. In addition, consultants in the University's computer centers are prepared to help students and faculty in the process of preparing their ETD.

#### Application for Graduation and Diploma Form

This form should be submitted to the Office of Research and Graduate Education within the first 2 weeks of the semester you plan to graduate. If the degree is not actually earned during that term, you must notify the Office and submit a new Form when registering for the term in which completion is again anticipated. The Office is responsible for maintaining all of your records necessary to certify you for graduation. If you paid the \$30.00 during the previous semester(s), do not pay it again, but indicate on your new application form the date that you paid it.

#### Exit Interview

The exit interview is conducted with the Assistant Dean for Graduate Studies shortly after the successful defense of the dissertation. The interview is collegial and will allow you to express your opinions about your graduate experiences. All expressed opinions are confidential and recorded anonymously. The purpose of the interview is to use your constructive opinions in a positive way to improve the IGPBMS and for assessment of the IGPBMS by the WVU Graduate Council.

#### Investiture/Commencement

It is expected that all graduates will attend the Investiture Ceremony for the School of Medicine or School of Pharmacy. These ceremonies are held on Saturday in the second week of May. The Investiture Ceremonies feature the graduates of the IGPBMS, the MD/PhD Scholars Program, M.D. program, and the Pharm.D. programs. The ceremonies are culminated by recitation of the Oath of Hippocrates, for those students receiving the M.D. degree, and the Ethical Affirmation for Scientists, for those students receiving the Ph.D. degree. This latter oath was originated at WVU and was published in the journal, *Science*, in 2003.

#### Residency/Fellowship

### Postdoctoral Fellowship

The postdoctoral years equate to a honeymoon period in research. The goals are to expand your horizons in research and to publish and gain the necessary experiences and wisdom to garner your first position. Most first positions in academia, industry, and even small colleges require a postdoctoral experience.

## **Eight Ph.D. Training Programs**

Requirements of the individual graduate programs can be obtained from the graduate directors. Websites of the individual graduate program can be accessed via:

[www.hsc.wvu.edu/resoff/](http://www.hsc.wvu.edu/resoff/)

You will select a research mentor and a specific graduate program by May of Year 2 and become thoroughly immersed in research by the summer after completion of the USMLE Step 1 exam. In PhD 1&2, you will take advanced coursework in your specialized training program, do research and some teaching, and defend a dissertation proposal (PhD candidacy exam) to your dissertation committee. PhD 3&4 are filled with research activities that culminate in defense of the dissertation research that is presented publicly and defended privately to the dissertation committee. It is strongly encouraged that you meet at least twice a year with your Committee – take advantage of the expertise of your dissertation committee members.

The current curricula for our eight Ph.D. training programs are provided on the next seven pages.

- **Biochemistry & Molecular Biology**
- **Cancer Cell Biology**
- **Cellular & Integrative Physiology**
- **Exercise Physiology**
- **Immunology & Microbial Pathogenesis**
- **Neuroscience**
- **Pharmaceutical & Pharmacological Sciences**
- **Public Health Sciences**

## Graduate Program in Biochemistry & Molecular Biology

<u>Year 1 Core</u>		<u>Year 2</u>		<u>Year 3</u>		<u>Year 4 &amp; 5 (each)</u>	
<b>1<sup>st</sup> Semester</b>	<b><u>Cr</u></b>		<b><u>Cr</u></b>		<b><u>Cr</u></b>		<b><u>Cr</u></b>
Cellular Structure & Function	(4)	Optional Elective		Journal Club	(1)	Journal Club	(1)
Fundamentals of Integrated Systems	(4)	Journal Club	(1)	<b>Proposal Defense</b>		Research	(11)
Statistics for the Biomedical Sciences	(1)	Research	(11)	Research	(11)		
Discussions on Scientific Integrity	(1)						
Laboratory Rotation (1 <sup>st</sup> )	(1)						
<b>CREDITS</b>	<b>11</b>		<b>12</b>		<b>12</b>		<b>12</b>
<b>2<sup>nd</sup> Semester</b>							
Molecular Biology	(3)	Adv. Molecular Biology	(4)	Adv. Protein Chemistry	(4)	Journal Club	(1)
Elective Modules	(5-9)	Journal Club	(1)	Journal Club	(1)	Research	(11)
Laboratory Rotation (2 <sup>nd</sup> )	(1)	Research	(7)	Teaching Practicum	(1)		
Laboratory Rotation (3 <sup>rd</sup> )	(1)			Research	(6)		
<b>CREDITS</b>	<b>10-14</b>		<b>12</b>		<b>12</b>		<b>12</b>
<b>Summer Session</b>							
Scientific Writing	(2)	Research	(6)	Research	(6)	Research	(6)
Research	(4)	<b>Qualifying Exam</b>					
<b>CREDITS</b>	<b>(6)</b>		<b>(6)</b>		<b>(6)</b>		<b>(6)</b>
<b>TOTAL CREDITS</b>	<b>27-31</b>		<b>30</b>		<b>30</b>		<b>30</b>

## Graduate Program in Cancer Cell Biology

<u>Year 1 (Core)</u>	<u>Year 2</u>		<u>Year 3</u>		<u>Year 4 &amp; 5</u>		
<b>1<sup>st</sup> Semester</b>	<b>Cr</b>		<b>Cr</b>		<b>Cr</b>	<b>Cr</b>	
Cellular Structure & Function	(4)	(CCB700) Basic/Clin. Aspects of Neoplasia	(3)	(CCB705) Journal Club	(1)	(CCB705) Journal Club	(1)
Fundamentals of Integrated Systems	(4)			(CCB796) Graduate Seminar	(1)	(CCB796) Graduate Seminar	(1)
Statistics for the Biomedical Sciences	(1)	(CCB701) Oncogenes & Signaling Networks	(3)	(CCB797) Research	(1-15)	(CCB797) Research	(1-15)
Discussions on Scientific Integrity	(1)						
Laboratory Rotation (1 <sup>st</sup> )	(1)	(CCB705) Journal Club	(1)				
		(CCB796) Graduate Seminar	(1)				
		(CCB797) Research	(1-15)				
<b>CREDITS</b>	<b>11</b>		<b>9-23</b>		<b>3-17</b>		<b>3-17</b>
<b>2<sup>nd</sup> Semester</b>							
Molecular Biology	(3)	(CCB702) Cancer Therapeutics	(3)	(CCB705) Journal Club	(1)	(CCB7050) Journal Club	(1)
Elective Modules	(5-9)	(CCB705) Journal Club	(1)	(CCB796) Graduate Seminar	(1)	(CCB796) Graduate Seminar	(1)
Intro to Cancer Cell Biology	(2)	(CCB796) Graduate Seminar	(1)	(CCB797) Research	(1-15)	(CCB797) Research	(1-15)
<b>(required if intent is to be in CCB Program)</b>							
Laboratory Rotations (2 <sup>nd</sup> )	(1)	(CCB797) Research	(1-15)	<b>Proposal Defense</b>			
Laboratory Rotations (3 <sup>rd</sup> )	(1)	<b>Qualifying Exam- (Given in August after end of Year 1)</b>					
<b>CREDITS</b>	<b>12-16</b>		<b>6-20</b>		<b>3-17</b>		<b>3-17</b>
<b>Summer Session</b>							
Scientific Writing	(2)	(CCB797) Research	(6)	(CCB797) Research	(6)	(CCB797) Research	(6)
Research	(4)						
<b>CREDITS</b>	<b>(6)</b>		<b>(6)</b>		<b>(6)</b>		<b>(6)</b>
<b>TOTAL CREDITS</b>	<b>29-33</b>		<b>21-49</b>		<b>12-40</b>		<b>12-40</b>

Year 2 – Three advanced courses (Neoplasia, Signaling Networks, and Therapeutics) are required

\*\* Research Proposal must be defended no later than end of Year 3

## Graduate Program in Cellular & Integrative Physiology

<u>Year 1 (Core)</u>	<u>Year 2</u>		<u>Year 3</u>		<u>Year 4&amp; 5</u>		
<b>1<sup>st</sup> Semester</b>	<b><u>Cr</u></b>	<b><u>Cr</u></b>	<b><u>Cr</u></b>	<b><u>Cr</u></b>	<b><u>Cr</u></b>	<b><u>Cr</u></b>	
BMS 705 Cellular Structure & Function	(4)	PSIO 750 Human Function	(1-7)	PSIO 797 Research	(4-7)	PSIO 797 Research	(8)
BMS 710 Fund. of Integrated Systems	(4)	PSIO Research	(1-4)	Advanced Courses**	(3-6)	PSIO 799	(1)
CMED 750 Stats for the Biomed. Sci.	(1)	PSIO 799 Colloquium	(1)	PSIO 799 Colloquium	(1)		
BMS 700 Scientific Integrity	(1)			<b>Proposal Defense</b>			
BMS 797 Laboratory Rotation (1 <sup>st</sup> )	(1)						
<b>CREDITS</b>	<b>11</b>		<b>3-12</b>		<b>8-14</b>		<b>9</b>
<b>2<sup>nd</sup> Semester</b>							
Molecular Biology	(3)	Statistics	(3)	Research	(4-7)	Research	(4-7)
Elective Modules*	(5-9)	Advanced Courses**	(3-9)	Colloquium	(1)	Seminar	(1)
Laboratory Rotation (2 <sup>nd</sup> )	(1)	Research	(1-4)	Seminar	(1)	Colloquium	(1)
Laboratory Rotation (3 <sup>rd</sup> )	(1)	Colloquium	(1)				
<b>CREDITS</b>	<b>10-14</b>		<b>9-15</b>		<b>9-15</b>		<b>9-15</b>
<b>Summer Session</b>							
Scientific Writing	(2)	Research	(6)	Research	(6)	Research	(6)
Research	(4)						
		<b>Qualifying Exam</b>					
<b>CREDITS</b>	<b>6</b>		<b>6</b>		<b>6</b>		<b>6</b>
<b>TOTAL CREDITS</b>	<b>27-31</b>		<b>24-36</b>		<b>24-23</b>		<b>24-31</b>

\* Elective modules – following consultation with the graduate director, select at least 5 credit hours from following options: Cell signaling and metabolism (3 credits), Cancer Cell Biology (2 credits), Cardiovascular & Respiratory Biology (3 credits), Muscle Structure and Function (2 credits), Immunology & Microbial Pathogenesis (3 credits), Neuroscience (2 credits) and Drug Discovery & Development (3 credits).

\*\* Advanced Courses – 9 credits are required to meet elective requirements. Options include: Cardiovascular Physiology; Endocrine Physiology; Respiratory Physiology; Special Topics (selected readings from current literature); Cell Signaling; Pharmacology; and Reproductive Physiology.

## Graduate Program in Exercise Physiology

<u>Year 1 (Core)</u>		<u>Year 2</u>		<u>Year 3</u>		<u>Year 4 &amp; 5</u>	
<b>1<sup>st</sup> Semester</b>	<b><u>Cr</u></b>		<b><u>Cr</u></b>		<b><u>Cr</u></b>		<b><u>Cr</u></b>
Cellular Structure & Function	(4)	Adv. Exercise Physio. I	(3)	Graduate Colloquium	(1)	Colloquium	(1)
Fundamentals of Integrated Systems	(4)	Electives	(0-5)	Research	(11)	Research	(11)
Statistics for the Biomedical Sciences	(1)	Special Topics-Res. Methods	(3)	**Teaching			
Discussions on Scientific Integrity	(1)	Statistics	(3)				
Laboratory Rotation (1 <sup>st</sup> )	(1)	Research	(2-6)				
		Graduate Colloquium	(1)				
<b>CREDITS</b>	<b>11</b>		<b>12-15</b>		<b>12</b>		<b>12</b>
<b>2<sup>nd</sup> Semester</b>							
Molecular Biology	(3)	Adv. Exercise Physio. II	(3)	Graduate Colloquium	(1)	Colloquium	(1)
Elective Modules	(5-9)	Electives	(0-5)	Research	(11)	Research	(11)
Laboratory Rotations (2 <sup>nd</sup> )	(1)	Statistics	(3)	*Teaching			
Laboratory Rotations (3 <sup>rd</sup> )	(1)	Research	(2-6)				
		Graduate Colloquium	(1)				
<b>CREDITS</b>	<b>10-14</b>		<b>9-15</b>		<b>12</b>		<b>12</b>
<b>Summer Session</b>							
Scientific Writing	(2)	Research	(6)	Research	(6)	Research	(6)
Research	(4)						
		<b>Qualifying Exam/ Proposal Defense</b>					
<b>CREDITS</b>	<b>(6)</b>		<b>(6)</b>		<b>(6)</b>		<b>(6)</b>
<b>TOTAL CREDITS</b>	<b>27-31</b>		<b>27-36</b>		<b>30</b>		<b>30</b>

\*\*Teaching is in either summer sessions of Fall or Spring of 3<sup>rd</sup> year. Additional teaching will need approval from faculty mentor.

## Graduate Program in Immunology & Microbial Pathogenesis

<u>Year 1 (Core)</u>	<u>Year 2</u>		<u>Year 3</u>		<u>Year 4 &amp; 5</u>		
<b>1<sup>st</sup> Semester</b>	<u>Cr</u>		<u>Cr</u>		<u>Cr</u>	<u>Cr</u>	
Cellular Structure & Function	(4)	<b>Advanced Topics**</b>	<b>(2-3)</b>	Journal Club	(1)	Journal Club	(1)
Fundamentals of Integrated Systems	(4)	Cell & Mol Biol Seminar*		Seminar	(1)	Seminar	(1)
Statistics for the Biomedical Sciences	(1)	Research	(7)	Research	(7)	Research	(8)
Discussions on Scientific Integrity	(1)	Seminar	(1)	Cell & Mol Biology Seminar*		CMB Seminar*	
Laboratory Rotation (1 <sup>st</sup> )	(1)	Journal Club	(1)	Teaching Assistant	(1)		
				<b>Proposal Defense</b>			
<b>CREDITS</b>	<b>11</b>		<b>11-12</b>		<b>10</b>		<b>10</b>
<b>2<sup>nd</sup> Semester</b>		<b>Advanced Topics**</b>	<b>(2-3)</b>	<b>Advanced Topics**</b>	<b>(2-3)</b>	Journal Club	(1)
Molecular Biology	(3)	Cell & Mol Biology Seminar*		Seminar	(1)	Seminar	(1)
Elective Modules	(5-9)	Research	(6)	Research	(6)	Research	(8)
Laboratory Rotations (2 <sup>nd</sup> )	(1)	Seminar	(1)	CMB Seminar*		CMB Seminar*	
Laboratory Rotations (3 <sup>rd</sup> )	(1)	Journal Club	(1)	Teaching Assistant	(1)		
				Journal Club	(1)		
<b>CREDITS</b>	<b>10-14</b>		<b>10-11</b>		<b>11-12</b>		<b>10</b>
<b>Summer Session</b>		Research	(6)	Research	(6)	Research	(6)
Scientific Writing	(2)						
Research	(4)	<b>Qualifying Exam</b>					
<b>CREDITS</b>	<b>(6)</b>		<b>(6)</b>		<b>(6)</b>		<b>(6)</b>
<b>TOTAL CREDITS</b>	<b>27-31</b>		<b>27-29</b>		<b>27-28</b>		<b>26</b>

\* Not for credit, educational enrichment

\*\*Advanced Immunology and Bacterial Pathogenesis are the two advanced courses taught in alternate years.

## Graduate Program in Neuroscience

<u>Year 1 (Core)</u>		<u>Year 2</u>		<u>Year 3</u>		<u>Year 4 &amp; 5</u>	
<b>1<sup>st</sup> Semester</b>	<b><u>Cr</u></b>		<b><u>Cr</u></b>		<b><u>Cr</u></b>		<b><u>Cr</u></b>
Cellular Structure & Function	(4)	Advanced Neuroscience	(6)	Seminar	(1)	Seminar	(1)
Fundamentals of Integrated Systems	(4)	Seminar	(1)	Journal Club	(1)	Journal Club	(1)
Statistics for the Biomedical Sciences	(1)	Journal Club	(1)	Research	(10)	Research	(10)
Discussions on Scientific Integrity	(1)	Research	(4)	<b>Proposal Defense</b>			
Laboratory Rotation (1 <sup>st</sup> )	(1)						
<b>CREDITS</b>	<b>11</b>		<b>12</b>		<b>12</b>		<b>12</b>
<b>2<sup>nd</sup> Semester</b>							
Molecular Biology	(3)	Systems or Cellular - Neuroscience Reading Elective	(3-6)	Seminar	(1)	Seminar	(1)
Elective Modules	(5-9)	Seminar	(1)	Journal Club	(1)	Journal Club	(1)
Laboratory Rotations (2 <sup>nd</sup> )	(1)	Journal Club	(1)	Research	(4-7)	Research	(4-7)
Laboratory Rotations (3 <sup>rd</sup> )	(1)	Research	(4-7)				
		Statistics	(3)				
<b>CREDITS</b>	<b>10-14</b>		<b>12-15</b>		<b>9-15</b>		<b>9-15</b>
<b>Summer Session</b>							
Scientific Writing	(2)	Research	(6)	Research	(6)	Research	(6)
Research	(4)	<b>Qualifying Exam</b>					
<b>CREDITS</b>	<b>(6)</b>		<b>(6)</b>		<b>(6)</b>		<b>(6)</b>
<b>TOTAL CREDITS</b>	<b>27-31</b>		<b>30-33</b>		<b>27-33</b>		<b>27-33</b>

## Graduate Program in Pharmaceutical & Pharmacological Sciences

<u>Year 1 (Core)</u>	<u>Year 2</u>		<u>Year 3</u>		<u>Year 4 &amp; 5</u>		
<b>1<sup>st</sup> Semester</b>	<b><u>Cr</u></b>		<b><u>Cr</u></b>		<b><u>Cr</u></b>		<b><u>Cr</u></b>
Cellular Structure & Function	(4)	Advanced Course*	(3-6)	Advanced Course*	(3)	Research	(10)
Fundamentals of Integrated Systems	(4)	Graduate Seminar	(1)	Research	(3)	Grad Seminar	(1)
Statistics for the Biomedical Sciences	(1)	Journal Club	(1)	Graduate Seminar	(1)	Journal Club	(1)
Discussions on Scientific Integrity	(1)	Research	(4-5)	Journal Club	(1)		
Laboratory Rotation (1 <sup>st</sup> )	(1)			Research	(3-4)		
				<b>Proposal Defense</b>			
<b>CREDITS</b>	<b>11</b>		<b>9-13</b>		<b>11-12</b>		<b>12</b>
<b>2<sup>nd</sup> Semester</b>							
Molecular Biology	(3)	Advanced Course*	(3)	Advanced Course*	(3)	Research	(10)
Elective Modules	(5-9)	Graduate Seminar	(1)	Research	(3)	Grad Seminar	(1)
Laboratory Rotations (2 <sup>nd</sup> )	(1)	Journal Club	(1)	Graduate Seminar	(1)	Journal Club	(1)
Laboratory Rotations (3 <sup>rd</sup> )	(1)	Research	(4-7)	Journal Club	(1)		
		<b>Qualifying Exam</b>		Research	(3-4)		
<b>CREDITS</b>	<b>10-14</b>		<b>9-12</b>		<b>11-12</b>		<b>12</b>
<b>Summer Session</b>							
Scientific Writing	(1)	Research	(3)	Research	(3)	Research	(3)
Research	(2)						
<b>CREDITS</b>	<b>(3)</b>		<b>(3)</b>		<b>(3)</b>		<b>(3)</b>
<b>TOTAL CREDITS</b>	<b>24-28</b>		<b>21-28</b>		<b>25-27</b>		<b>27</b>

**\*Advanced courses (2 or 3 of the following advanced courses are required):**

BIOC 791 Advanced Molecular Biology	PCOL 743 Pharmacology I	PHAR 716 Chemistry of Drug Action I
CHEM 335 Structure Determination	PCOL 744 Pharmacology II	PHAR 726 Chemistry of Drug Action II
CHEM 346 Physical Chemistry	PCOL 745 Advanced Pharmacology. I	PHAR 731 Biopharmaceutics & Pharmacokinetics
CHEM 514 Mass Spectrometry: Principles and Practice	PCOL 746 Advanced Pharmacology. II	PHAR 779 Drug Discovery & Design
CHEM 531 Advanced Organic Chemistry I	PCOL 767 Advanced Neuropharmacology.	PHAR 780 Intro to Molecular Modeling
CHEM 532 Advanced Organic Chemistry II	PHAR 711 Chem. Properties of Drugs	PHAR 781 Drug Metabolism

## Graduate Program in Public Health

### Social and Behavioral Sciences Track

<u>Year 1 Core</u>		<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>			
<b>1<sup>st</sup> Semester</b>	<b><u>Cr</u></b>		<b><u>Cr</u></b>	<b><u>Cr</u></b>			
Epidemiology <i>PUBH 660</i>	(3)	Social and Behavioral Theory <i>CHPR 612</i>	(3)	Elective <i>CHPR 635</i> (fall)	(3)	Journal Club	(1)
Biostatistics <i>PUBH 611/ STAT/511</i>	(3)	Journal Club	(1)	Research <i>PUBH 797</i>	(6)	Research <i>PUBH 797</i>	(9)
Research Designs & Methods <i>CHPR 634</i>	(3)	Teaching Experience <i>PUBH 790</i>	(1)	Journal Club	(1)		
Scientific Integrity & Ethics <i>BMS 700</i>	(1)	Needs Assessment <i>*CHPR 638</i>	(3)	Teaching <i>PUBH 790</i>	(1)		
Research Seminar <i>PUBH 706</i>	(1)	Qualitative Methods <i>SCFD 615 / SOCA 513</i> <i>NSG 726 / NSG 729/</i> <i>COMM 713</i>	(3)	<b>Proposal Defense</b>			
		Research <i>PUBH 797</i>	(3)				
<b>CREDITS</b>	<b>11</b>		<b>14</b>		<b>11</b>		<b>10</b>
<hr/>							
<b>2<sup>nd</sup> Semester</b>							
Advanced Epidemiology <i>PUBH 661</i>	(3)	Social/Behavioral Measurement <i>PSYC 653 / NSG 730</i>	(3)	Journal Club	(1)	Journal Club	(1)
Multivariate Statistics <i>PUBH 707/ PSYC 612/</i> <i>SOCA 518/ POLS 602</i> (fall)/ <i>POLS 603</i> (spring)	(3)	Program Evaluation <i>*CHPR 638</i> <i>PSYC 614</i>	(3)	Research <i>PUBH 797</i>	(6)	Research <i>PUBH 797</i>	(9)
Survey Research Methods <i>PUBH 629/ SOCA 511</i> (spring) <i>STAT 631</i> (spring)	(3)	Journal Club	(1)	Seminar	(1)		
Elective <i>CHPR 642</i> (spring)	(3)	Intervention Design <i>CHPR 648</i> Research <i>PUBH 797</i>	(3)	Elective	(3)		
		<b>Qualifying Exam</b>	(3)				
<b>CREDITS</b>	<b>12</b>		<b>13</b>		<b>11</b>		<b>10</b>

**Summer Session 1**

Scientific Writing	(1)	Research <i>PUBH 797</i>	(3)	Research <i>PUBH 797</i>	(3)	Research <i>PUBH 797</i>	(3)
Research <i>PUBH 797</i>	(2)						

**Summer Session 2**

Research <i>PUBH 797</i>	(3)	Research <i>PUBH 797</i>	(3)	Research <i>PUBH 797</i>	(3)	Research <i>PUBH 797</i>	(3)
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<b>CREDITS</b>	<b>(6)</b>		<b>(6)</b>		<b>(6)</b>		<b>(6)</b>
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<b>TOTAL CREDITS</b>	<b>29</b>		<b>33</b>		<b>28</b>		<b>26</b>
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\*CHPR 638 Currently includes course content covering both needs assessment and evaluation.

**Population Epidemiology & Biostatistics Track**

<u>Year 1 Core</u>		<u>Year 2</u>		<u>Year 3</u>		<u>Year 4</u>	
<b>1<sup>st</sup> Semester</b>	<b><u>Cr</u></b>		<b><u>Cr</u></b>		<b><u>Cr</u></b>		<b><u>Cr</u></b>
Epidemiology <i>PUBH 660</i>	(3)	Chronic Disease Epidemiology <i>PHAR 793A</i> (fall) <i>PUBH 691</i>	(3)	Teaching <i>PUBH 790</i>	(1)	Journal Club	(1)
Biostatistics <i>PUBH 611/ STAT/511</i>	(3)	Secondary data analysis <i>PHARM 791F</i> (spring) <i>POLS 603</i> (spring)	(3)	Journal Club	(1)	Research <i>PUBH 797</i>	(9)
Research Designs & Methods <i>CHPR 634</i>	(3)	Journal Club	(1)	<b>Proposal Defense</b>			
Scientific Integrity & Ethics <i>BMS 700</i>	(1)	Teaching Experience <i>PUBH 790</i>	(1)	Research <i>PUBH 797</i>	(9)		
Research Seminar <i>PUBH 706</i>	(1)	Research <i>PUBH 797</i>	(3)				
		Elective <i>POLS 602</i> (fall)	(3)				
<b>CREDITS</b>	<b>11</b>		<b>14</b>		<b>11</b>		<b>10</b>
<b>2<sup>nd</sup> Semester</b>							
Advanced Epidemiology <i>PUBH 661</i>	(3)	Elective <i>STAT 591E</i>	(3)	Journal Club	(1)	Journal Club	(1)
Categorical (or) Multivariate Data analysis <i>PSYC 612/ STAT 541</i> (fall) <i>STAT 551/ POLS 602</i> (fall) <i>STAT 555</i> (spring) <i>PUBH 691F</i> (spring)	(3)	Mortality and Survival* <i>PUBH 704</i> (every other yr.)	(3)	Research <i>PUBH 797</i>	(6)	Research <i>PUBH 797</i>	(9)
Survey Research Methods <i>PUBH 629/ SOCA 511</i> (spring)	(3)	Journal Club	(1)	Seminar	(1)		
Statistics Elective <i>STAT 512/ STAT 551</i>	(3)	Research <i>PUBH 797</i>	(3)	Elective	(3)		
		Categorical (OR) Multivariate Analysis <i>PSYC 612/ STAT 541</i> (fall) <i>STAT 551/ POLS 602</i> (fall) <i>STAT 555</i> (spring) <b>Qualifying Exam</b>	(3)				
<b>CREDITS</b>	<b>12</b>		<b>13</b>		<b>11</b>		<b>10</b>

**Summer Session 1**

Scientific Writing	(1)	Research <i>PUBH 797</i>	(3)	Research <i>PUBH 797</i>	(3)	Research <i>PUBH 797</i>	(3)
Research <i>PUBH 797</i>	(2)						

**Summer Session 2**

Research <i>PUBH 797</i>	(3)	Research <i>PUBH 797</i>	(3)	Research <i>PUBH 797</i>	(3)	Research <i>PUBH 797</i>	(3)
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<b>CREDITS</b>	<b>(6)</b>		<b>(6)</b>		<b>(6)</b>		<b>(6)</b>
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<b>TOTAL CREDITS</b>	<b>29</b>		<b>33</b>		<b>28</b>		<b>26</b>
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\*This course is no longer required.

## WVU and Health Sciences Center

The following information about WVU and HSC is culled from more detailed information at:

[www.hsc.wvu.edu/resoff/education/currentstudents/orientation.aspx](http://www.hsc.wvu.edu/resoff/education/currentstudents/orientation.aspx)

### Bookstores

The HSC bookstore is located on the ground floor of Health Sciences North, across from the small cafeteria. Textbooks for classes offered through the HSC can be purchased at this bookstore. The main WVU bookstore is located in the Mountainlair (Student Union), on the downtown campus

### Campus Transportation

The Personal Rapid Transit (PRT) system is an easy-to-use transportation system for WVU students and faculty, as well as the Morgantown community. There are five stations: Walnut St., Beechurst Ave., Engineering Sciences, Evansdale Residential Complex, and Health Sciences. Access to the PRT requires your student ID, which is called the Mountaineer Card. A University bus system is also available.

### Food

The HSC operates two cafeterias on the ground floor. A large cafeteria and dining room are in Health Sciences South, and a smaller cafeteria offering a more limited selection is in Health Sciences North. Students are also welcome in the Ruby Memorial Hospital cafeteria, on the 4th floor of the hospital. In the warm months, the hospital cafeteria's large covered patio is especially nice. Eating and drinking are prohibited in all research and teaching laboratories.

### Mail and Mailboxes

A U.S. Post Office is on the ground floor of Health Sciences South, hallway near the shipping dock. Campus mail for all first-year students comes to the Office of Research and Graduate Education. You may pick-up your mail in the Office. Please note that HSC policy forbids the receipt of personal mail at a University address. Be sure and tell your friends and family to use your home address. Likewise, while you are free to use the ground floor Post Office for sending personal mail, you may not send personal mail using your HSC address.

### Parking

If you plan to drive to campus, you will need a parking permit. Graduate students (well as as junior faculty and staff) are usually assigned to Lot 81, also called "the pit." This lot is on Van Voorhis Road, below the Health Sciences PRT station. It is convenient to the building, parking costs ~ \$325 starting in July 1. Expiration date for parking permits is June 30. Before then, you will be notified (each year) to renew your parking permit online. Parking Management recommends that parking applications be purchased before the start of Orientation to secure a parking pass.

The Parking Management Office is located on the first floor of the new Mountaineer Station, located by the Pit parking lot, lot 81, directly off from Van Voorhis Drive. An online Parking System is available with general information about university parking and parking alternatives at [www.transportation.wvu.edu](http://www.transportation.wvu.edu).

### Phone Access

- Calling from a WVU number to another WVU number: Dial 3, then the last 4 digits of the number.
- Calling from a WVU number to an outside number: Dial 9, then the full number including the area code.

Long-distance phone calls for personal reasons must be made using your own cell phone. For laboratory-related business, each faculty member has an access number. They may make this number available to you at their discretion.

### Photocopying and Printing

For personal use, you can make copies in the copy center, located by the small cafeteria on the ground floor, Health Sciences North. Also, you can get a copy card for the copy machine in the HSC library. As the card is depleted, you can renew it for further use.

The Common Graduate Room has two computers and a printer. We will supply you with paper and ink for the printer – please ask Claire, Lea Ann or Penny.

### Student Address Records

The University keeps a record of up to four addresses on you. These include your permanent address, billing address, and grade report address. If you want your bills and grade reports to go to your Morgantown address, you must list it as your *permanent address*. This change can be made in the Admissions and Records office on the first floor of Health Sciences North, across from the elevators. This is particularly important for international students - otherwise your grade reports and bills will go to your country of origin.

### Student ID Cards

After you register for classes, you can obtain your student ID card, called the Mountaineer Card. This card is for personal identification, library privileges, PRT access, and recreation center access. You can also use it for discounted admission to University-sponsored events. Many businesses in Morgantown also offer student discounts if you show identification. This card can also be keyed for access to the Animal Care and DNA core facilities on the Health Sciences campus.

To obtain the card, take your driver's license or other photo ID to the University ID card center (293-CARD) in the Mountainlair (student union), on the Downtown campus.

### Pertinent Numbers

**Addendum:**  
**Compact**  
**Between Biomedical Graduate Students and Their Research Advisors**

**Advanced Graduate Student**  
**Individual Development Plan**  
**Annual Review**

**Research Compliance Information**

GREAT Group Representatives:

The attached draft Compact Between Biomedical Graduate Students and their Research Advisors was unanimously endorsed by the GREAT Group Steering Committee at its June 16, 2008, meeting in Washington, DC. As you may recall, in March 2007, the development of a graduate student compact was strongly endorsed by the GREAT Group. An earlier draft of the document was presented at the October 20, 2007, GREAT Group Business meeting in Providence, RI, and was circulated for comment and feedback to the entire GREAT Group. We plan to present the document to AAMC governance for endorsement at its September meeting.

On behalf of Nancy Street and the entire drafting team, thank you for your support for and input on the document. Please feel free to contact me if you have any questions or would like to discuss the document.

Thank you,

Jodi

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## **Compact Between Biomedical Graduate Students and Their Research Advisors**

Pre-doctoral training entails both formal education in a specific discipline and an apprenticeship in which the graduate student trains under the supervision of one or more investigators who are qualified to fulfill the responsibilities of a mentor. A positive mentoring relationship between the pre-doctoral student and the research advisor is a vital component of the student's preparation to become not only an independent and successful research scientist but also an effective mentor to future graduate students.

Individuals who pursue a biomedical graduate degree are expected to take responsibility for their own scientific and professional development. Faculty who advise students are expected to fulfill the responsibilities of a mentor, including the provision of scientific training, guidance, instruction in the Responsible Conduct of Research and research ethics, and financial support. The faculty advisor also performs a critical function as a scientific role model for the graduate student.

### **Core Tenets of Pre-doctoral Training**

#### **Institutional Commitment**

Institutions that train biomedical graduate students must be committed to establishing and maintaining high-quality training programs with the highest scientific and ethical standards. Institutions should work to ensure that students who complete their programs are well-trained and possess the foundational skills and values that will allow them to mature into independent scientific professionals of integrity. Institutions should provide oversight for length of study, program integrity, stipend levels, benefits, grievance procedures, and other matters relevant to the education of graduate students. Additionally, they should recognize and reward their graduate training faculty.

#### **Program Commitment**

Graduate programs should endeavor to establish graduate training programs that provide students with the skills necessary to function independently in a scientific setting by the time they graduate. Programs should strive to maintain scientifically relevant course offerings and research opportunities. Programs should establish clear parameters for outcomes assessment and closely monitor the progress of graduate students during their course of study.

**Quality Mentoring**

Effective mentoring is crucial for graduate school trainees as they begin their scientific careers. Faculty mentors must commit to dedicating substantial time to the graduate students to ensure their scientific, professional and personal development. A relationship of mutual trust and respect should be established between mentors and graduate students to foster healthy interactions and encourage individual growth. Effective mentoring should include teaching the scientific method, providing regular feedback in the form of praise and constructive criticism to foster individual growth, teaching the “ways” of the scientific enterprise, and promoting students’ careers by providing appropriate opportunities. Additionally, good graduate school mentors should be careful listeners, actively promote and appreciate diversity, possess and consistently exemplify high ethical standards, recognize the contributions of students in publications and intellectual property, and have a strong record of research accomplishments and financial support.

**Provide Skills Sets and Counseling that Support a Broad Range of Career Choices**

The institution, training programs, and mentor should provide training relevant to academic, industrial, and research careers that will allow their graduate students to appreciate, navigate, discuss, and develop their career choices. Effective and regular career guidance activities should be provided, including exposure to academic and non-academic career options.

## Commitments of Graduate Students

- **I acknowledge that I have the primary responsibility for the successful completion of my degree.** I will be committed to my graduate education and will demonstrate this by my efforts in the classroom and the research laboratory. I will maintain a high level of professionalism, self-motivation, engagement, scientific curiosity, and ethical standards.
- **I will meet regularly with my research advisor and provide him/her with updates on the progress and results of my activities and experiments.**
- **I will work with my research advisor to develop a thesis/dissertation project.** This will include establishing a timeline for each phase of my work. I will strive to meet the established deadlines.
- **I will work with my research advisor to select a thesis/dissertation committee.** I will commit to meeting with this committee at least annually (or more frequently, according to program guidelines). I will be responsive to the advice of and constructive criticism from my committee.
- **I will be knowledgeable of the policies and requirements of my graduate program, graduate school, and institution.** I will commit to meeting these requirements, including teaching responsibilities.
- **I will attend and participate in laboratory meetings, seminars and journal clubs that are part of my educational program.**
- **I will comply with all institutional policies, including academic program milestones.** I will comply with both the letter and spirit of all institutional safe laboratory practices and animal-use and human-research policies at my institution.
- **I will participate in my institution's Responsible Conduct of Research Training Program and practice those guidelines in conducting my thesis/dissertation research.**

- **I will be a good lab citizen.** I will agree to take part in shared laboratory responsibilities and will use laboratory resources carefully and frugally. I will maintain a safe and clean laboratory space. I will be respectful of, tolerant of, and work collegially with all laboratory personnel.
- **I will maintain a detailed, organized, and accurate laboratory notebook.** I am aware that my original notebooks and all tangible research data are the property of my institution but that I am able to take a copy of my notebooks with me after I complete my thesis/dissertation.
- **I will discuss policies on work hours, sick leave and vacation with my research advisor.** I will consult with my advisor and notify fellow lab members in advance of any planned absences.
- **I will discuss policies on authorship and attendance at professional meetings with my research advisor.** I will work with my advisor to submit all relevant research results that are ready for publication in a timely manner prior to my graduation.
- **I acknowledge that it is primarily my responsibility to develop my career following the completion of my doctoral degree.** I will seek guidance from my research advisor, career counseling services, thesis/dissertation committee, other mentors, and any other resources available for advice on career plans.

## Commitments of Research Advisors

- **I will be committed to the life-long mentoring of the graduate student.** I will be committed to the education and training of the graduate student as a future member of the scientific community.
- **I will be committed to the research project of the graduate student.** I will help to plan and direct the graduate student's project, set reasonable and attainable goals, and establish a timeline for completion of the project. I recognize the possibility of conflicts between the interests of externally funded research programs and those of the graduate student, and will not let these interfere with the student's pursuit of his/her thesis/dissertation research.
- **I will be committed to meeting one-on-one with the student on a regular basis.**
- **I will be committed to providing financial resources for the graduate student as appropriate or according to my institution's guidelines, in order for him/her to conduct thesis/dissertation research.**
- **I will be knowledgeable of, and guide the graduate student through, the requirements and deadlines of his/her graduate program as well as those of the institution, including teaching requirements and human resources guidelines.**
- **I will help the graduate student select a thesis/dissertation committee.** I will assure that this committee meets at least annually (or more frequently, according to program guidelines) to review the graduate student's progress.
- **I will lead by example and facilitate the training of the graduate student in complementary skills needed to be a successful scientist, such as oral and written communication skills, grant writing, lab management, animal and human research policies, and the ethical conduct of research.** I will encourage the student to seek opportunities in teaching, if not required by the student's program.
- **I will expect the graduate student to share common laboratory responsibilities and utilize resources carefully and frugally.**

- **I will not require the graduate student to perform tasks that are unrelated to his/her training program and professional development.**
- **I will discuss authorship policies regarding papers with the graduate student.** I will acknowledge the graduate student's scientific contributions to the work in my laboratory, and I will work with the graduate student to publish his/her work in a timely manner prior to the student's graduation.
- **I will discuss intellectual policy issues with the student with regard to disclosure, patent rights and publishing research discoveries.**
- **I will encourage the graduate student to attend scientific/professional meetings and make an effort to secure and facilitate funding for such activities.**
- **I will provide career advice and assist in finding a position for the graduate student following his/her graduation.** I will provide honest letters of recommendation for his/her next phase of professional development. I will also be accessible to give advice and feedback on career goals.
- **I will provide for every graduate student under my supervision an environment that is intellectually stimulating, emotionally supportive, safe, and free of harassment.**
- **Throughout the graduate student's time in my laboratory, I will be supportive, equitable, accessible, encouraging, and respectful.** I will foster in the graduate students professional confidence and encourage critical thinking, skepticism and creativity.

**ADVANCED GRADUATE STUDENT  
INDIVIDUAL DEVELOPMENT PLAN  
ANNUAL REVIEW**

Name: \_\_\_\_\_ Review date: \_\_\_\_\_

Date training began at WVU: \_\_\_\_\_

**Part 1. Progress Review: Research and Professional Training in the Past Year**

- Brief overview of your research project and major accomplishments in the past year (one half page should be sufficient):
  
- Publications:
  
- Honors/Awards (include fellowships with entire funding periods, grants written/applied for/received, professional society presentation awards, or travel awards, etc.):
  
- National or other professional meetings attended (indicate meeting title, oral or poster presentation):
  
- Seminar presentations (title, department, or joint meetings):
  
- New areas of research or technical expertise acquired in past years:
  
- Teaching activity:
  - Oversight of graduate, undergraduate or summer student (name, academic level, project title):
  
  - Course lectures (department, course name) or lab sections (section title, supervised/unsupervised):
  
- Committee or other service activity (indicate if you held an office); Other professional activities not identified above:

**Part 2. Plans for the Up-coming year:**

**Research and other training plans:**

- Research project goals (brief paragraph):

- Anticipated publications (indicate projected titles):
- Anticipated meeting or workshop attendance:
- Fellowship or other funding applications planned (indicate name of award):
- Other professional training (course work, teaching activity):

**Career Goals:**

- Current career goal(s):
  - 1)
  - 2)
- What further research activity or other training is needed before it is appropriate to start a search for a post-doctoral fellowship or first-job position?
- When do you anticipate beginning this search?

\*Source: <http://www.faseb.org>

**Research Compliance Information**

<http://www.oric.research.wvu.edu>

Under Compliance Training, click on CTI Training Website

Sign in as a new member

Question 1: RCR – choose biomedical

Question 2: IRB – choose biomedical, if conducting human research

Question 3: IACUC – choose biomedical if conducting animal research