

WILLIAM PATERSON UNIVERSITY
DEPARTMENT OF BIOLOGY
Master of Science in BIOTECHNOLOGY
GRADUATE STUDENT HANDBOOK

2019/2020

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I. Welcome!

Welcome to William Paterson University and to the Department of Biology. The faculty and staff are committed to providing you with an outstanding academic and technical education. We look forward to developing an intellectual partnership that will contribute to your understanding of the molecular biology as well as the technical skills practiced in industry. Faculty believe in providing an excellent foundation in and understanding of research, lab skills and industry knowledge. We are dedicated to providing the training that will enable you to thrive in an industry or research setting.

II. Student Responsibility

We are providing this Graduate Student Handbook to inform you of the policies and procedures that will influence your experience in the graduate program in the Department of Biology at William Paterson University. **It is the responsibility of all students to be familiar with, and to adhere to, the policies and procedures described herein.**

This Handbook, the William Paterson University Student Handbook and the current William Paterson Graduate Catalog will provide you with the information needed to pursue a successful academic experience as a graduate student. While faculty and staff will aim to provide assistance and guidance in every possible manner, students are responsible to stay informed about policies/procedures, their status in the graduate program, and progress toward graduation.

III. Mission of the Graduate Program

The mission of the graduate program is to prepare students for careers in exciting and evolving fields of biotechnology - including pharmaceutical, biopharmaceutical, and biomedical industries, government and academic research laboratories, forensic sciences, food and cosmetic industries, and agricultural biotechnology.

IV. Mission of the University

William Paterson University of New Jersey is a public institution that offers an outstanding and affordable education to a diverse traditional and nontraditional student body through baccalaureate, graduate and continuing education programs. The University's distinguished teachers, scholars and professionals actively challenge students to high levels of intellectual and professional accomplishment and personal growth in preparation for careers, advanced studies and productive citizenship. Faculty and staff use innovative approaches to research, learning and student support to expand students' awareness of what they can accomplish. The University's graduates embody a profound sense of responsibility to their communities, commitment to a sustainable environment and active involvement in a multicultural world.

V. Overview of the Program

The Masters of Science in Biotechnology is a 30-credit applied science graduate program that prepares you for a successful career in or further advancement in the exciting and evolving fields of biotechnology - including pharmaceutical, biopharmaceutical, and biomedical industries, government and academic research laboratories, forensic sciences, food and cosmetic industries, and agricultural biotechnology. You will receive in-depth theoretical training in molecular biology, research methods, and project management, as well as extensive hands-on training in

recombinant DNA technologies including CRISPR/Cas-9, gene expression analyses, genomics and bioinformatics, plant and animal cell/tissue culture, and advanced protein methodologies. Elective courses are available in the sciences (e.g. immunology, pharmacology, virology, and human physiology) or in Business and/or Professional Communications to promote the “soft skills” that will make you more attractive on the job market and for career advancement (e.g. management theory, organizational communication, and leadership and teamwork)..

VI. Requirements for the Master’s Degree in Biotechnology

SUMMARY OF DEGREE REQUIREMENTS

- Completion of 30 credits of graduate coursework.
- Completion of the required number of credits with a minimum 3.00 cumulative grade point average.
- Completion of the program with no more than six credit hours with a grade of C.

REQUIRED PREREQUISITE COURSES: Students without any undergraduate preparation in biotechnology may be required take prerequisite courses in the areas of Genetics and/or Biochemistry

Required Graduate Courses: All of the following courses are required for the master’s degree.

<u>BIO</u>	<u>COURSE TITLE (Credits)</u>
5240	Molecular Biology (3)
5330	Research Methods (4)
6330	Project Management in Biotechnology (3)
Total: 10 credits	

Required Independent Experience: Take one of the following, with a minimum number of two credits.

<u>BIO</u>	<u>COURSE TITLE</u>
7000	Independent Study (2-4)
7020	Independent Reading (2-3)
7030	Field Experience in Biotechnology Industry (3)
6530	Seminar in Molecular Biology (3)
Total: 2-4 credits	

Required Applied Laboratory Component: Take three or more of the following courses:

<u>BIO</u>	<u>COURSE TITLE</u>
5300	Biotechnology: DNA (4)
5310	Cell and Tissue Culture (4)
5340	Genomics and Bioinformatics (4)
6310	Techniques in Gene Expression (3)
6320	Proteins (3)
Total: 12 credits, minimum	

Directed Electives: Students can complete up to six credits of electives. These courses are somewhat flexible and can come from Business, Professional Communication or Biology. The Business and Professional Communication courses are designed to give students the ‘soft’ skills required in industry. Students wishing to pursue research careers may opt for the Thesis option. In which case, students would register for two 3-credit Thesis courses (BIO 7990).

BIO 5040 Parasitology Credits: 3.0
BIO 5110 Physiology of Human Reproduction and Fertility Credits: 3.0
BIO 5220 Human Physiology Credits: 3.0
BIO 5270 Endocrinology Credits: 3.0
BIO 5300 Biotechnology: DNA Credits: 4.0
BIO 5310 Cell and Tissue Culture Credits: 4.0
BIO 5340 Genomics and Bioinformatics Credits: 4.0
BIO 5360 Neural Basis Behavior Credits: 3.0
BIO 5400 Immunology Credits: 3.0
BIO 5410 Virology Credits: 3.0
BIO 5440 Evolution Credits: 3.0
BIO 5461 Advanced Pathophysiology Credits: 3.0
BIO 5600 Pharmacology Credits: 3.0
BIO 5700 Bioethics Credits: 3.0
BIO 5840 Scanning Electron Microscopy Credits: 4.0
BIO 5850 Transmission Electron Microscopy Credits: 4.0
BIO 6240 Advanced Molecular Biology Credits: 3.0
BIO 6310 Biotechnology: Gene Expression Credits: 4.0
BIO 6320 Biotechnology: Protein Credits: 4.0
MGT 6040 Management Theory Credits: 3.0
MBA 6050 Business Statistics and Quantitative Analysis Credits: 3.0
MBA 6160 Organizational Behavior and Communication Credits: 3.0
MGT 6050 Business Analytics for Strategic Decision Making Credits: 3.0
MGT 7080 Ethical Leadership and Change Management Credits: 3.0
MKT 6080 Marketing Management Credits: 3.0
PCOM 5100 Integrated Communications Credits: 3.0
PCOM 5120 Organizational Communication Credits: 3.0
PCOM 5470 Strategic Multiplatform Writing Credits: 3.0
PCOM 5660 Corporate Social Responsibility Credits: 3.0
PCOM 6090 Leadership and Teamwork Credits: 3.0
RPS 6100 Influence, Persuasion and Negotiation Strategy Credits: 3.0

Total: 6 credits, maximum

XI. Student Learning Outcomes

- Demonstrate a comprehensive understanding of the concepts and principles of biotechnology.
- Utilize and apply technical skills and experimental approaches relevant to biotechnology.
- Identify, analyze and solve problems in the field of biotechnology using the scientific method.
- Critically evaluate scientific and technical publications relevant to biotechnology.
- Effectively communicate in standard scientific formats, orally and in writing.
- Demonstrate knowledge of interdisciplinary frame works within biotechnology and related fields and professions.

XII. Advisement

Advisement

The Graduate Director conducts an initial advisement session with each incoming graduate student prior to the start of their first semester. As such, all transcripts for incoming students will be reviewed and a complete audit will be conducted indicating whether or not prerequisite course requirements have been met. During meetings with students, the Graduate Director discusses the audit and develops a curriculum plan for the student. If a student feels that s/he has completed coursework not reflected in the audit, they may request a review of the decision. This request should follow the procedures outlined in the section entitled "Adjustment of Degree Requirements".

Course Sequencing

Many of the courses in the program have prerequisites. Prerequisites for specific courses are indicated in the graduate and undergraduate catalogues. The curriculum plans have been developed to adhere to prerequisite sequences.

MS Biotechnology Curriculum Map

2.0 year plan

Fall Semester

Spring Semester

Year 1

Research Methods 4cr
Project Management 3cr

Applied Biotech Course 4cr
Elective 3-4cr

Year 2

Molecular Biology 3cr
Applied Biotech Course 4cr

Applied Biotech Course 4cr
Elective 3-4cr
Independent Experience 2-3cr

1.5 year plan

Fall Semester

Spring Semester

Year 1

Research Methods 4cr
Project Management 3cr

Applied Biotech Course 4cr
Applied Biotech Course 4cr
Elective 3-4cr

Summer

Independent Experience 2-3cr
Elective 3cr

Year 2

Molecular Biology 3cr
Applied Biotech Course 4cr

XII. Independent Experience

Proposal preparation guidelines BIO 7000 Independent Study

BIO 7000 Independent Research provides an opportunity for advanced undergraduate students to design and execute a research project involving collection and analysis of data under the supervision of a faculty mentor. Students interested in conducting an independent research project should contact a faculty supervisor well in advance of the intended semester in which the project is to be conducted. In consultation with the faculty supervisor, the student will define the project objectives, investigate the published research literature on the topic, and prepare a detailed plan of research. These shall be used in the preparation of a formal proposal for independent research, following the detailed guidelines below. Any proposal for independent study is to represent the scholarly work of an individual student and must strictly adhere to the University policy on academic integrity regarding plagiarism and appropriate acknowledgement of sources. Faculty guidance is not to include the writing of any part of the proposal, and supervisors should take special care that students do not paraphrase any source without attribution in the preparation of their proposals.

The purpose of the proposal is to convince the faculty supervisor, department chairperson, and dean:

...that the proposed project is scientifically and educationally worthwhile. Will the project, if successful, potentially make a contribution to general knowledge and provide the student with a valuable research experience?

...that the student investigator is well-prepared to conduct the proposed research. Is the student knowledgeable about the discipline, including the relevant scientific literature, the necessary methods, and the relation of the proposed project to issues of broad scientific interest?

...that the project is feasible. Are the necessary materials and equipment available? Do the student and supervisor have the necessary expertise? Can the proposed objectives be achieved in the proposed project period (typically one semester)? Are the proposed methods appropriate and sufficient to achieve the proposed objectives? Is there sufficient replication and an appropriate statistical design for meaningful data analysis? Is the description of procedures sufficiently detailed to demonstrate the student's knowledge and a likelihood of success?

The independent research proposal should accomplish these aims within the following components and format. DO use section titles (Introduction, Materials and Methods, etc.) as headings in your proposal.

Introduction

Introduce the scientific context for the proposal, explain the motivation for your proposal, review the relevant scientific literature, provide a clear set of objectives and validate and justify the overall approach to be taken to achieve these objectives.

Research Plan

Provide a clearly organized, detailed exposition of your plan for accomplishing the stated objectives. These details should allow a referee to judge that you have considered the approach thoroughly and are aware of its strengths and shortcomings. For experimental projects, this should generally include a detailed experimental design (treatments and controls, number of replicates, data to be collected, planned statistical analysis), detailed technical procedures (sample collection, tissue preparation, injection protocols, instrumental methods, etc.) and an exposition of limitations inherent in your approach and potential ways around it. For field studies, the research plan should generally include a description of study sites, a sampling design (number of samples and how selected, data to be collected, planned statistical analysis), and detailed technical procedures (behavioral observations, instrumental methods, handling of specimens, etc.). All proposals should include in this section a timetable or schedule indicating when various activities will take place and when you expect various goals to be achieved. Subheadings (e.g., Experimental Design, Technical Procedures, Data Analysis, Timetable) might be helpful and are encouraged. **NOTE: If the project involves animal or human subjects, approval from the WPUNJ Institutional Animal Care and Use Committee, or the Institutional Review Board (IRB) must be obtained in advance and indicated with the appropriate signature on the application form.**

Equipment, Supplies, and Budget

Provide a complete list of equipment and supplies needed for the project. For any items that need to be purchased, provide a cost estimate and suggested supplier. For sophisticated instrumentation that requires special training (electron microscopes, spectrophotometers, etc.), describe your experience with the instrument or a plan for becoming proficient under appropriate supervision.

Timeline:

Please indicate a rough timeline when you expect to finish various aspects of the study

Literature Cited

List all of the information sources (and only those sources) that you cited in the body of your proposal. Citation by author's name and year is preferred over the "footnote" style citations found in Science and some other journals. For example: "Adult ticks have eight legs (Sonenshine 1991)" and not "Adult ticks have eight legs (1)" or "Adult ticks have eight legs¹." Listing in the Literature Cited section should begin with the author's surname and include the full title of the article and journal in which it was published. For example:

Andrews, R. H. and Bull, C. M. 1982. Mating behavior and reproductive isolation of three species of reptile ticks. *Animal Behaviour*. 30:514-524.

Citation and listing of a publication indicates that you have read the publication yourself. Second-hand citation should be avoided, and clearly acknowledged when necessary (as when the original is unavailable or in a language you don't read, for example:

Aeschlimann, A. 1958. Development embryonnaire d'*Ornithodoros moubata* et transmission transovarriene de *Borrelia duttoni*. Acta Tropica 15: 15-64, cited in Sonenshine, D., 1991. Biology of Ticks. Oxford University Press.).

Heavy reliance on web sources (other than peer-reviewed publications available online) is discouraged. Where necessary, citation of web sources should be as complete as possible, should indicate the authority for the information on the site, and should include the date when the site was last updated (if available) and the date when it was accessed by the student.

XII. Thesis Option

Proposal Guidelines:

BIO 7990 Graduate Thesis Research provides an opportunity for research oriented graduate students to design and execute an in-depth research project under the supervision of a faculty mentor and committee. Students interested in conducting independent research should contact a faculty supervisor well in advance of the intended semester in which the project is to be conducted. Students are encouraged to register for Graduate Independent Reading (BIO 7010/7020) for an adequate literature review prior to taking thesis credits. In consultation with the faculty supervisor and two additional committee members, the student will define the project objectives, do a literature search to develop the justification for the proposed research, develop detailed methods for the proposed work, and prepare a project proposal according to the detailed guidelines below. Any proposal for thesis research is to represent the scholarly work of an individual student and must strictly adhere to the University policy on academic integrity regarding plagiarism and appropriate acknowledgement of sources. Faculty guidance is not to include the writing of any part of the proposal, and supervisors should take special care that students do not paraphrase any source without attribution in the preparation of their proposals.

The purpose of the proposal is to develop a novel, independent, publishable research project. Furthermore, the Thesis Committee is charged with determining if: 1) the proposed project will provide significant impact to the scientific community; 2) the proposed project will provide a worthwhile experience in independent scholarship for the student and lead to a potential peer-reviewed publication; 3) the student is well-prepared and motivated to conduct the proposed project; and 4) the project is feasible in a reasonable time-frame and at a reasonable cost.

The thesis research proposal should accomplish these aims within the following components and format. DO use section titles (Introduction, Background, Research Plan and Literature Cited) as headings in your proposal.

Introduction

Introduce the scientific context for the proposal, explain the motivation for your proposal, and provide a clear statement of objectives and hypotheses. Your purpose is to demonstrate an understanding of the conceptual framework for the questions you propose

to investigate, indicate some familiarity with the relevant literature, and make the case that your proposed investigation is scientifically worthwhile.

Background

Provide a reasonably detailed review of the current literature on your topic (or, alternatively, questions and sub-questions) that will provide the basis for your research project. Include what is currently known about your topic, what is lacking in the field you wish to study and how your project will advance the field's knowledge of the topic.

Research Plan

Provide a detailed section explaining how each hypothesis will be addressed. Provide information of your study organism, field location and experimental design. Include any experimental protocols. Provide information regarding the type of data to be collected and how those data will be analyzed.

Also include a detailed timeline indicating when you expect to finish various aspects of the research. Please include the semesters you will register for thesis credits.

Literature Cited

List all of the information sources (and only those sources) that you cited in the body of your proposal. Citations should be formatted in a manner acceptable to the discipline or in the APA (American Psychological Association) style. For example:

Andrews, R. H. and Bull, C. M. 1982. Mating behavior and reproductive isolation of three species of reptile ticks. *Animal Behaviour*. 30:514-524.

Citation and listing of a publication indicates that you have read the publication yourself. Second-hand citation should be avoided, and clearly acknowledged when necessary (as when the original is unavailable or in a language you don't read, for example:

Aeschlimann, A. 1958. Development embryonnaire d'*Ornithodoros moubata* et transmission transovarriene de *Borrelia duttoni*. *Acta Tropica* 15: 15-64, cited in Sonenshine, D., 1991. *Biology of Ticks*. Oxford University Press.).

Heavy reliance on web sources (other than peer-reviewed publications available online, in which case providing the doi, digital object identifier, is acceptable) is discouraged. Where necessary, citation of web sources should be as complete as possible, should indicate the authority for the information on the site, and should include the date when the site was last updated (if available) and the date when it was accessed by the student.

Progress Report Guidelines:

Include these titled sections:

Introduction

Provide a brief introduction on the scientific scope of the project. Indicate the initial rationale for the project and the hypotheses that were tested. Indicate any change from the initial proposal and the direction the research will take to finish the thesis research.

Progress to Date

Provide a detailed account of the completed research. Include the hypotheses tested and appropriate data that addressed those hypotheses. Indicate how the completed progress

has influenced the future direction of the thesis research.

Timeline for Completion

Provide a detailed timeline indicating when you expect to finish the remaining aspects of the research. Include when the thesis document is expected to be completed and a tentative date for the oral presentation and defense of the thesis.

XIII. Academic Policies and Procedures

Admission - Matriculation

The minimum requirement for admission is a bachelor's degree from an accredited college or university, preferably with a major in biology or a related field. Undergraduate courses should include at least five courses or 20 credits of biology. Additional co-requirements should include one year each of chemistry and mathematics (two semesters of calculus or a semester of calculus and a semester of statistics). Applicants to the Biotechnology program should have proficiency in cellular biology, genetics, molecular biology and biochemistry. A cumulative undergraduate average of at least 3.0 on a scale of 0 to 4.0 is expected. Lower GPA's will be considered based on overall strength of application.

In addition, we require a satisfactory score on the Graduate Record Examination (GRE) general test and two letters of recommendation from persons addressing the applicant's academic ability and potential.

International students must supply a World Education Service (or its equivalent) evaluation of their undergraduate transcript and, depending on their country of origin, have a satisfactory score on the Test of English as a Foreign Language (TOEFL).

Academic Standards

The student is responsible for maintaining the required grade point average (3.00) and for observing the cumulative totals that appear on each semester's grade report. The University is under no obligation to warn students about academic deficiencies or to alert them in advance to probation or dismissal when their grade point average falls below the required minimum.

If at any time during a graduate student's academic career that student's grade point average (GPA) falls below a 3.0 cumulative GPA, the student will be placed on probation. While on probation, the maximum number of credits in which a student can enroll will be nine (9) credits. During the time in which a graduate student is on probation, if that student's cumulative GPA remains below 3.0, but the student has achieved a GPA of 3.25 or higher in the semester, the student will be allowed to register for a subsequent term and a maximum of nine credits. If during the time a graduate student is on probation and that student has not attained a cumulative GPA of 3.0 or higher, and/or a GPA of 3.25 in the semester, the student will be dismissed from the University. A student must, however, attain a cumulative GPA of 3.0 or higher by the final semester of matriculation which is consistent with University policy.

College policy also stipulates that students may not graduate with more than six semester hours of C work. **Thus, students who earn more than six semester hours of C work in academic courses will be dismissed from the program.**

Appeals of dismissal decisions may be made in writing to the Dean of the College of Science and Health.

Academic Integrity

The Department of Biology strongly supports the University's Academic Integrity Policy. Students should refer to the Graduate Catalogue for a complete description of the policy. The department will enforce the policy according to the procedures outlined in the catalogue.

Leave of absence

Graduate students who wish to take a leave of absence from their studies for one semester must file a Request for a Leave of Absence Form with the Office of Graduate Admissions. Students are eligible for an additional semester of leave upon written request to the Office of Graduate Admissions. Students who are not enrolled in courses or on leave of absence must reapply to their program of study through the Office of Graduate Admissions. Semesters on leave are included in the 6-year time limit (from the date of matriculation) for completion of a master's degree.

Withdrawal from the University

Any graduate student who wishes to withdraw from the University must complete appropriate withdrawal forms which removes him or her from courses without academic penalty. A withdrawal is for an indefinite length of time and is in force until the student chooses to apply for readmission. Dropping one course does not constitute withdrawal from the University nor does non-attendance of classes. Students who withdraw from the University must drop all of their courses. If a student wishes to resume their studies they must apply for readmission through the Office of Graduate Admissions according to the admission's calendar.

Readmit Policy

Graduate students not enrolled in courses and who are not on an official leave of absence for a given semester are considered academically withdrawn and are required to apply for readmission prior to resuming graduate study.

Time Limit

The master's degree must be completed within a period of six years from the time the student matriculates. The time to completion includes leaves of absence, withdrawals, and comprehensive examinations. Requests for extension of time must be approved by the Dean of the College of Science and Health. Students requesting an extension should submit the request to the Dean of the College of Science and Health. A description of the extenuating circumstances and the projected graduation date should be included in the request. Courses completed more than six years prior to graduation may not be accepted towards the degree.

Applying for Graduation

An application must be filed with the Office of Graduate Admissions when the student plans to graduate. The application must be submitted to Graduate Admissions by the deadline specified in the Graduate Catalogue and the Office of Graduate Admissions website. Students who apply but do not qualify for graduation must submit a new application for subsequent semesters. Applications do not carry over.

Clearance for Graduation

Students should be aware that graduation clearances are completed according to the following schedule:

January graduates are cleared in early February

May graduates are cleared in early June

August graduates are cleared in early September

Adjustments to this timeline is not possible as final grades are not posted to the transcript immediately and clearance cannot occur until the Office of the Registrar processes all grades.

XV. Support Services

There are a variety of support services at William Paterson University which are available to students. The University offers the Center for Academic Support, the Writing Center and the Office of Disability Services. Students seeking accommodations due to a disability should consult with the Office of Disability Services to determine eligibility. The College of Science and Health maintains a Science Enrichment Center which is available to students enrolled in our program.

The department offers an academic assistance program whereby qualified graduate assistants are available for tutoring in various subject areas. The program also provides a Clinician's Assistance Program for students who are experiencing difficulties in their clinical work (See Clinician's Handbook). There are several computer laboratories available to students which are located in the Atrium, Science 217 and in the department.

XVII. Faculty and Staff Information

The following faculty and staff are members of the Department of Biology:

James Arnone

Assistant Professor

Ph.D., Wesleyan University

Genetics, genomics and molecular biology using *Saccharomyces cerevisiae* as a model organism

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Sonya Bierbower

Assistant Professor

Ph.D., University of Kentucky

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Danielle Desroches

Professor

Ph.D., City University of New York, Hunter College

Neuroendocrinology; teratogenic agents and development

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Mycology, fungal pathogenesis, antimicrobial resistance
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Jeung Woon Lee
Associate Professor
Ph.D., Boston University
Neurophysiology of pain; Transplantation of genetically engineered cells for pain research
Phone: 1 973 720 2442
Office: SCIE 4044
LeeJ22@wpunj.edu

Claire M. Leonard
Professor
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Molecular biology of metabolic diseases
Phone: 1 973 720 2791
Office: SWest 4058
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Kendall J. Martin
Professor
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Jaishri Menon
Professor
Ph.D., University of Baroda India
Physiology and vertebrate morphology
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Associate Professor
Ph.D., Medical University of South Carolina
Genomics & molecular biology of marine organisms; secondary metabolism; harmful algal blooms
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Emmanuel Onaivi
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Molecular biology of drug abuse
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Pradeep Patnaik
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DNA replication and the molecular genetics of parasitic protozoa
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PatnaikP@wpunj.edu

Michael S. Peek
Professor
Ph.D., University of Maryland
Plant ecophysiology
Phone: 1 973 720 2247
Office: SCIE 4054
PeekM@wpunj.edu

Venkat Sharma
Professor & Dean of College of Science and Health
Ph.D., University of Madras
Transcription and cytokine biology; Immunology, Nano-Immunology, Biochemistry of Leukemia, HIV-associated B-cell lymphomas and Biomedical Ethics
Phone: 1 973 720 2194

Office: SCIE 3019
SharmaV@wpunj.edu

David Slaymaker
Professor & Department Chair
Ph.D., University of California at Riverside
Molecular plant ecology; molecular plant-pathogen interactions
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Office: SCIE 4064B
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Joseph Spagna
Associate Professor
Ph.D., University of California, Berkeley
Systematics, evolution and biomechanics of arthropods
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Stephen G. Vail
Professor
Ph.D., University of California at Davis
Population ecology; plant-animal interactions; Lyme disease
Phone: 1 973 720 2487
Office: SCIE 4041
Vails@wpunj.edu

Miryam Z. Wahrman
Professor
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Microbiology; hand hygiene; bacteria-fomite interactions; bioethics
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WahrmanM@wpunj.edu

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Molecular biology, biochemistry, and genetics of bacterial signal transduction
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XVIII. Awards

Monroe Spivak Fellowship

The Monroe Spivak Fellowship (\$4,000) is awarded to a new or returning full-time graduate student. Applications must include undergraduate transcripts and a statement that addresses the student's career goals. The Spivak Fellowship is awarded during fall semester.

XVIII. Forms

**APPLICATION FOR BIO 7990
GRADUATE THESIS RESEARCH**

Course: BIO 7990 (3 cr) Graduate Thesis Research

Student Information

Name: _____ SID: _____

Major: _____ Concentration: _____

Credits Completed: _____ GPA: _____

Faculty Supervisor: _____

Committee Members: (2) _____

(3) _____

Title of Proposed Study:

Semester and Year of Study: _____ **Continuing Project:** yes or no

Brief Summary of Proposal/Progress:

Signatures

Student: _____ **Date:** _____

Faculty Supervisor: _____ **Date:** _____

Committee: _____ **Date:** _____

_____ **Date:** _____

Graduate Program Director/Chairperson: _____ **Date:** _____

APPLICATION FOR BIO 7000
GRADUATE INDEPENDENT STUDY

Course: *BIO 7000 (3 cr) Graduate Independent Study*

Student Information

Name: _____ SID: _____

Major: _____ Concentration: _____

Credits Completed: _____ GPA: _____ Bio GPA: _____

Faculty Supervisor: _____

Title of Proposed Study:

Number of Credits: _____

Semester and Year of Study: _____

Brief Summary of Proposal:

Signatures

Student: _____ Date: _____

Faculty Supervisor: _____ Date: _____

IRB and/or IACUC Approval: _____ Date: _____

Graduate Program Director or Biology Chairperson _____ Date: _____

Dean: _____ Date: _____