The Department and Curriculum

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Welcome Message from Dr. David Slaymaker, Chairperson

This booklet is designed to help launch students to successfully navigate through the programs in biology or biotechnology to graduation, and the beginnings of a career or professional training.

Included in these pages are a description of the biology curriculum, a listing of courses and specific course requirements in biology and other required sciences and mathematics. The University Core Curriculum portion of the curriculum is also discussed. The latter is common to all undergraduates. Additionally, there is information about advisement, registration procedures, integrity policies, extracurricular clubs and organizations, scholarship opportunities, and many other aspects of University life that will help students make their years as undergraduates at William Paterson University a rewarding experience.

Refer to this handbook when you have specific questions; if you do not find the answers consult your advisor or the department chairperson (973/720-2439) or one of our faculty members listed in this handbook and inquire in person. Many questions regarding the biology department can be found on our website at http://www.wpunj.edu/cosh/departments/biology. Course descriptions can be found in the WPUNJ online course catalog.

The Biology department also has a student listserv for updates on available courses, seminars, job and scholarship opportunities, and meetings. These notices will be sent to your WPUNJ student email account.

Good Luck!

Dr. James T. Arnone
Courses: General Biology I, Genetics
Research: Genomics and Molecular biology using Saccharomyces cerevisiae
Office: SciE4042  x3457  ArnoneJ@wpunj.edu
Laboratory: SciW203

Dr. Robert Benno
(Director Animal Research Facility)
Courses: Animal Physiology, Histology, Neuroscience
Research: Developmental neurobiology
Office: SciE4047  x3440  BennoR@wpunj.edu
Laboratory: SciE2008

Dr. Sonya Bierbower
Courses: Animal Physiology
Research: Brain edema, Neuroinflammation responses after Traumatic Brain Injury
Office: SciE4052  x3455  BierbowerS@wpunj.edu
Laboratory: SciE2010

Dr. Danielle Desroches
(Coordinator: GS-LSAMP and MAPS)
Courses: Anatomy & Physiology, Endocrinology
Research: Neuroendocrinology; teratogenic agents and development
Office: SciE4046  x2329  DesrochesD@wpunj.edu

Dr. Eileen Gardner
(Coordinator: ISSBB and NOYCE)
Courses: General Biology I, Cell Biology, Developmental Biology, Immunology
Research: Cytoskeletal proteins; protein expression during development
Office: SciE4057  x3441  GardnerE@wpunj.edu
Laboratory: SciW205

Dr. David Gilley
Courses: Ecology Evolution and Behavior, Animal Behavior
Research: Insect social organization and its evolution; honey bee pheromones
Office: SciE4038  x2549  GilleyD@wpunj.edu
Laboratory: SciW307
NOTE: A sample of undergraduate majors courses are listed for each faculty. The listed research topics briefly summarize current foci of each professor; additional research opportunities may also be available. Interested? Talk to us! Check out our web pages:  http://www.wpunj.edu/cosh/departments/biology/faculty.dot

Dr. Lance Risley  
(Advisor: Beta Beta Beta Honor Society)  
Courses: General Biology II, Ecology Evolution & Behavior, General Ecology, Zoology, Conservation Biology  
Research: Ecology of bats; conservation of forest ecosystems  
Office: SciE4051 x3438 RisleyL@wpunj.edu  
Laboratory: SciE4017

Dr. Stephen Vail  
(Assistant Chairperson)  
Courses: Ecology Evolution & Behavior, General Ecology, Evolution, Mathematical Biology  
Research: Population biology; ecology of tick-borne diseases  
Office: SciE4041 x2487 VailS@wpunj.edu  
Laboratory: SciW317

Dr. Miryam Wahrman  
Courses: General Biology I, Bioethics, Molecular Biology, Research Methods  
Research: Molecular biology of development; biotechnology, bioethics  
Office: SciE4050 x3456 WahrmanM@wpunj.edu  
Laboratory: SciW306

Dr. Carey Waldburger  
(Post-Baccalaureate Advisor)  
Courses: General Biology I, Biotechnology: DNA, Basic Microbiology, General Genetics  
Research: Microbiology, bacteria-textile interaction; biotechnology, bioethics  
Office: SciE4048 x2486 WaldburgerC@wpunj.edu  
Laboratory: SciW215

Dr. Michael Peek  
(Graduate Coordinator)  
Courses: Ecology, Evolution & Behavior, Plant Physiology, Plant Ecology  
Research: Plant ecophysiology; Plant root dynamics  
Office: SciE4054 x2247 PeekM@wpunj.edu  
Laboratory: SciW317
DEPARTMENT OF BIOLOGY MISSION STATEMENT

The Department of Biology offers intellectually challenging programs leading to Bachelor and Master of Science degrees in biology and biotechnology. The programs are designed to prepare students for a variety of science and science-related careers, and for advanced study in graduate and professional schools. Careers for which our students prepare include teaching, scientific research, medicine and the allied-health professions, technical careers in the biomedical/pharmaceutical industry, and science administration and regulatory jobs in government.

The department offers undergraduate and graduate students opportunities to participate in exciting research with experienced investigators. The graduate programs are designed to provide advanced knowledge and skills that will allow these students to move to the forefront of their professions or successfully pursue higher degrees. Workshops sponsored with the Office of Continuing Education provide opportunities for full-time professionals to incorporate recent discoveries and state-of-the-art technology in their work places.

The department actively supports the research efforts of its faculty, recognizing that these endeavors create a stimulating and exciting working and learning community. The faculty of the department makes every effort to periodically re-examine the programs in the light of advances in the discipline, providing an environment that is conducive to scholarship and commensurate with the goals of the institution.

STUDENT LEARNING OUTCOMES

Students graduating with a biology degree will be able to demonstrate a fundamental understanding of basic biological concepts. Students will be expected to communicate these concepts orally, on written examinations, and in laboratory environments. They will have mastered the ability to formulate sound hypotheses in biology and to understand contemporary means for testing them. Students will have the ability to design experiments that utilize skill acquired from coursework and hands-on laboratory experience in order to collect and analyze biological data and come to logical conclusions that reflect an understanding of biological principles and phenomena.
All undergraduate curricula at William Paterson University consist of two parts:

1. **University Core Curriculum**: The Core constitutes a third of the entire undergraduate curriculum at WPU (approx. 40 credits). It contains a number of courses from across the university’s academic departments developed specifically for the Core program. Students create their Core experience by choosing a sequence of thirteen (13) courses from each of the following six areas of study.

   - Areas one, two and three are broadly viewed as “foundational” wherein courses will expose students to basic ideas, concepts, theories, perspectives, histories, methods, problems and debates from within any discipline in ways that clarify the meanings and scope of that area. Areas four, five and six are broadly viewed as “themes” that are core challenges in the 21st century. Courses in these areas will build upon the “foundational” knowledge and skills acquired by students.

   For more information, visit: [http://www.wpunj.edu/ucc/ucc-in-depth.dot](http://www.wpunj.edu/ucc/ucc-in-depth.dot)

2. **The Major: Biology/Biotechnology**: Curricula are designed for students interested in some aspect of the living world (animals, plants, microbes), specific areas of biology (neurobiology, animal behavior, ecology, molecular biology, teaching biology), and numerous other fields of biology. As a student of Biology/Biotechnology you will take 33-35 credits in Biology as well as 31-32 credits in co-requisites (Chemistry (16), Physics (8), and Mathematics (8)).

   The details of each program - Biology and Biotechnology are listed on the next few pages. The department also offers Pre-Professional Programs in pre-medicine, pre-dentistry, and other related areas that are explained in greater detail on page 19. For those students planning a career in teaching K-12 please also refer to the College of Education’s Handbook.

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**Integrating Core with Majors**

To allow for better integration of Core and student majors, the Faculty Senate passed the following resolution on January 25, 2011:

Students may use up to three courses in their major to fulfill UCC requirements. One of these UCC-major courses may be a foundational course offered in Areas One, Two or Three. All UCC-major designated courses must be approved by the UCC Council.

**Developmental Core**

To ensure a developmental sequence of courses within the Core, students are expected to

- Take at least 18 credits in Areas 1-3 before they take Area 4, and
- Take Area 4 before they take Areas 5 and 6

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**Writing Intensive (WI) and Technology Intensive (TI) Requirements**

WPU is committed to a nurturing learning environment in which writing and technology literacies are taken seriously across disciplines. Many courses at WPU are designated as “WT” or “TI.” These are attributes to courses which could be designated as a WI or TI course can be used by a student to satisfy the above requirements.

- Four (4) Writing Intensive (WI) courses
- Two (2) Technology Intensive (TI) courses

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**Notice: The Biology Core-course Rules**

**A) C- Minimum Grade Policy**

All Biology and Biotechnology majors are required to earn grades of at least C- in their core courses. If a student has received a grade below C- in a particular core course, that student did not meet the program’s grade requirements for the course and that student will not be allowed to proceed into sequential courses (those that require the core course as a prerequisite), nor to graduate, until they have received a grade of C- or better. The BS Biology core courses are BIO 1630 (General Biology I), BIO 1640 (General Biology II), BIO 2050 (Cell Biology), BIO 2060 (Genetics), and BIO 2490 (Ecology Evolution & Behavior). The BS Biotechnology core courses are BIO 1630, 2050, and 2060.

**B) Single Repeat Policy**

Only ONE repeat is allowed for each of the BS Biology and BS Biotechnology core courses. This policy is effective Fall semester 2013 and applies to current and new BS Biology and BS Biotechnology majors. Students in other majors do not fall under this policy. For current majors in Biology and Biotechnology, the policy only applies to courses completed for the first time in Fall 2013.

**C) Biology Pre-requisite Policy**

All biology and biotechnology majors must successfully complete (with a C- or better) the core courses required for their major before progressing to upper-level biology courses (3000 and above). In other words, the core course sequence is a prerequisite for all upper-level biology courses. Core courses for the BS Biology major are BIO 1630 (General Biology I), BIO 1640 (General Biology II), BIO 2050 (Cell Biology), BIO 2060 (Genetics), and BIO 2490 (Ecology Evolution & Behavior). Core courses for the BS Biotechnology major are BIO 1630, 2050, and 2060. Core courses also include BIO 1120 and 1130 if a student is using these to fulfill the requirement for BIO 1640.
Notice: Minimum GPA Requirement

All Biology Majors must maintain an Overall Grade Point Average of 2.0 or above in all major courses in order to graduate with a BS degree in Biology/Biotechnology.

To calculate your GPA note the following:

A) Each credit earned with a grade of A = 4.0, A- = 3.7, B+ = 3.3, B = 3.0, B- = 2.7, C+ = 2.3, C = 2.0, C- = 1.7, D+ = 1.3, D = 1.0, F = 0, P = not included

B) This means a grade of B for a 4 credit course = 4(credits) x 3 = 12 points; C (for a 3 credit course) = 3 x 2 = 6 points, etc.

C) Add together all points earned and divide by the credits earned = GPA

Example above: 18 (points) divided by 7 (credits) = 2.57

D) Each semester add the number of points to the previous total points

Add the number of credits (remember varies between courses) to previous total

Divide new credit total into new point total = new GPA

E) Courses retaken - only the last grade counts in your GPA; subtract all other grades (points and credits), add new grade (points and credit), ask advisor for help!

F) All repeat courses Must be taken at WPUNJ or the prior grade will still count in the student's GPA.

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Curriculum Control Sheets

College of Science and Health, Bachelor of Science in BIOLOGY

UCC REQUIREMENTS [40-41 credits]

AREA 1: PERSONAL WELLBEING [3]

3 cred.

AREA 2: EXPRESSION [9]

a. Arts/Communication

3 cred.

b. Writing

ENG 1100 College Writing

3 cred.

c. Literature

3 cred.

AREA 3: WAYS OF KNOWING [19-20]

a. Philosophical Perspectives

3 cred.

b. Historical Perspectives

3 cred.

c. Social/Behavioral Science (2 different disciplines)

3 cred.

3 cred.

d. Scientific Perspectives (choose 1 of the following)

PHYS 2550 College Physics I or PHYS 2600 General Physics I

4 cred.

e. Quantitative Thinking

MATH 1600 Calculus I

4 cred.

AREA 4: DIVERSITY & JUSTICE [3]

Must complete 18 credits in UCC prior to taking Area 4

3 cred.

AREA 5: CIVIC & COMMUNITY ENGAGEMENT [3]

MUST COMPLETE Area 4 before taking Areas 5-6

3 cred.

AREA 6: GLOBAL AWARENESS [3]

MUST COMPLETE Area 4 before taking Areas 5-6

3 cred.

FIRST YEAR SEMINAR [1.5]

Required for 1st year students & transfers with less than 12 credits

1.5 cred.

INTENSIVE REQUIREMENTS

These courses can be double counted within the UCC, the major, or as free electives. If you are a transfer with an AA/AS degree you must take one WI course and zero TI courses.

WRITING INTENSIVE (WI) *W

The first WI course must be Area 2 College Writing

At least one course must be at the 3000 or above level

ENG 1100 College Writing

3 cred.

3 cred.

TECHNOLOGY INTENSIVE (TI) *T

3 cred.

3 cred.

UNIVERSITY REQUIREMENTS

FOREIGN LANGUAGE [6]

3 cred.

3 cred.

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### Biology Core*

- BIO 1630 General Biology I
- CHEM 1600/1610 General Chemistry I & II
- CHEM 2510 & 0510/2520 & 0520 Organic Chem I & II
- BIO 2590 Cell Biology
- PHYS 2560 College Physics II or PHYS 2610 General Physics II (matching course to Area 5d)
- MATH 1610 Calculus I or MATH 2300 Statistics or MATH 3720 Math Models in Biological Science

**Students must earn at least a C- in all 5 Biology Core* courses before taking any upper level Biology courses.**

### General Concentration

- Select one Plant course: BIO 3610, BIO 3630, or BIO 3650
- Biology Electives: Must complete 3 courses, 3000 level or above (3-4 cr.) At least one must be 4 credit.
- BIO 4800 Biology Seminar or BIO 4990 Independent Study

### Physiology & Behavior Concentration

- BIO 3300 Animal Behavior
- BIO 3080 Animal Physiology
- Biology Electives: Must complete 2 courses, 3000 level or above (3-4 cr.) At least one must be 4 credit.
- BIO 4800 Biology Seminar or BIO 4990 Independent Study

### Ecology Concentration

- BIO 3630 Terrestrial Plant Ecology
- BIO 33000 General Ecology
- Ecology Elective: Must complete 1 course, 3000 level or above (3-4 cr.)
- Biology Elective: Must complete 1 course, 3000 level or above (3-4 cr.)
- BIO 4800 Biology Seminar or BIO 4990 Independent Study

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### PHYSIOLOGY CONCENTRATION

<table>
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<th>Pre-Req.</th>
<th>Credits</th>
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### ECOLOGY CONCENTRATION

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### Biology Elective Courses

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<tr>
<td>CHEM 4270</td>
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</tbody>
</table>

**Note:**
1. Several courses from the Department of Environmental Science and Geography can be used as electives for the Ecology concentration. A list of approved courses is available from the Biology Department.
2. Electives in orange text are Plant Electives. One plant course required for General Concentration.
3. Junior and senior biology majors may take graduate biology courses at the 5000 level with the permission of the instructor, the Department of Biology chairperson, and the Dean of the College. GPA of 3.0 required. These credits (5000s) could be applied to either the undergraduate or graduate degree at WPUNJ.
4. A student in any of the biology concentrations must complete a minimum of two laboratory courses at the 3000 level or above to graduate from the biology program.

*BIO 1120 and 1130, General Anatomy and Physiology I and II, may substitute for Bio 1640 by permission of the Biology Department chairperson, in which case BOTH must be taken. These courses are for students interested in health-related fields, such as physical therapy or physician assistant.

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**Curriculum Control Sheets**

College of Science and Health Bachelor of Science in BIOTECHNOLOGY

<table>
<thead>
<tr>
<th>UCC REQUIREMENTS [40-41 credits]</th>
<th>Credits</th>
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<tr>
<td>AREA 1: PERSONAL WELLBEING [5]</td>
<td>3</td>
</tr>
<tr>
<td>AREA 2: EXPRESSION [9]</td>
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<tr>
<td>a. Arts/Communication</td>
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<td>b. Writing</td>
<td>3</td>
</tr>
<tr>
<td>c. Literature</td>
<td>3</td>
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<tr>
<td>AREA 3: WAYS OF KNOWING [19-20]</td>
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<tr>
<td>a. Philosophical Perspectives</td>
<td>3</td>
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<td>b. Historical Perspectives</td>
<td>3</td>
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<tr>
<td>c. Social/Behavioral Science (2 different disciplines)</td>
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<td>d. Scientific Perspectives (choose 1 of the following)</td>
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<tr>
<td>PHYS 2550 College Physics I or PHYS 2600</td>
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<td>General Physics I</td>
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<td>e. Quantitative Thinking</td>
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<td>MATH 1600 Calculus I</td>
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<td>AREA 4: DIVERSITY &amp; JUSTICE [3]</td>
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<tr>
<td>Must complete 18 credits in UCC prior to taking Area 4</td>
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**AREA 5: CIVIC & COMMUNITY ENGAGEMENT [3]**

**AREA 6: GLOBAL AWARENESS [3]**

**FIRST YEAR SEMINAR [1.5]**

**Writing Intensive (WI) *W**

**Technology Intensive (TI) *T**

**University Requirements**

**Foreign Language [6]**
BIOTECH CORE* [9 cred.]
- BIO 1630 General Biology I
- BIO 2050 Cell Biology
- BIO 2060 Genetics

BIOTECH UPPER LEVEL COURSEWORK [23 – 25 cred.]
- BIO 3200 Microbiology
- BIO 4240 Molecular Biology
- BIO 4300 Biotechnology: DNA
- BIO 4310 Biotechnology: Cell Culture
- BIO 4990 Independent Study

Choose 1 of the following courses:
- BIO 3610 General Botany

CO-REQUIREMENTS [28 cred.]
- CHEM 1600 General Chemistry I
- CHEM 1610/0610 General Chemistry II
- CHEM 2510/0510 Organic Chemistry I
- CHEM 2520/0520 Organic Chemistry II
- PHYS 2560 College Physics II or PHYS 2610
- PHYS 4270 Biochemistry

Students must earn a C- in all Biotech Core* courses.

BIOTECHNOLOGY ELECTIVES

<table>
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<td>BIO 3610 Botany</td>
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<td>BIO 3650 General Plant Physiology</td>
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<td>BIO 4160 Comparative Animal Physiology</td>
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<td>BIO 4210 Developmental Biology</td>
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<td>BIO 4500 Molecular Biology of Prokaryotes</td>
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Choose 1 of the following courses:

SUGGESTED SEQUENCE OF COURSES

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Credits 17

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Credits 15

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Credits 17

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Credits 13
### Course Rotation for Undergraduate Biology Courses 2015 - 2020

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### Independent Study

Independent study allows juniors and seniors to receive degree credits for carrying out a research project with a faculty mentor. Students must have at least a 3.0 grade point average to apply and students (under the guidance of a faculty mentor) must submit a project proposal. Interested students should speak to faculty members about available research projects. This can be taken instead of the Biology Seminar requirement. For details, see page 21.

### GS-LSAMP-MAPS

These programs, led by Dr. Danielle Desroches, provide support and mentoring to increase the participation of minority students in science. In cooperation with the Minority Education and Enrichment Center, these programs provide financial support for minority students to participate in summer research internships on and off campus. GS-LSAMP-MAPS also hosts meetings where students present their work, socialize, and learn about available scholarships, grants, and research opportunities. Contact Dr. Desroches for details and meeting times.

### Summer Experience

This departmental program helps place students in off-campus summer research positions in a wide range of biological disciplines. Local, national, and international opportunities are available in fields such as ecology, behavior, cell and molecular biology, and forensic pathology. Students have worked at academic, government, and industry locations. This program also provides funding to help students pursue these opportunities. Contact Dr. David Slaymaker, Dr. Claire Leonard or Dr. Danielle Desroches about the many opportunities available.

### Student Research Opportunities

Both Biology and Biotech students are strongly encouraged to engage in active field or laboratory research projects with a faculty mentor as part of their educational experience. You are thus encouraged to approach any faculty member at any time to ask about research opportunities or visit: http://www.wpunj.edu/cosh/departments/biology/student.dot.

In addition, the programs below can help you find and/or fund research projects at WPU, or beyond.
Center for Research (CfR)

CFR was established by the College of Science and Health to support student involvement in the rapidly developing fields of biology, biotechnology, biochemistry, and environmental sciences. CfR provides funding for summer research projects involving undergraduates and also provides a moderate summer stipend for students. Interested students should talk with individual faculty members about research projects and about the availability of CfR support.

Student Undergraduate Research Program (SURP)

SURP is sponsored by the Provost’s Office. SURP awards provide up to $2000 for undergraduate research projects (equipment, supplies, and travel). Students must apply for SURP awards in cooperation with a faculty mentor so talk with individual faculty about this opportunity.

INDEPENDENT STUDY AND RESEARCH OPPORTUNITIES

Students are encouraged to join faculty in laboratory research. This experience can help the student in many ways. It gives students laboratory experience and it is excellent to have this type of experience on the resume, either for employment or for professional school. It also helps the students to determine which area of research is most interesting to them. This research can be conducted as an independent study for university credit. Financial support for students is sometimes available through grants awarded to members of our faculty. In addition, the College of Science and Health provides financial support for research through its Center for Research (CfR). Grants from the CfR are competitive and awarded to both faculty and students. The student should find a faculty member who is conducting research that sounds interesting and approach him/her to ask about research opportunities.

The Department of Biology also offers financial and logistical support for placement of undergraduate students, majoring in biology or biotechnology, in off-campus summer programs (including internships) offered locally, nationally, and internationally. These opportunities include competitive federally funded research programs, summer courses, positions with government agencies, corporate-sponsored internships, and placement with researchers in students’ areas of interest.

ELIGIBILITY: Undergraduate status. Federally supported programs typically require U.S. citizenship or permanent residency. Field-oriented research programs require personnel in good physical condition. In some cases, minimum age of 18 is required. Minority and economically disadvantaged students are particularly encouraged to apply.

DURATION: Summer programs for undergraduates can range from 2 to 16 weeks and usually take place sometime during the months of May through August. While many programs have fixed lengths and start/end dates, some programs are more flexible and may be tailored to student availability.

DESCRIPTIONS AND DEADLINES: Printed descriptions of a wide variety of summer programs are available for students to examine. Deadlines are variable among programs and generally range from the first week of February to later in the spring. See Dr. Slaymaker for out-of-state programs and Dr. Leonard for in-state programs and especially corporate internships.

HOW TO APPLY FOR DEPARTMENTAL SUPPORT: Contact Dr. Slaymaker (973/720-2439; SlaymakerD@wpunj.edu) for application forms and instructions.

Students are able to present their findings at various meetings, including a regional meeting dedicated to undergraduate research, held here at William Paterson University. See your mentor for more information.
LABORATORIES AND EQUIPMENT

Major facilities and equipment include: The animal facilities, with colonies of genetically selected mice and rooms for data collection and analysis; the neurobiology facility, including a computerized image processing system and facilities for animal surgery and behavioral and physiological research; confocal and electron microscopy facilities, including transmission and scanning electron microscopes and associated specimen preparation equipment, an X-ray analyzer and two darkrooms; biotechnology facilities and tissue culture lab, including PCR units, electrophoresis units, computerized UV spectrophotometers, high pressure liquid chromatography units, ultracentrifuges and three scanning spectrophotometers; greenhouse; and a well-equipped ecology laboratory with both stationary and field equipment. In addition to laboratory facilities, the department is well-equipped for field-oriented aquatic and terrestrial ecological research.

Our campus is surrounded by forest and includes several streams, a waterfall, and three ponds. All of these are explored by students in various Biology courses. An adjacent 1,000 acres of protected forest, purchased by the city of Wayne and The Nature Conservancy has been described as the largest parcel of undeveloped forest in the New York Metropolitan area. It is, of course, an excellent outdoor laboratory for ecological projects. In May 1998, Bayer Corporation donated the nearby Oldham Pond to WPUNJ. This 26.5 acre facility is being utilized by both Biology and Environmental Science students in efforts to better understand this urban-impacted ecosystem. The Department of Biology is located in the new 232,000 sq. ft. Science Complex, opened in 2012.
A minor in Biology is suggested for students majoring in one of the other sciences, as well as students enrolled in Nursing, Psychology, Community Health, and those students who have a special interest in the field of biology. This course sequence may broaden future graduate and employment opportunities.

**Required Courses:** BIO 1630, 1640, 2050, 2060 and 2490 20 credits

One year of Chemistry and Precalculus are strongly recommended.

### TRANSFER STUDENTS

Transfer students from within the University must abide by all rules and regulations for degree requirements; every time a student changes his/her major there is the potential of losing credit in a specified area and accumulating elective credits that will prevent timely graduation in the newly chosen major. Students must be prepared to spend additional time as undergraduates to complete the requirements. (e.g., a mathematics requirement for a business major does not fulfill the mathematics requirement for a science/biology major). Transfer students from Nursing or Community Health will be able to substitute BIO 1120/1130 for BIO 1640 and may be able to substitute BIO 1700 for BIO 3200.

Transfer students with undergraduate course credits (but no bachelors degree) must complete a minimum of 30 credits at WPUNJ with a minimum of five (5) biology courses (at least three with a laboratory) and fulfill all other degree requirements for the major in order to graduate.

Transfer students with an AA or AS Degree from a New Jersey Community College automatically receive credit for all University Core Curriculum requirements, but should check their transcript carefully with regards to majors courses and consult the department chairperson with any questions.

Second Degree students, who have earned a bachelors degree with a different major either at WPUNJ or another accredited institution must take a minimum of thirty (30) credits at WPUNJ. This must include at least 50% of the major (biology) and all co-requisite courses unless previously completed, in order to receive a second degree. Transfer students who have completed the equivalent of BIO 1120/1130 will receive credit for either BIO 1640 or as a free elective.

### ACADEMIC ADVISEMENT

Each biology student is assigned to a specific faculty member who will act as an advisor and as a mentor to help the student plan his/her academic career, choose appropriate courses each semester and guide his/her progress toward timely graduation. Every student is expected to consult his/her advisor during each semester, at least before registration and more frequently if there are questions or problems.

### NEW JERSEY N-12 TEACHING CERTIFICATION

Students interested in NJ State Teacher Certification must contact the College of Education at the beginning of the sophomore year (after 30 earned credits) to be able to complete the requirements for certification in a timely fashion. Students will be assigned a second advisor, who will assist in choosing the certification courses and field-study sequence.

Students planning this route are advised to choose the General Biology Concentration.

### HONORS PROGRAMS AT WPUNJ

For talented and highly motivated students of all majors the institution offers specific Honors tracks that complement the standard curricula offered by the five colleges. Each Honors Track Program has as its primary goal to enrich the student’s collegiate experience and provide a unique educational opportunity for enhancing the individual learning environment. There are seven (7) specific honors tracks, one of which is closely related to biology: Biopsychology; but you may also be interested in one of the other six.

Consult the Honors College Office, Raubinger Hall, Extension 3658, or Dr. Robert Benno in the Department of Biology, Ext. 3440 for more information.
The Department of Biology within the biology major offers course sequences which prepare students for entrance to health related professional schools which lead to doctoral degrees in Medicine, Dentistry, Veterinary Medicine, Chiropractic, Podiatry, Optometry, Pharmacy, Physical Therapy and Masters degree in Physicians Assistant.

The Pre-Professional Committee advises students on course selection, coordinates a speaker series through the Future Health Professionals, writes letters of recommendation to professional schools, gives mock interviews for students and facilitates the application process to professional schools. For more information consult Dr. Claire Leonard at X2791 or leonardc@wpunj.edu or visit http://www.wpunj.edu/cosh/departments/biology/undergraduate-programs/rippp.dot. Students interested in any professional program should consult the pre-professional advisor early in their undergraduate careers.

Students interested in professional schools are not limited to a biology or other science major, although most of them choose this path. A certain course sequence in Biology, Chemistry and Physics; high GPA, and good scores on the MCATs and any chosen major are acceptable.

Over the past five years 80% of our students who applied to professional schools have been accepted.

**Major Science and Mathematics Courses:**
- General Biology I (BIO 1630) 4 credits
- General Anatomy & Physiology I, II (BIO 1120, 1130) 8 credits
- General Chemistry I, II (CHEM 1600, 1620) 8 credits
- College Physics I, II (PHYS 2550, 2560) 8 credits
- Calculus I (MATH 1600) 4 credits
- Statistics for science majors (MATH 2300) 4 credits
- Genetics (BIO 2060) 4 credits

**Total 40 credits**

**University Core Curriculum and Elective Courses:**
- First Year Seminar (WPU 1010) 1.5 credits
- UCC Personal Well-Being 3 credits
- UCC Expression (Art & Comm; Literature; Writing) 9 credits
- UCC Ways of Knowing (Philos.; Hist; Soc & Behav) 12 credits
- Biomechanics (KNES 3300) 3 credits
- Writing Intensive (3 courses) – may be included in above courses 4 credits
- Technology Intensive (2 courses) – may be included in above courses 6 credits

**Total 43.5 credits**

**Total number of credits required at WPunj** 83.5 credits**

Students must maintain a GPA of at least 3.0 to be competitive for admission to the Physical Therapy program at Rutgers SHRP. A GPA of 3.3 is preferred.
### Three Year Suggested Course Sequence

#### Freshman Year
<table>
<thead>
<tr>
<th>Fall</th>
<th>Cr.</th>
<th>Spring</th>
<th>Cr.</th>
<th>Total Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 1630</td>
<td>4</td>
<td>BIO 1120</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>WPU 1010</td>
<td>1.5</td>
<td>MATH 1600</td>
<td>4</td>
<td></td>
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<tr>
<td>UCC</td>
<td>3</td>
<td>UCC</td>
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<td>UCC</td>
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<td></td>
<td>14.5</td>
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<td>28.5</td>
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</table>

**NOTE:** BIO1120 and BIO1130 are also offered in Summer sessions 1 and 2, respectively.

#### Sophomore Year
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<thead>
<tr>
<th>Fall</th>
<th>Cr.</th>
<th>Spring</th>
<th>Cr.</th>
<th>Total Cr.</th>
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</thead>
<tbody>
<tr>
<td>BIO 1130</td>
<td>4</td>
<td>BIO 2060</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CHEM 1600</td>
<td>4</td>
<td>CHEM 1620</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Foreign Lang.</td>
<td>3</td>
<td>Foreign Lang. II</td>
<td>3</td>
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<tr>
<td>UCC</td>
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</table>

#### Junior Year
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<tr>
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<th>Cr.</th>
<th>Spring</th>
<th>Cr.</th>
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<tr>
<td>PHYS 2550</td>
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<td>PHYS 2560</td>
<td>4</td>
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<tr>
<td>MATH 2300</td>
<td>4</td>
<td>KNES 3300</td>
<td>3</td>
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<td>UCC</td>
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<td>UCC</td>
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<td></td>
<td>14</td>
<td></td>
<td>13</td>
<td>27</td>
</tr>
</tbody>
</table>

#### Senior Year
**to complete Biology/Biotechnology Major**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Chemistry I, II (CHEM 2510, 0510, 2520, 0520)</td>
<td>8</td>
</tr>
<tr>
<td>Cell Biology (BIO 2050)</td>
<td>4</td>
</tr>
<tr>
<td>Ecology, Evolution and Behavior (BIO 2490)</td>
<td>4</td>
</tr>
<tr>
<td>Biology Electives (3000-4000 level)</td>
<td>15-16</td>
</tr>
<tr>
<td>Biology concentration-specific course</td>
<td>3-4</td>
</tr>
<tr>
<td>Biology Seminar (BIO 4800)</td>
<td>2</td>
</tr>
</tbody>
</table>

*Total credits: 36-38 credits*

*Admission to the Physical Therapy Program at Rutgers SHRP is not guaranteed.*

**University policy requires that at least 30 of the 83.5 total credits shall be completed at WPU. Further, half the ‘major’ courses (20 of 40 credits), including at least 8 credits of biology, must be taken at WPU.**

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**ADDITIONAL FACTS ABOUT THE WPUNJ / RUTGERS 3+ 3 Pre-Physical Therapy Program**

1. The primary advantage for a student in this articulated program is that it reduces one year of schooling. Students who apply to Rutgers SHRP from non-articulating schools must have a bachelor's degree.
2. Rutgers SHRP has a total of approximately 50 slots available each year.
3. The GRE is required for admission and letters of recommendation from Physical Therapists for whom the applicant has worked or volunteered.
4. Applicants should contact Dr. Leonard who will help them with their application packets. Applications for Rutgers SHRP's Physical Therapy program are available online at [http://shrp.rutgers.edu/dept/PT/north/admissions/application_process_tips.htm](http://shrp.rutgers.edu/dept/PT/north/admissions/application_process_tips.htm)
5. Students should apply to Rutgers SHRP during the summer (e.g., July, August) before their third year. Deadline for applications is October 1st.
6. Tuition for the Rutgers SHRP, DPH PT program is available on their website at [http://rbhs.rutgers.edu/studentfinancialaid/index_new_brow.htm](http://rbhs.rutgers.edu/studentfinancialaid/index_new_brow.htm).
7. Undergraduate financial aid will end when the student completes the program at William Paterson University.
8. After the required 83.5 credits at WPUNJ, the number of credits required in the Physical Therapy program at Rutgers SHRP is 110, with a required summer semester at the beginning of the program.
9. The contact person for the Admission Committee at Rutgers SHRP is available at [http://shrp.rutgers.edu/dept/PT/north/faculty_staff/faculty_staff.html](http://shrp.rutgers.edu/dept/PT/north/faculty_staff/faculty_staff.html)

Students accepted in the Physical Therapy Program at Rutgers SHRP will receive the BS from William Paterson University after the completion of the first year at Rutgers SHRP, and a Doctor of Physical Therapy (DPT) degree after the completion of the program.

Students not admitted to the Physical Therapy program after their 3rd year of study in the Pre-PT program, may complete the Biology or Biotechnology major within the 4th year at William Paterson University.
WPUNJ / RUTGERS 3 + 3 Pre-Physician Assistant Program

The Department of Biology at William Paterson University (WPUNJ) in conjunction with the Rutgers School of Health Related Professions (SHRP) has established a collaborative 3 + 3 program of study leading to the Bachelor of Science degree in Biology from WPUNJ and the Master of Science-Physician Assistant degree from the Rutgers SHRP after completion of a six year joint program. Successful students will spend three years (or the time required to complete 92.5 credits) in the Pre-Physician Assistant (pre-PA) program at WPUNJ fulfilling the requirements for admission to the MS-Physician Assistant program at Rutgers SHRP.* The following requirements must be completed at William Paterson:

**Major Science and Mathematics Courses:**
- General Biology I (BIO 1630) 4 credits
- General Anatomy & Physiology I, II (BIO 1120, 1130) 8 credits
- Cell Biology (BIO 2050) 4 credits
- Genetics (BIO 2060) 4 credits
- General Chemistry I, II (CHEM 1600, 1620) 8 credits
- Organic Chemistry I, II (CHEM 2570, 2580) 8 credits
- College Physics I, II (PHYS 2550, 2560) 8 credits
- Calculus I (MATH 1600) 4 credits
- Statistics (MATH 2300) 4 credits

**Total** 52 credits

University Core Curriculum (UCC) and Elective Courses:
- First Year Seminar (WPU 1010) 1.5 credits
- UCC Personal Well-Being 3 credits
- UCC Expression (Art & Comm; Literature; Writing) 9 credits
- UCC Ways of Knowing (Philos.; Hist; Soc & Behav) 12 credits
- UCC Ways of Knowing: Science (College Physics I (PHYS 2550)) (list above)
- UCC Ways of Knowing: Quantitative (Calculus I (MATH 1600)) (list above)
- UCC Diversity and Justice 3 credits
- UCC Community and Civic Knowledge 3 credits
- UCC Global Awareness 3 credits
- Foreign Language 6 credits

Writing Intensive (3 courses) – may be included in above courses
Technology Intensive (2 courses) – Cell Biology and Genetics (list above)

**Total** 40.5 credits

**Total number of credits required at WPUNJ** 92.5 credits**

Students must have a GPA of at least 3.0 to be considered for admission to the MS-Physician Assistant program at Rutgers SHRP.

*Admission to the MS-Physician Assistant Program at Rutgers SHRP is not guaranteed.

**For eligibility consult Dr. Leonard, pre-professional advisor.

Three Year Suggested Course Sequence

<table>
<thead>
<tr>
<th>Fall</th>
<th>Cr.</th>
<th>Spring</th>
<th>Cr.</th>
<th>Total Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 1630</td>
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<td>BIO 1120</td>
<td>4</td>
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</tr>
<tr>
<td>WPU 1010</td>
<td>1.5</td>
<td>MATH 1600</td>
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<td>UCC</td>
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NOTE: BIO1120 and BIO1130 are also offered in Summer sessions 1 and 2, respectively.

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>Fall</th>
<th>Cr.</th>
<th>Spring</th>
<th>Cr.</th>
<th>Total Cr.</th>
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<tbody>
<tr>
<td>BIO 1130</td>
<td>4</td>
<td>BIO 2060</td>
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<td>CHEM 1600</td>
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<tr>
<td>Foreign Lang. I</td>
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<td>MATH 2300</td>
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<table>
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<th>Junior Year</th>
<th>Fall</th>
<th>Cr.</th>
<th>Spring</th>
<th>Cr.</th>
<th>Total Cr.</th>
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<tbody>
<tr>
<td>PHYS 2550</td>
<td>4</td>
<td>PHYS 2560</td>
<td>4</td>
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<tr>
<td>CHEM 2570</td>
<td>4</td>
<td>CHEM 2580</td>
<td>4</td>
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<tr>
<td>BIO 2050</td>
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</table>

**Total Credits 92.5**
Students accepted in the MS-Physician Assistant Program at Rutgers SHRP will receive the BS Biology degree from William Paterson University after the completion of the first year at Rutgers SHRP, and a MS-Physician Assistant degree after the completion of the program.

Students not admitted to the MS-Physician Assistant Program after their 3rd year of study in the Pre-PA program, may complete the BS Biology major within the 4th year at William Paterson University.

**Senior Year (to complete Biology Major)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Ecology, Evolution and Behavior (BIO 2490)</td>
<td>4 credits</td>
</tr>
<tr>
<td>AND (select ONE of the three Concentrations below)</td>
<td></td>
</tr>
<tr>
<td>Biology: General Concentration (Plant course + 3 Biology Electives)</td>
<td>14-16 credits</td>
</tr>
<tr>
<td>OR</td>
<td></td>
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<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Biology: Ecology Concentration (Ecology + Pl. Ecology + 2 Biology Electives)</td>
<td>14-16 credits</td>
</tr>
<tr>
<td>AND</td>
<td></td>
</tr>
<tr>
<td>Biology Seminar (BIO 4800)</td>
<td>2 credits</td>
</tr>
<tr>
<td>Writing Intensive course (upper level)</td>
<td>3 credits</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23-25 credits</strong></td>
</tr>
</tbody>
</table>
ACADEMIC INTEGRITY POLICY FOR WILLIAM PATERSON UNIVERSITY STUDENTS*

I. Standards of Academic Conduct

As an academic institution committed to the discovery and dissemination of truth, William Paterson University expects that all members of the University community shall conduct themselves honestly and with professional demeanor in all academic activities.

William Paterson University has established standards of academic conduct because of its belief that academic honesty is a matter of individual and university responsibility and that, when standards of honesty are violated, each member of the community is harmed.

Members of the University community are expected to acknowledge their individual responsibility to be familiar with and adhere to the Academic Integrity Policy.

II. Violations of Academic Integrity

Violations of the Academic Integrity Policy will include, but not be limited to, the following examples:

A. Cheating during examinations includes any attempt to (1) look at another student's examination with the intention of using another's answers for attempted personal benefit; (2) communicate in any manner, information concerning the content of the examination during the testing period or after the examination to someone who has not yet taken the examination; (3) use any materials, such as notebooks, notes, textbooks or other sources, not specifically designated by the professor of the course for student use during the examination period, or (4) engage in any other activity for the purpose of seeking aid not authorized by the professor.

B. Plagiarism is the copying from a book, article, notebook, video, or other source material, whether published or unpublished, without proper credit through the use of quotation marks, footnotes, and other customary means of identifying sources, or passing off as one's own the ideas, words, writings, programs, and experiments of another, whether or not such actions are intentional or unintentional. Plagiarism will also include submitting, without the consent of the professor, an assignment already tendered for academic credit in another course.

C. Collusion is working together in preparing separate course assignments in ways not authorized by the instructor. Academic work produced through a cooperative (collaborative effort) of two or more students is permissible only upon the explicit consent of the professor. The collaboration must also be acknowledged in stating the authorship of the report.

D. Lying is knowingly furnishing false information, distorting data or omitting to provide all necessary, required information to the University’s advisor, registrar, admissions counselor, professor, etc., for any academically related purpose.

E. Other concerns which relate to the Academic Integrity Policy include such issues as computer security, stolen tests, falsified records, and vandalism of library materials. No list could possibly include all the possible violations of academic integrity. These examples should, however, give a clearer idea of the intent and extent of application of this policy.
III. Resolution of Academic Integrity Policy Violations

A. If a faculty member has sufficient reason to believe that a violation may have occurred on any work submitted for a grade, he/she must attempt to discuss this matter with the student within ten (10) working days of the incident.

B. After discussing this matter with the student, and if the student accepts the proposed penalty, the student waives his/her right to a hearing. Depending on circumstances, as assessed by the faculty member who has discussed the matter with the student, the following penalty could be imposed:
   1. Resubmission of the assignment
   2. Failure of the assignment
   3. Failure of the course
   4. Forced withdrawal from the course with no credit received
   5. Impose other appropriate penalties with the consent of the student
   6. Recommendation of the President of suspension or expulsion from the University

C. If the student does not admit to a violation or disagrees with the proposed penalty he/she must:
   1. Speak directly to the faculty member within ten (10) working days of being informed of a violation or of the proposed penalty. If, after repeated attempts, the student is unable to reach the faculty member within ten (10) working days, the student must notify the department chairperson in writing within that ten (10) day period.
   2. If, after discussion with the faculty member, the student is dissatisfied with the outcome, the student must contact the department chairperson presenting a dated, written, and signed statement describing the specific basis for the complaint. At this time, the student will also provide the faculty member with a copy of these written materials.
   3. The department chairperson will try to resolve the issue by reaching a settlement which is agreed upon by both the student and the faculty member. If the issue is not resolved at the chairperson’s level, the student will request that the chairperson convene the Department Executive Council (or other appropriate department committee)—excluding the faculty member involved—to hear the appeal. The faculty member will submit a written, dated and signed statement of the alleged violation to the council/committee. The student will submit a written, dated and signed statement describing the basis of the complaint. The accuser will assume the burden of proof. When the faculty member involved is the chairperson, then the student will request that the dean of the college convene the Department Executive Council (or other appropriate department committee). The Department Executive Council/Committee will submit its decision to the chairperson (or college dean, if the faculty member involved is the chairperson).

4. If not satisfied with the Department Executive Council’s (or other appropriate department committee’s) decision, the student may ask the dean of that college to bring the matter to the College Council. The faculty member will submit a written, dated and signed statement of the alleged violation. The student will submit a written, dated and signed statement describing the basis for the complaint. The accuser will assume the burden of proof. The chairperson of the department concerned will not take part in the final vote (though the written decision from the department chairperson will be part of the record). The College Council’s decision will constitute the University’s final decision regarding the substantive nature of the case.) Future appeals based on violations of due process are permitted to the limit of the law.

5. Each step in the procedure must be initiated within ten (10) working days of the faculty, chairperson, department, or college response. Dated, written, and signed statements are required at each step. Likewise, at each level, the faculty member(s), chairperson, Department Executive Council (or other appropriate department committee) or College Council must complete a review of all pertinent written materials prior to rendering a decision, in writing, within ten (10) working days of receipt of complaint materials. In case the faculty member has verifiably been unable to be contacted, or in other instances of extenuating circumstances affecting students or faculty, it is understood that the student’s right to appeal will not be jeopardized and the time constraints will be extended. Due process must be followed at every step of this procedure. No penalty will be changed by anyone other than the faculty member convincing evidence that the penalty was inconsistent with professional standards of the discipline.

1. Each student who registers a complaint with a department chairperson must be given a copy of this policy. A copy must be attached to the appeal and signed by the student to indicate that he/she has been given a copy of the procedure, read it, and understand it before the appeal can proceed.

*From Undergraduate Catalogue: http://www.wpunj.edu/cte/wp/academic-integrity-policy.dot
PASS/FAIL POLICY

A maximum of one course (3-4 credits) may be taken Pass/Fail during a semester and no more than 12 credits may be taken Pass/Fail in a student's academic career.

* Only free elective courses may be taken P/F. Major and co-requirements cannot be taken pass/fail.
* Students must complete a Pass/Fail contract in the Office of the Registrar. Deadlines are posted on the Semester Calendar.
* Once the pass/fail contract is submitted it cannot be reversed.
* If a grade of F is earned in a pass/fail course, it is calculated into the student's GPA.
* Second degree students may not take a course on a pass/fail basis.
* The following categories of graduate students may not take a course on a pass/fail basis: GN, GC, GE, GT, GM
* The above policy as outlined was revised and applies to all students in attendance as of Fall 2003.

GRADE DEFINITIONS

A Excellent
A- Excellent-
B+ Good
B Good
B- Good-
C+ Satisfactory
C Satisfactory
C- Satisfactory-
D+ Minimally passing
D Minimally passing
D- Minimally passing-
F Failing
P Passed course, taken on a Pass/Fail basis, equivalent to A-D
S Satisfactory (Basic Skills courses, not for graduation credit)
In Incomplete
N Unacceptable, must repeat (Writing Effective Prose, Basic Skills, and Freshman Seminar)
M Missing, no grade submitted
AU Audit
WD Withdrawn Officially

NOTE: (P/F) A "PASS" may not always be transferable to another college.

REPEAT COURSE POLICY

Only currently enrolled undergraduate first degree students may repeat once any course taken toward degree completion in which a grade of D+ or D has been received. A grade of F may be repeated only twice.

- Continuing students DO NOT need to complete an application to repeat courses. Courses will be systematically updated.
- Maximum number of repeats per course is two (2).
- Only the last grade will be computed in the GPA.
- All grades will be shown on the transcript.
- The course being repeated may only be taken on a pass/fail basis if it was initially taken pass/fail.
- Course substitutions are not permitted.
- Students must be registered and have paid for the courses that are being repeated.

PROCEDURES FOR A LEAVE OF ABSENCE/WITHDRAWAL

Leave of Absence (For details go to) http://www.wpunj.edu/registrar/academic-regulations/leave.dot
Withdrawal from the University (For details go to) http://www.wpunj.edu/registrar/academic-regulations/leave.dot

SCIENCE ENRICHMENT CENTER

The Science Enrichment Center sponsored by the college of Science and Health offers a variety of resources to enhance student learning of difficult topics in the sciences. OPEN TO ALL STUDENTS the services are available both at the Center (Science East 3054) and also on the WEB. Visit the Center to check the days and times (changes each semester) as to when the center is open and take advantage of the following services:

1. Academic Assistance - (tutoring, exam review, study groups)
2. Laboratory Equipment - (anatomical models, rocks, slides, field guides, maps)
3. Reference Material - (available in the Center and on-line)
4. Test Bank - (old tests available at the Center and on-line, solution manuals, MCAT Review books, textbooks)
5. Computer Lab - (computers, presentation system, scanner, technological assistance, science links)
6. Other - (computer programs, audiovisual tapes, study guides, video disks)
7. Workshops - (how to study for science courses - TBA)

For further information contact: Donna Potacco, X1340, SciE3054, potaccod@wpunj.edu, http://www.wpunj.edu/sec.
BIOLOGY ALUMNI

The department is proud of the accomplishments of our graduates in Biology/Biotechnology. We like to keep track of your careers and future and urge all to join the Alumni Association of WPUNJ, and especially the departmental Alumni group, so we may send you the annual copy of the BIO ALUMNI NEWS. This newsletter was started more than 30 years ago and keeps you informed of faculty, staff and alumni’s whereabouts, families, research, etc. Also keep in touch via Facebook.com (name: BioWilliamPaterson)!

Annually, 70-80% of our students (Biology/Biotechnology) who applied to professional and graduate degree programs are accepted immediately upon graduation. The remainder of the graduates enter the job market in industry, business, research and clinical laboratories, and frequently continue their education on a part-time basis. Our Pre-professional advisors and the faculty as a whole have been very successful in guiding students through the application process toward achieving admission to their chosen professional schools and other career goals. Alumni are frequently invited back to share their WPUNJ experience, graduate education, and working experiences with current undergraduate Biology/Biotechnology majors.

SCHOLARSHIPS, AWARDS, HONOR SOCIETY

1. Undergraduate Scholarship: Improving Student Success in Biology and Biotechnology (ISSBB)

Twenty to 25 scholarships have been made available by a generous grant from the National Science Foundation. Scholarship awards will vary based on financial need, with a maximum award of $10,000, and will be given each year to full-time William Paterson University students pursuing a B.S. in Biology or Biotechnology and planning to pursue careers in scientific research, industry or teaching. To be eligible for an ISSBB Scholarship, you must:

- Be eligible for and plan to enroll or continue full time in either the Biology or Biotechnology B.S. degree program at William Paterson University and be considering a career in industry, scientific research or teaching.
- Provide documentation that you are a U.S. citizen, national, alien lawfully admitted for permanent residence, or an alien classified as a refugee at the time of application.
- Provide two letters of recommendation – one of which must be from a science, math or technology instructor.
- Provide a personal statement outlining goals, financial need, education plans and career objectives.

Scholarships are renewable for up to four years given the student maintains a minimum GPA of 2.8 in science and math and a cumulative GPA of 3.0 or higher. For more information, contact Dr. Eileen Gardner 973/720-3441 or download a scholarship application from the Biology department website.

2. Undergraduate Scholarship: Robert Noyce Teacher Scholarship (NOYCE)

Students studying to teach science or math who intend to spend at least 2 years teaching in a high need school are eligible for scholarships up to $10,000 a year for up to two years. These scholarships have been made available by a generous grant from the National Science Foundation. To be eligible for a Robert Noyce Teacher Scholarship, you must:

- Be enrolled in a Mathematics or Science major and an Education major (leading to middle school (5-8) or high school certification) at William Paterson University.
- Have completed at least 60 credits and have taken at least 15 credits towards the science or math major.
- Have achieved an overall Grade Point Average (GPA) of 2.8 at WPUNJ and in your major.
- Provide documentation that you are a U.S. citizen, national, or permanent resident alien at the time of application.
- Complete and file a Free Application for Federal Student Aid (FAFSA) with the Financial Aid Office.
- Be prepared to complete two years of teaching in a USDOE designated high-need school for each year of scholarship support.

For more information contact Dr. Eileen Gardner at gardner@wpunj.edu.
5. Graduation Awards

1. **Outstanding Senior Award - Criteria**
   - For relatively high academic standing (not necessarily highest)
2. **C. Kent Warner Award - Criteria**
   - High academic standing
   - Contributions to the Department, College, and University are considered
3. **Biology Faculty Award - Criteria**
   - Academic excellence despite encountering severe obstacles and hardships.
4. **Undergraduate Research Award**
   - This award honors the best research project by an undergraduate
5. **Capstone Award**
   - High score on ETS Capstone exam

3. Undergraduate Scholarship: C. Kent Warner

The Department of Biology annually awards a **maximum of five $1,000 scholarships** to biology or biotechnology majors. The scholarships are named for C. Kent Warner who served at William Paterson from 1958-1963 as the first Chairman of the Department of Science and Mathematics. To be eligible, you must:

1. Be officially registered as an undergraduate biology or biotechnology major.
2. Be a full-time student (registered for at least 12 credits) at the time of application and remain a full-time student throughout the year for which the scholarship is awarded.
3. Be a sophomore or above (minimum of 24 credits) and have completed General Biology I and/or II at the time you would receive the scholarship.
4. Have a minimum GPA of 3.0 at the time of application.

Scholarships are credited toward the student's spring tuition. Applications may be picked up in the Department of Biology Office, SciE 4064 in February.

4. Biology Honor Society Beta Beta Beta
   - Advisor: Dr. Lance Risley – SciE 4051 – 973/720-3438

The William Paterson University Biology Department is proud of its affiliation with the Chi Rho Chapter of Beta Beta Beta, a national honor society founded in 1922 for students in the biological sciences. The William Paterson University Chapter has been in existence since 1986. Membership is based on achievement in Biology as well as overall academic performance. Membership invitations are extended during the spring semester primarily to Juniors and Seniors, but outstanding sophomores may also be invited to join.

**JOB OPPORTUNITIES**

Students interested in working up to twenty hours per week as paid Student Assistants either in the office or as a Lab Assistant to one of the laboratory technicians may contact the Financial Aid Office (x2203) and fill out an application. On-campus jobs have the advantage that students can choose convenient hours and save time traveling to and from off-campus jobs. It is also advantageous for biology majors to get to know the department and the faculty.

**CAREERS**

You will have many career options upon graduation and even before you are completed with your studies. About half of our graduates go directly to graduate or professional school to continue their education. Others obtain positions in business, industry, and research laboratories or enter the teaching profession. It is important to start looking into possible career choices with your faculty advisor and the career services staff as early as your freshman year, but keep an open mind!

**SUGGESTED CAREER PLANNING TIMETABLE**

**FRESHMAN YEAR**
1. Identify personal interests, needs and skills.
2. Visit the Career Services Office in University Commons.
3. Expand your information about occupations that are of interest (visit the Career Library).

**SOPHOMORE YEAR**
1. Reassess the suitability of your major.
2. Consider selecting a new major more consistent with your interests, abilities, and goals.
3. Attend a workshop exploring careers in your major.
4. Consider activities such as part-time jobs, internships, volunteer/community work, summer research.
5. Discuss career and educational plans with your advisor.

**JUNIOR YEAR**
1. Consider the variety of choices that will be open to you after graduation; immediate full-time employment, further schooling, etc.
2. Plan for your choices.

**SENIOR YEAR**
1. Take necessary examinations (graduate study, government, jobs, and professional school).
2. Complete applications for graduate/professional study.
4. Attend workshops on resume writing, interview techniques, job search strategies, etc.
**Bachelor’s Degree**
- Assistant Research Scientist
- Dental Hygienist
- Laboratory Director
- Elementary School Teacher
- High School Teacher
- Science Editor/Writer
- Pharmaceutical Sales
- Personnel Officer
- Psychotherapy Assistant
- Business
- Park Ranger
- Museum Curator
- Dental Hygienist
- Lab Technician
- Landscape Design

**Master’s Degree**
- Teaching High School
- Teaching Jr. College
- Research Position
- Exercise Physiology
- Biostatistician
- Medical Librarian
- Psychometrician
- Fish & Wildlife Manager
- Conservation Scientist

**Professional Schools**
- Veterinary Medicine
- Pharmacy
- Chiropractic
- Dentistry
- Medicine
- Optometry
- Osteopathic Medicine
- Podiatry

**Ph.D. Degree**
- College Professor
- Senior Research Scientist
- Laboratory Director
- Consultant
- Forensic Scientist

**Post Doctorate**
- 2-4 years
- College Professor
- Independent Researcher
- Senior Research Scientist
- Museum Curator

**Additional 1-2 year Program**
- Hospital Lab Technician
- Physical Therapy
- Occupational Therapy
- Physician Assistant
- Genetic Counselor