Biology Student Success Handbook

Department of Biology
William Paterson University
Wayne, NJ 07470

http://www.wpunj.edu/cos/biology/

Fall 2009

Fourth Annual Faculty-Student Athletic Dominance Contest

TABLE OF CONTENTS

WELCOME STATEMENT

From Lance Risley, 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 General Education portion of the curriculum is also discussed. The latter is common to all undergraduates. Additionally, there is information as to the details of finding ways through the bureaucratic maze of institutions of higher learning including advisement, registration procedures, integrity policies, extracurricular clubs and organizations, scholarship opportunities, and many other aspects of college 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 (720-3438) 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 www.wpunj.edu/cos/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.

G O O D L U C K !

DEPARTMENT OF BIOLOGY FACULTY

NOTE: All of our professors teach service courses, e.g., field biology, A&P, and also teach Bioseminar, thus these courses may not be listed for everyone. Instead, upper-level undergraduate courses are typically listed. Most of our professors also teach graduate courses (which may not be listed here). The listed research topics are brief, reflect current foci of professors, and may not represent other areas of research in which a student could participate with our faculty. Interested? Talk to us! .Check out our web pages: http://www.wpunj.edu/cos/biology/faculty.htm

Dr. Robert Benno (Coordinator Biopsychology Track, University Honors Program)
Courses: Animal Physiology, Histology, Neuroscience
Research: Developmental neurobiology

Dr. Robert Chesney (Graduate Coordinator; Advisor Beta Beta Beta Honor Society)
Courses: General Biology I, General Genetics, Microbiology
Research: Bacterial and phage genetics (biotechnology)

Dr. Danielle Desroches (Director Pathways to Academic Success in the Sciences (PASS) & Minority Association of Premedical Students (MAPS))
Courses: Anatomy & Physiology, Endocrinology
Research: Neuroendrocrinology; teratogenic agents and development

Dr. Eileen Gardner
Courses: General Biology I, Cell Biology, Developmental Biology, Immunology
Research: Cytoskeletal proteins; protein expression during development

Dr. David Gilley
Courses: Ecology Evolution and Behavior, Animal Behavior, Bioseminar
Research: Insect social organization and its evolution; honey bee pheromones

Dr. JeungWoon Lee
Courses: Anatomy & Physiology, Neuroscience
Research: Neurophysiology of pain, stem/progenitor cell transplantation

Dr. Claire Leonard (Coordinator Pre-Professional; Co-coordinator Summer Experiences Programs)
Courses: Cell Biology, Histology, Biotechnology: Cell Culture
Research: Molecular biology of metabolic diseases

Dr. Kendall Martin
Courses: Microbial Ecology, Basic Microbiology
Research: Microbial ecology; fungal-plant associations

Dr. Jaishri Menon
Courses: Comparative Vertebrate Anatomy, Histology, Transmission Electron Microscopy (TEM), Recent Trends in Reproduction and Fertility
Research: Physiology and vertebrate morphology

Dr. Emmanuel Onaivi

Courses: Animal Physiology, Neuroscience, Behavior Genetics, Ecology Evolution & Behavior, Pharmacology

Research: Molecular biology of drug abuse

Dr. Pradeep Patnaik

Courses: General Biology I, Genetics, Molecular Biology

Research: DNA replication and the molecular genetics of parasitic protozoa

Dr. Michael Peek

Courses: Ecology, Evolution & Behavior, Plant Physiology, Plant Ecology

Research: Plant ecophysiology; Plant root dynamics

Dr. Lance Risley (CHAIRPERSON Department of Biology)

Courses: General Biology I & II, Ecology Evolution & Behavior, Ecology of Communities & Ecosystems, Invertebrate Zoology, Conservation Biology

Research: Ecology of bats; conservation of forest ecosystems

Dr. Michael Sebetich

Courses: Ecology Evolution & Behavior, Ecol. of Communities & Ecosystems, Aquatic Ecol.

Research: Limnology; land use effects on surface water quality

Dr. David Slaymaker

Courses: General Biology I, General Botany, General Genetics, Biotech: Cell Culture, Biotech: Proteins

Research: Genetic diversity in natural and restored populations of American beachgrass

Dr. Joseph Spagna

Courses: General Biology II, Ecology Evolution and Behavior, Field Entomology

Research: Evolutionary biomechanics of spiders and ants

Dr. Stephen Vail

Courses: General Biology II, Ecology Evolution & Behavior, Ecology of Individuals & Populations, Evolution, Mathematical Biology

Research: Population biology; ecology of tick-borne diseases

Dr. Miryam Wahrman

Courses: General Biology I, Bioethics, General Genetics, Molecular Biology, Research Methods

Research: Molecular biology of development; biotechnology, bioethics

Dr. Carey Waldburger

Courses: General Biology I, Biotechnology: DNA, Basic Microbiology, Cell Biology

Research: Molecular biology, biochemistry, and genetics of bacterial signal transduction.

THE BIOLOGY FACULTY AND STAFF MEMBERS

Dr. Lance Risley, Chairperson	S434	X3438	risleyl@wpunj.edu
Nancy Malba, Secretary	S434	X2265	malban@wpunj.edu
Georgeann Russo, Secretary	S434	X2245	russog@wpunj.edu

Biology Faculty

Dr. Robert Benno	S 449	X3440	bennor@wpunj.edu
Dr. Robert Chesney	S 507	X3455	chesneyb@wpunj.edu
Dr. Danielle Desroches	S 447	X2329	desrochesd@wpunj.edu
Dr. Eileen Gardner	S443	X3441	gardnere@wpunj.edu
Dr. David Gilley	S 453	X2549	gilleyd@wpunj.edu
Dr. JeungWoon Lee	S 452	X2442	leej22@wpunj.edu
Dr. Claire Leonard	S503	X2791	leonardc@wpunj.edu
Dr. Kendall Martin	S501	X3452	martink@wpunj.edu
Dr. Jaishri Menon	S501	X2795	menonj@wpunj.edu
Dr. Emmanuel Onaivi	S503	X3453	onaivie@wpunj.edu
Dr. Pradeep Patnaik	S505	X3454	patnaikp@wpunj.edu
Dr. Michael Peek	S501	X2247	peekm@wpunj.edu
Dr. Michael Sebetich	S455	X2792	sebetichm@wpunj.edu
Dr. David Slaymaker	S507	X2439	slaymakerd@wpunj.edu
Dr. Joseph Spagna	S511	X2793	spagnaJ@wpunj.edu
Dr. Stephen G. Vail	S452	X2487	vails@wpunj.edu
Dr. Miryam Wahrman	S511	X3456	wahrmanm@wpunj.edu
Dr. Carey Waldburger	S505	X2486	waldburgerc@wpunj.edu

Department Technicians

Mrs. Trish Bush	S408	X3450	busht@wpunj.edu
Mr. Norman Schanz	S 208	X2270	schanz@wpunj.edu
Mrs. Susan Sgro	S 401B	X2453	sgro@wpunj.edu
Mr. Michael Wyrwa	S401A	X2357	wyram@wpunj.edu

Faculty Office Hours may be found posted on faculty office doors and in S434. Faculty Teaching Schedules may be found posted on faculty office doors.

Other Important Campus Phone Numbers

Dean DeYoung	x2194
Advisement Center	x2727
Registrar	x2700
Bursar	x3695
Academic Support Center	x3324
Science Enrichment Center	x3340
Financial Aid	x2202
Student Information Center	x2292

BIOLOGY DEPARTMENT 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.

THE DEPARTMENT AND CURRICULUM

All undergraduate curricula at William Paterson University consist of two parts:

1. **General Education:** consists of a series of courses in different disciplines (e.g. English, History, Mathematics, Art and a number of others) that are **required of all undergraduates**. Many of these courses are on the freshmen or sophomore level, others are upper level courses. Of the **128 credits required for graduation**, about **59 credits are in general education courses** designed to provide all students with a common knowledge base expected from a college graduate, and also provide an opportunity for students who are somewhat undecided to experience different disciplines before they choose a major.

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 (7-8)**).
The **fine 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**.

Notice: The Core-course C- Rule

The core-course C- rule applies to both Biology and Biotechnology majors. Core courses for the BS Biology major are BIO 163, 164, 206, 249, and (unless you are in the Ecology Concentration) BIO 205. Core courses for the BS Biotechnology major are BIO 163, 205, and 206. Core courses also include BIO 112 and 113 if a student is using these to fulfill the requirement for Bio 164, in which case this rule applies to *each* course. The rule is as follows. If a student has received a grade below C- in a particular core course,

i. that student did not meet the program's grade requirements for the course.
ii. 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. (A grade of "D" in BIO 206 Genetics, for example will preclude you from taking any 300-level or higher biology courses that require Genetics as a prerequisite.)
iii. if the student is already registered for a sequential course, they will be automatically dropped from that sequential course by the Registrar and must therefore enroll to retake the core course or to add an alternative, but non-sequential course, to their next semester schedule as they and their advisor find most appropriate.

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.

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.

BS IN BIOLOGY

The **Biology Program** was revised in 1998 and now consists of **three concentrations.** Each of these has the same **Co-requisites in Chemistry/Physics and Mathematics but** varies in terms of the specific biology courses required. Students are required to take a minimum of two lab courses at 300 level or above. Students interested in health professions, in consultation with their advisor, and by permission of the department chairperson, may take BIO 112 and BIO 113 which together will be credited as BIO 164.

General Biology Concentration

BIO 163†/164†	General Biology I/II	8 credits
BIO 205†	Cell Biology	4 credits
BIO 206†	General Genetics	4 credits
BIO 249†	Ecology/Evolution/Behavior	4 credits
BIO	Plant Course	4 credits
Three (3)	Bio Elective Courses	10-12 credits
BIO 480	Bio-Seminar	1 credit
BIO 499	Independent Study*	1- 3 credits
	Total	**34 (minimum)**

Ecology Concentration

BIO163†/164†	General Biology I/II	8 credits
BIO 206†	General Genetics	4 credits
BIO 249†	Ecology/Evolution/Behavior	4 credits
BIO 342	Ecology: Individual & Populations	4 credits
BIO 344	Ecology: Community & Ecosystem	4 credits
BIO	Plant Course	4 credits
Two (2)	Bio Elective Courses	6-8 credits
BIO 480/BIO 499	Bio-Seminar or Independent Study*	1-3 credits
	Total	**35 (minimum)**

Physiology and Behavior Concentration

BIO 163†/164†	General Biology I/II	8 credits
BIO 205†	Cell Biology	4 credits
BIO 206†	General Genetics	4 credits
BIO 249†	Ecology/ Evolution/Behavior	4 credits
BIO 308	Animal Physiology	4 credits
BIO 350	Animal Behavior	3 credits
Two (2)	Bio Elective Courses	7-8 credits
BIO 480/BIO 499	Bio-Seminar or Independent Study*	1-3 credits
	Total	**34 (minimum)**

†Denotes Biology Core Course
*See WPUNJ Undergraduate Catalogue

Biology Elective Courses

Course		Credits
BIO 308	Animal Physiology a,b	4
BIO 318	Invertebrate Zoology	4
BIO 320	Microbiology	4
BIO 335	**Field Botany**	**3**
BIO 342	Ecology of Individuals and Populations a,c	4
BIO 344	Communities and Ecosystems a,c	4
BIO 345	Conservation Biology	3
BIO 350	Animal Behavior a,b	3
BIO 361	**General Botany**	**4**
BIO 363	**Terrestrial Plant Ecology**	**4**
BIO 365	**Plant Physiology**	**4**
BIO 399	Selected Topics	1-6
BIO 402	Aquatic Ecology	4
BIO 411	Human Reproduction	4
BIO 416	Comparative Animal Physiology	4
BIO 417	Histology	4
BIO 421	Developmental Biology	4
BIO 444	Evolution	3
BIO 460	Pharmacology …	3
BIO 470	Bioethics and Society	3
BIO 484	Scanning Electron Microscopy	4
BIO 485	Transmission Electron Microscopy	4
BIPY 474	Neuroscience	4
BIPY 475	Behavior Genetics	4
BIPY 479	Biorhythms in Physiology and Behavior c	3
BIPY 490	Human Neuropsychology c	3
CHEM 427	Biochemistry I	4

Notice: Universal Prerequisite Rule

Beginning Spring 2010, all biology and biotechnology majors must successfully complete (C- or better) the core courses required for their major and concentration before progressing to upper-level biology courses (300 and above). In other words, the core course sequence will be prerequisite for all upper-level biology courses.

Core courses for the BS Biology major are BIO 163, 164, 206, 249, and (unless you are in the Ecology Concentration) BIO 205. Core courses for the BS Biotechnology major are BIO 163, 205, and 206. Core courses also include BIO 112 and 113 if a student is using these to fulfill the requirement for Bio 164, in which case this rule applies to *each* course.

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 **bold** are Plant Electives
3. Electives without superscripts are available for all concentrations
   a. Elective for General Biology concentration
   b. Elective for Ecology concentration
   c. Elective for Physiology and Behavior concentration
4. Junior and senior biology majors may take graduate biology courses at the 500 level with the permission of the instructor and the Biology Department chairperson.
5. A student in any of the biology concentrations **must** complete a minimum of two laboratory courses at the 300 level or above to graduate from the biology program.

*BIO 112 and 113, General Anatomy and Physiology I and II, may substitute for Bio 164 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 chiropractic study.

Curriculum Control Sheet for

Biology Major - General Concentration

Core Courses* – **22-23 credits**	Cr.	Grade
BIO 163 General Biology I	4	____
Bio 164 General Biology II	4	____
Bio 205 Cell Biology	4	____
Bio 206 General Genetics	4	____
Bio 249 Ecology, Evolution and Behavior	4	____
Bio 480 Senior Seminar	2	____
OR:		
Bio 499 Independent Study	3	____

*note: a grade of C- in the core courses is required to progress as a biology major.

Plant Course – **CHOOSE ONE** (4 credits)		
Bio 335 Field Botany	4	____
Bio 361 General Botany	4	____
Bio 363 Terrestrial Plant Ecology	4	____
Bio 365 Plant Physiology	4	____

Corequirements – 20 credits

Chemistry – 16 credits		
CHEM 160, 060 General Chemistry I (Lecture and lab)	4	____
CHEM 161, 061 General Chemistry II (Lecture and lab)	4	____
CHEM 251, 051 Organic Chemistry I (Lecture and lab)	4	____
CHEM 252, 052 Organic Chemistry II (Lecture and lab)	4	____

Mathematics – 4 credits		
MATH 160 Calculus I (counts as GE Math requirement)	(4)	____
MATH 161	4	____
OR		
MATH 230	4	____

Physics – Counts as GE Science requirement		
PHYS 255, 266 College Physics I & II	(8)	____
OR		
PHYS 260,261 General Physics I & II	(8)	____

Major Electives – 11-12 credits of Biology upper level elective courses (2 of the three must have labs)

_____	4	____
_____	4	____
_____	3-4	____

TOTAL CREDITS OF MAJOR REQUIREMENTS – **58-60 CREDITS**

Curriculum Control Sheet for

Biology Major - Ecology Concentration

Core Courses* – **26-27 credits**	Cr.	Grade
BIO 163 General Biology I	4	____
Bio 164 General Biology II	4	____
Bio 206 General Genetics	4	____
Bio 249 Ecology, Evolution and Behavior	4	____
Bio 342 Ecology of Individuals and Populations	4	____
Bio 344 Community and Ecosystem Ecology	4	____
Bio 480 Senior Seminar	2	____
OR:		
Bio 499 Independent Study	3	____

*note: a grade of C- in the core courses is required to progress as a biology major.

Plant Course – **CHOOSE ONE** (4 credits)		
Bio 335 Field Botany	4	____
Bio 361 General Botany	4	____
Bio 363 Terrestrial Plant Ecology	4	____
Bio 365 Plant Physiology	4	____

Corequirements – 20 credits

Chemistry – 16 credits		
CHEM 160, 060 General Chemistry I (Lecture and lab)	4	____
CHEM 161, 061 General Chemistry II (Lecture and lab)	4	____
CHEM 251, 051 Organic Chemistry I (Lecture and lab)	4	____
CHEM 252, 052 Organic Chemistry II (Lecture and lab)	4	____

Mathematics – 4 credits		
MATH 160 Calculus I (counts as GE Math requirement)	(4)	____
MATH 161	4	____
OR		
MATH 230	4	____

Physics – Counts as GE Science requirement		
PHYS 255, 266 College Physics I & II	(8)	____
OR		
PHYS 260,261 General Physics I & II	(8)	____

Major Electives – 7-8 credits of Biology upper level elective courses (1 of the two must have lab)

_____	4	____
_____	3-4	____

TOTAL CREDITS OF MAJOR REQUIREMENTS – **57-59 CREDITS**

Curriculum Control Sheet for

Biology Major - Physiology & Behavior Concentration

Core Courses* – **29-30 credits**	Cr.	Grade
BIO 163 General Biology I	4	____
Bio 164 General Biology II	4	____
Bio 205 Cell Biology	4	____
Bio 206 General Genetics	4	____
Bio 249 Ecology, Evolution and Behavior	4	____
Bio 308 Animal Physiology	4	____
Bio 350 Animal Behavior	3	____
Bio 480 Senior Seminar	2	____
OR:		
Bio 499 Independent Study	3	____

*note: a grade of C- in the core courses is required to progress as a biology major.

Corequirements – 20 credits

Chemistry – 16 credits		
CHEM 160, 060 General Chemistry I (Lecture and lab)	4	____
CHEM 161, 061 General Chemistry II (Lecture and lab)	4	____
CHEM 251, 051 Organic Chemistry I (Lecture and lab)	4	____
CHEM 252, 052 Organic Chemistry II (Lecture and lab)	4	____
Mathematics – 4 credits		
MATH 160 Calculus I (counts as GE Math requirement)	(4)	____
MATH 161	4	____
OR		
MATH 230	4	____
Physics – Counts as GE Science requirement		
PHYS 255, 266 College Physics I & II	(8)	____
OR		
PHYS 260,261 General Physics I & II	(8)	____

Major Electives – 7-8 credits of Biology upper level elective courses (1 of the two must have lab)

_____	4	____
_____	3-4	____

TOTAL CREDITS OF MAJOR REQUIREMENTS – **56-58 CREDITS**

General Education Curriculum with Modifications for Biology/Biotechnology Major

A total of **59 credits** in General Education is required for all students in the undergraduate curricula offered at WPUNJ; certain modifications are permitted for students in different colleges; for Biology/Biotechnology majors the requirements are as follows, and may be taken throughout the 4-5 years:

For a table of requirements go to: http://www.wpunj.edu/cos/biology/GERequirements.htm

From Arts and Communications: **Two GE courses** selected from the following list:
ARTH 101; COMM 101, 110; MUS 120 (No more than one course per discipline.)

From Humanities: ENG 110, 150; HIST 101, 102; PHIL 110
Foreign Language 0-2 semesters, depending on background knowledge. (Two different languages will not satisfy this requirement.)
You must take **all the above** within your career at WPUNJ

From Social Science: **Three GE courses** selected from the following list:
ANTH 130; POL 110, 120; PSY 110; SOC 101, 102; ECON 201; GEO 150
(No more than one course per discipline.) (ED MAJORS NEED PSY 110.)

From Science and Health: the **two mathematics co-requisites*** fulfill the GE math;
PHYS 255/256 **or** PHYS 355/356 fulfill the GE science;
Either PEGE 150 **or** CMHL 120 required.

Other General Education requirements:
Racism and Sexism or **Women's Changing Roles**
Non-western course (see Master schedule), which may also satisfy a major or upper level GE requirement;
two GE electives;
three upper level electives; the latter **may not be** in your major or any of the co-requisites (e.g. chem, physics, or math)

For transfer students the same General Education requirements must be fulfilled - many courses may transfer from local Community Colleges (grade of C or better, unless transfer student earned an AA degree, in which case D or better transfers) or other accredited institution previously attended.

* Students who are not prepared to enter Calculus I will be required to take an additional one or two math pre-requisites in order to fulfill the mathematics requirement for the Bachelor's degree in Biology or Biotechnology.

GENERAL EDUCATION REQUIREMENTS – **59 CREDITS** (A,B,C,D,E,&F)

A. Arts & Communication – **6 credits**			Cr.	Grade
___COMM	110	Communication in Action	3	_____
___ARTH	101	Approaches to Western Art	3	_____
___ARTH	201	Approaches to Modern Art	3	_____
___MUS	120	Music Appreciation	3	_____
___COMM	101	Introduction to Theater	3	_____

B. Humanities – **21 credits**				
___ENG	110	Writing effective Prose	3	_____
___ENG	150	Introduction to Literature	3	_____
___Foreign Language		Basic I	3	_____
___Foreign Language		Basic II	3	_____
___HIST	101	Foundations of Western Civ.	3	_____
___HIST	102	The West and the World	3	_____
___PHIL	110	Introduction to Philosophy	3	_____

C. Math/Science – **12 credits**				
___MATH	160	Calculus I	4	_____
___PHYS	255/260&256/261	Physics I & II	8	_____

D. Social Science – **9 credits** (No more than 3 credits per discipline)				
___ANTH	130	Introduction to Anthropology	3	_____
___SOC	101	Principles of Sociology	3	_____
___SOC	102	Social Problems	3	_____
___GEO	150	World Regional Geography	3	_____
___POL	110	Introduction to Politics	3	_____
___POL	120	American Government	3	_____
___PSY	110	General Psychology	3	_____
___ECON	201	Macroeconomic Principles	3	_____

E. Health or Movement Science – **3 credits**				
___CMHL	120	Current health Issues	3	_____
___PEGE	150	Fitness for Life	3	_____
___CMHL/PEGE	200	Active Lifestyles for Health	3	_____

F. Racism and Sexism - **3 credits**				
___AACS	150	Racism & Sexism in US	3	_____
___AACS	155	Justice & Racism	3	_____
___WS	110	Women's Changing Roles	3	_____
___WS	150	Racism & Sexism in US	3	_____

NON-WESTERN REQUIREMENT – **3 CREDITS** 3 _____
(Choose from the list (200 level or above) in the Reference and Instruction Guide)
(Used as 3 credits of Upper-Level Electives)

UPPER LEVEL ELECTIVES

FREE ELECTIVES
(Additional credits may be needed to reach the 128 minimum to graduate)

_____ __ _____
_____ __ _____
_____ __ _____

Suggested Course Sequence for 4 Year Completion of the BS in Biology

Year 1

Fall		**Spring**	
BIO 163 General Biology	4 credits	BIO 164 General Biology II	4 credits
CHEM 160/060 Gen. Chem I	4	CHEM 161/061 Gen Chem II	4
Mathematics by advisement	3-4	Mathematics by advisement	3-4
GE English or other GE	3	GE English or other GE	3
		GE course	3
Total	**14-15**	**Total**	**17-18**

Year 2

Fall		**Spring**	
BIO 206 Gen Genetics	4 credits	BIO 249 Eco/Evo/Behavior	4 credits
CHEM 251/051 Org. Chem I	4	CHEM 252/052 Org. Chem II	4
GE Humanities or other GE	3	GE Social Science or other	3
BIO Elective	3-4	GE or BIO 205 Cell Bio	3-4
GE Art/Comm.	3	GE other	3
Total	**17-18**	**Total**	**17-18**

Year 3

Fall		**Spring**	
BIO Plant course	4 credits	BIO Elective	4 credits
PHYS 255 Coll. Physics I*	4	PHYS 256 Coll. Physics II*	4
GE Social Science	3	GE other	3
BIO Elective	4	BIO Elective	4
Total	**15**	**Total**	**15**

Year 4

Fall		**Spring**	
BIO 480 Bio Seminar	2 credits	Non-western Course	3 credits
BIO 499 Independent Study**	1-3	Racism / Women's Changing Roles	3
Upper Level Elective	3	Upper Level Elective	3
BIO Elective	3-4	BIO Elective	3-4
BIO Elective or GE	3-4	Free Elective	3-4
Total	**12-16**	**Total**	**15-17**

***or** Gen Physics I & II

**Independent Study may be taken up to 3 crs as Bio elective.

This sequence presumes that the **student has no Basic Skills requirements** and takes a **full program every semester.** Otherwise, it may take extra time to complete the program; it is also recommended that a work schedule of more than 20 hours weekly is not compatible with success as a biology major.

BS IN BIOTECHNOLOGY

The major requirements for students in the Biotechnology program are similar to those in the Biology major with several exceptions indicated below:

BIO 163	General Biology I	4 credits
BIO 205	Cell Biology	4 credits
BIO 206	General Genetics	4 credits
BIO 361	General Botany	4 credits
or		
BIO 365	Plant Physiology	4 credits

From the core courses not required: **BIO 164 General Biology II and**
BIO 249 Evolution, Ecology, and Behavior

Other course requirements: **BIO 320 Microbiology**; **BIO 524 Molecular Biology;**
BIO 530 Biotechnology: DNA; BIO 531 Biotechnology: CellCulture;
BIO 499 Independent Study or BIO 480 Senior Seminar

Co-requisites: same as Biology majors plus **CHEM 427 Biochemistry I**

Biotechnology Electives

Course	**Credits**
BIO 361 Botany	4
BIO 365 General Plant Physiology	4
BIO 416 Comparative Animal Physiology	4
BIO 417 Histology	4
BIO 421 Developmental Biology	4
BIO 450 Molecular Biology of Prokaryotes	4
BIO 470 Bioethics and Society	3
BIPY 474 Neuroscience	4
BIO 499 Independent Study	1-3
CHEM 470 Advanced Biochemistry	3

Curriculum Control Sheet for

Biotechnology Major

Core Courses – **32 credits**	Cr.	Grade
BIO 163 General Biology I	4	____
Bio 205 Cell Biology	4	____
Bio 206 General Genetics	4	____
Bio 320 Microbiology	4	____
Bio 524 Molecular Biology	3	____
Bio 530 BT:DNA	4	____
Bio 531 BT: Cell Culture	4	____
Bio 480 Senior Seminar	2	____
OR:		
Bio 499 Independent Study	3	____

Plant Course – **CHOOSE ONE** (4 credits)		
Bio 361 General Botany	4	____
Bio 365 Plant Physiology	4	____

Corequirements – 24 credits

Chemistry – 20 credits		
CHEM 160, 060 General Chemistry I (Lecture and lab)	4	____
CHEM 161, 061 General Chemistry II (Lecture and lab)	4	____
CHEM 251, 051 Organic Chemistry I (Lecture and lab)	4	____
CHEM 252, 052 Organic Chemistry II (Lecture and lab)	4	____
CHEM 427 Biochemistry	4	____

Mathematics – 4 credits		
MATH 160 Calculus I (counts as GE Math requirement)	(4)	____
MATH 161	4	____
OR		
MATH 230	4	____

Physics – Counts as GE Science requirement		
PHYS 255, 266 College Physics I & II	(8)	____
OR		
PHYS 260,261 General Physics I & II	(8)	____

Major Electives – 3-4 credits of Biology upper level elective courses

_____	**3-4**	**____**

TOTAL CREDITS OF MAJOR REQUIREMENTS – 59-60 CREDITS

SUGGESTED COURSE SEQUENCE FOR 4 YEAR COMPLETION OF BIOTECHNOLOGY BS DEGREE

Year 1

Fall		Spring	
BIO163 General Biology I	4 credits	BIO 205 Cell Biology	4 credits
CHEM 160/060 Gen. Chem I	4 credits	CHEM 161/061 Gen Chem II	4 credits
MATH 160 Calculus I	4 credits	MATH 161 Calculus II (or Statistics)	4 credits
General Education	3 credits	General Education	3 credits
Total	**15**	**Total**	**15**

Year 2

Fall		Spring	
CHEM 251/051 Org. Chem I	4 credits	CHEM 252/052 Org. Chem II	4 credits
BIO 206 Genetics	4 credits	BIO 365 Plant Physiology (or BIO 361 Botany)	4 credits
General Education	9 credits	General Education	9 credits
Total	**17**	**Total**	**17**

Year 3

Fall		Spring	
BIO 320 Microbiology	4 credits	CHEM 427 Biochemistry	4 credits
PHYS 260 College Physics I	4 credits	PHYS 261 College Physics II	4 credits
BIO 524 Molecular Biology	3 credits	BIO Elective/Non Western	3-4 credits
General Education	6 credits	General Education	6 credits
Total	**17**	**Total**	**17-18**

Year 4

Fall		Spring	
BIO 530 Biotech - DNA	4 credits	BIO 531 Biotech - Cell Culture	4 credits
BIO 499 Independent Study	1-3 credits	BIO 480 Senior Seminar	2 credits
General Education	9 credits	General Education/Electives	6 credits
Total	**14-16**	**Total**	**12**

See details under the Biotechnology program description and General Education requirements. Consult the course rotation schedule on page 19.

Course Rotation for Undergraduate Biology Courses 2009 - 2012

	Semesters Offered								
Course	**F 2009**	**S 2010**	**F 2010**	**S 2011**	**F 2011**	**S 2012**	**F 2012**	**S 2013**	**Summer**
BIO 112 General A&P I	X	X	X	X	X	X	X	X	X
BIO 113 General A&P II	X	X	X	X	X	X	X	X	X
BIO 163 General Biology I	X	X	X	X	X	X	X	X	X
BIO 164 General Biology II	X	X	X	X	X	X	X	X	X
BIO 205 Cell Biology	X	X	X	X	X	X	X	X	
BIO 206 General Genetics	X	X	X	X	X	X	X	X	
BIO 249 Ecol Evol & Behav	X	X	X	X	X	X	X	X	
BIO 308 Animal Physiology		X		X		X		X	
BIO 318 Invertebrate Zoology	X			X			X		
BIO 320 General Microbiology	X		X		X		X		
BIO 335 Field Botany									X
BIO 342 Ecol Indiv & Pop		X		X		X		X	
BIO 344 Ecol Comm & Ecosys	X		X		X		X		
BIO 345 Conservation Biology			X			X			
BIO 350 Animal Behavior	X		X		X		X		
BIO 352 Economic Botany									
BIO 361 General Botany	X		X		X		X		
BIO 363 Terr Plant Ecology	X		X		X		X		
BIO 365 Plant Physiology		X		X		X		X	
BIO 399 Selected Topics		X			X			X	X
BIO 402 Aquatic Ecology		X				X			
BIO 411 Human Reproduction									X
BIO 416 Comp Animal Phys			X				X		
BIO 417 Histology		X			X			X	
BIO 421 Developmental Bio	X			X			X		
BIO 444 Evolution	X				X				
BIO 460 Pharmacology	X		X		X		X		
BIO 470 Bioethics		X		X		X		X	
BIO 480 Senior Seminar	X	X	X	X	X	X	X	X	
BIO 484 SEM		X			X			X	
BIO 485 TEM			X			X			
BIO 524 Molecular Bio	X		X		X		X		
BIO 530 Biotech: DNA	X		X		X		X		
BIO 531 Biotech: Cell Culture		X		X		X		X	
BIPY 474 Neuroscience			X			X			
BIPY 475 Behavior Genetics	X			X			X		

STUDENT RESEARCH OPPORTUNITIES

Both Biology and Biotech students are strongly encouraged to engage in active field of 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/cos/biology/student.htm#RESEARCH. In addition, the programs below can help you find and/or fund research projects at WPU, or beyond.

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. The deadline for spring semester applications is Dec. 1.

LSM-PASS-MAPS (Louis Stokes Alliance for Minorities/Pathways for Academic Success in Sciences/ Minority Association of Premedical Students)
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. LSM-PASS-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. Lance Risley or Dr. Claire Leonard about the many opportunities available.

Center for Research (CfR)
CfR was established by the College of Science and Health to support student involvement in the rapidly developing fields of 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. Risley for out-of-state programs and Dr. Leonard for in-state programs and especially corporate internships.

HOW TO APPLY FOR DEPARTMENTAL SUPPORT: Contact Dr. Risley (720-3438; RisleyL@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.

Biology and Biotechnology students should consider an extra-curricular research experience (with our faculty or in an off-campus program) as an important and integral part of their degree plan!

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; electron microscopy facilities, including transmission and scanning electron microscopes and associated specimen preparation equipment, an X-ray analyzer and three darkrooms; biotechnology facilities and tissue culture lab, including PCR units, liquid scintillation counter, electrophoresis units, computerized UV spectrophotometers, FPLC, high pressure liquid chromatography units ultracentrifuges and three scanning spectrophotometers; two greenhouses; 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. A newly-renovated building at Oldham Pond, complete with laboratories and classroom, is scheduled to open in fall 2003.

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 420/421**) 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**, X3340, S421A, potaccod@wpunj.edu, www.wilpaterson.edu/wpcpages/icip/sec/.

MINOR IN BIOLOGY

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 163/164 General Biology I and II 8 credits**

Three additional 200 level or above Biology Courses, by advisement (Bio 206 Genetics is strongly recommended).

One year of Chemistry and Precalculus are strongly recommended.

*Biology courses taken as co-requisites in these majors may be substituted for some of the required or elective courses in the biology minor.

For information concerning transfer credits and second degree requirements please see below (p 18-19).

ACADEMIC ADVISEMENT

Upon entering as a biology major in the department, each 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.

Any student who wishes to **change advisor** must complete a Change of Advisor request form available in S434. The requested advisor must be a faculty member of the department in which the student is a declared major.

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 112/113 for BIO 164 and and may be able to substitute BIO 170 for BIO 312.

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 Associate Degree from a New Jersey Community College automatically receive credit for all General Education 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 fifteen (15) in 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 112/113 will receive credit for **either** BIO 164 **or** four credits as a biology elective; one semester (BIO 112) will count only as a free elective.

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.

At present, certification requirements total thirty (30) credits which includes the Practicum experience in the junior year and Student Teaching in the senior year. For Biology majors this might entail additional time - a full semester and/or several summer sessions.

Students planning this route are advised to choose the **General Biology Concentration** and include a **geology** course among the upper level elective courses. All co-requirements remain the same.

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 Office**, Raubinger Hall, Extension 3658, or Dr. Robert Benno in the Biology Department, Ext. 3440 for more information.

PRE-PROFESSIONAL PROGRAMS

The Biology Department **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 and Masters degrees in Physical Therapy, Physicians Assistant and other health related advanced training.

The Pre-Professional Committee advises students on course selection, coordinates a speaker series through the **Galen Society**, 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/cos/biology/undergrad.htm#PRE-PROFESSIONAL_PROGRAMS. 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 & Physics; high GPA, and good scores on the MCATS and any chosen major are acceptable.

Over the past five years 61% of our students who applied to professional schools have been accepted.

PRE-PHYSICAL THERAPY PROGRAM

The Department of Biology at William Paterson University of New Jersey (WPUNJ) in conjunction with the University of Medicine and Dentistry of New Jersey in Newark (UMDNJ) has established a collaborative 3-by-3 program of study. This leads to the BS degree in Biology from WPUNJ and the Doctor of Physical Therapy (DPT) from UMDNJ after completion of a six-year joint program. Successful students will spend three years (or the time required to complete 96 credits) in the Pre-Physical Therapy program at WPUNJ fulfilling the requirements for admission to the DPT program at UMDNJ.

Course Requirements (total of 96 - 98 credits):

Science and Mathematics Courses (total of 38/40 credits):

General Chemistry I and II including laboratory (8 cr.)
General Anatomy and Physiology I and II (8 cr.)
College Physics I and II (8 cr.)
Calculus (4 cr.)
Statistics for Science majors (4 cr.)
Biology elective (should be Bio 164) and Genetics (8 cr.)

General Education Courses (total of 43 credits):

Freshman Seminar (1 cr.)
Humanities (21 cr.)
Social Science (must incl. Psychology) (6 cr.)
Current Health (3 cr.)
Racism and Sexism/Women's Changing Roles (3 cr.)
Arts/Communication (6 cr.)
Non-western course (3 cr.)

Electives (total of 15 credits):

5 elective courses by advisement, including PEAC 330 Biomechanics

In addition to the courses listed above, students must maintain a grade point average of 3.4 or better to remain competitive for admission to the Physical Therapy program at UMDNJ.

ASSESSMENT PROCEDURES FOR STUDENT LEARNING OUTCOMES

All students entering William Paterson University as Biology/Biotechnology majors in Fall 2002 or thereafter must complete the **specified departmental curriculum**, **other curricular requirements, and take a comprehensive exit exam,** to qualify for the BS degree. The primary purpose of the exit exam is as an evaluation tool for the programs the department offers and to determine how well these programs serve the students and fulfill the goals and objectives that the faculty has laid out.

During the **Senior Seminar (BIO 480**) students will complete a questionnaire, and their competence in terms of the learning outcomes objectives listed under lecture material will be assessed.

After a certain period all graduates will receive a questionnaire relating to the biology major programs and the students perception of the appropriateness and relevance of the curriculum in the light of their current situation.

ADVANCED PLACEMENT CREDIT

1. **Biology Department High School Advanced Placement Course Credit Policy**
   Students who took the Advanced Biology Placement course and received a score of 4 or 5 will be granted 4 credits for General Biology I (BIO 163) and exemption from General Biology II (BIO 164). The total number of credits required for graduation with a major in Biology or Biotechnology remains the same. (With a score of 3 the student receives credit for a General Education Science course.)

2. **Successful completion of the CLEP examination generally earns the student credits in the appropriate General Education courses.**

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
7. With any of the above, the faculty member can have a written record of the sequence of events placed in the student's permanent record with a copy to the student.

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.

*Excerpted from Undergraduate Catalogue 1999-2001 pp. 36-38

PASS/FAIL POLICY

NOTE: there are important changes to this policy!

The student who exercises this option must indicate such intention at the time of registration and is not permitted to change his/her intention after the registration period is complete. Nor may the student who has registered for a course be permitted to change his/her mind and exercise the pass/fail policy after the registration period.

A grade of "P" shall count in the number of credits earned but not in the cumulative grade point average. A grade of "F" counts in the grade point average.

Students who wish to exercise the pass/fail option are reminded of certain limitations in the concept and of potential difficulties that they may encounter. Not only are grades of "P" not counted in the student's grade point average, but also the student may find that grades of "P" are not transferable to other colleges and may not be recognized by some graduate schools.

1. Students may register for only one course per semester as a Pass/Fail option.
2. Students may register for no more than 4 courses as a Pass/Fail option during their academic careers.
3. The Pass/Fail option may be used only for free elective courses. It may not be used for major or minor courses or directed electives. (This count does not include any General Education, Elective or Major courses, which can only be taken Pass/Fail.)
4. A Pass/Fail grade of "P" will be considered the equivalent of "A" to "D". A Pass/Fail grade of "F" will be considered the equivalent of "F".

GRADE DEFINITIONS

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

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

REPEAT COURSE POLICY

1. Effective fall 1987, only a currently enrolled* undergraduate first-degree student may repeat once any course in which a passing grade **less than "C-"** is received. (Those students who have previously repeated a course prior to the effective date may not do so again.)
2. A course in which a failing grade is received may be repeated until a passing grade is obtained.
3. **Only the last grade** will be computed in the GPA.
4. All grades will be shown on the transcript.
5. Courses taken under the repeat grade policy will be noted accordingly on the transcript.
6. The course being repeated **cannot** be taken on a Pass/Fail basis unless it was initially taken Pass/Fall.
7. Course substitutions are not permitted.

*Enrolled ‘ Registered, Paid, and in Attendance.

PROCEDURES FOR INVESTIGATING COMPLAINTS ABOUT GRADES OR STUDENT ACADEMIC PERFORMANCE

Students who are dissatisfied with treatment by a faculty member in reference to grades or student academic performance should pursue the following procedure:

1. Speak directly to the faculty member **within ten working days** of the receipt of grade or incident related to student academic performance. If, after repeated attempts a student is unable to reach the faculty member **within ten working days**, the student must notify the department chairperson in writing within that ten working day period.
2. If, after discussion with the faculty member the student is dissatisfied with the outcome, the student should contact the department chairperson presenting a dated, written statement describing the specific basis for the complaint. The written material must include any pertinent documentation to substantiate the student's complaint. At this time, the student will also provide the faculty member with a copy of these written materials.
3. The department chairperson shall try to resolve the issue by reaching a settlement, which is agreed upon by both the student and by faculty member. If the issue is not resolved at the chairperson's level, the student should request that the department chairperson convene the Department Executive Council (or other appropriate department committee) to hear the appeal, consult with the faculty member concerned, then submit a decision to the department chairperson. When the faculty member involved is the chairperson, then the student may request that the Dean of the College convene the Department Executive Council (or other appropriate department committee).
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 for a decision by the departmental chairpersons of the College concerned. This will constitute the University's final decision. The chairperson of the department concerned shall not take part in the final vote.
5. Each step in the procedure must be **initiated within ten working days** of the faculty or department response. Dated, written statements are required at each step. Likewise, at each level, the faculty member(s), chairperson, or Department Executive Council (or other appropriate department committee) must complete a review of all pertinent written materials prior to rendering their

decision, in writing, **within ten 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 each step of this procedure. No grade shall be changed by anyone other than the faculty member who assigned it unless there is convincing evidence that the assignment of the original grade was inconsistent with professional standards in the discipline.

6. 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 this procedure, read it and understands it before the appeal can proceed.

PROCEDURES FOR A LEAVE OF ABSENCE/WITHDRAWAL

Leave of Absence

A leave of absence can be granted for one academic year (two semesters). A student must be in good standing in order to be eligible to take a leave of absence.

If a student is not in good standing, a leave of absence cannot be granted, and the student electing to leave school must withdraw from the University (see below). A leave of absence must be applied for at least 30 days prior to the last day of classes of the semester for which it is applicable. Refunds after the deadline will not be considered under any circumstances.

All sophomores, juniors and seniors can obtain the forms for a leave of absence from the counseling Center, Morrison hall, X2257. All leave of absence forms for freshmen can be obtained through the Freshman Life Office, Morrison Hall, X2219.

Withdrawal from the University

A withdrawal from the University will not be refused to any matriculated student. A withdrawal is for an indefinite length of time and is in force until the student chooses to apply for readmission. Withdrawal should not be confused with dropping a course nor should a withdrawal be confused with a leave of absence.

Nonattendance in classes does not constitute a withdrawal from the University. For matriculated sophomores, juniors or seniors, a withdrawal from the University must be officially processed through the counseling Center, Morrison Hall, X2257. Matriculated freshmen seeking withdrawal must contact the Freshman Life Office, Morrison Hall, X2219. Nonmatriculated students who wish to withdraw from the University during the school year are required to complete the appropriate form, available at the Office of the Registrar, College Hall, X2700.

Students who withdraw from the University (from all their courses) must apply or readmission through the Admissions Office, X2903, according to the admissions calendar. Readmission is not automatic; college or department enrollment restrictions and other considerations may not permit return during a particular semester. Students who are not in good standing upon withdrawal and subsequently seek readmission must simultaneously seek readmission to a major, if previously declared. Refunds after the deadline will not be considered under any circumstances.

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 an 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: Bio William Paterson)!**

Of our annual Biology/Biotechnology majors about 50% are admitted to professional and graduate degree programs immediately upon graduation. The remainders 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: **Robert Noyce Teacher Scholarship**

   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 gardnere@wpunj.edu

2. Undergraduate scholarship: Improving Student Success in Biology and Biotechnology Scholarship

Ten to twelve scholarships made available by a generous grant from the National Science Foundation. Scholarship awards will vary based on financial need, with a maximum award of $9,000, 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
- Submit a Free Application for Federal Student Aid (FAFSA) by the ISSBB application deadline.
- 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.

3. Undergraduate Scholarship: C. Kent Warner Scholarship

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 Biology Department Office, S434, after February 15th and completed applications are due back in S434 on March 15th.

4. Summer Internships
Information available during the spring semester in the Biology Office S434.

5. Biology Honor Society Beta Beta Beta
Advisor: Dr. Robert H. Chesney - S507B - 720-3455

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.

6. Graduation Awards

1. Outstanding Senior Award - Criteria
   a. Biology/Biotechnology Major
   b. For relatively high academic standing (not necessarily highest)

2. C. Kent Warner Award - Criteria
   a. Biology/Biotechnology Major
   b. High academic standing
   c. Contributions to the Department, College, and University are considered

3. Biology Faculty Award - Criteria
   a. Biology/Biotechnology Major
   b. Academic excellence despite encountering severe obstacles and hardships.

4. **Undergraduate Research Award**
   a. Biology/Biotechnology Major
   b. This award honors the best research project by an undergraduate

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, the faculty, and what makes the department tick.

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 Morrison hall.
3. Expand your information about occupations that are of interest (visit the Career Library).

SOPHOMORE YEAR

1. Reassess the suitability of your major. Consider selecting a new major more consistent with your interests, abilities, and goals.
2. Develop tentative short and long range 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

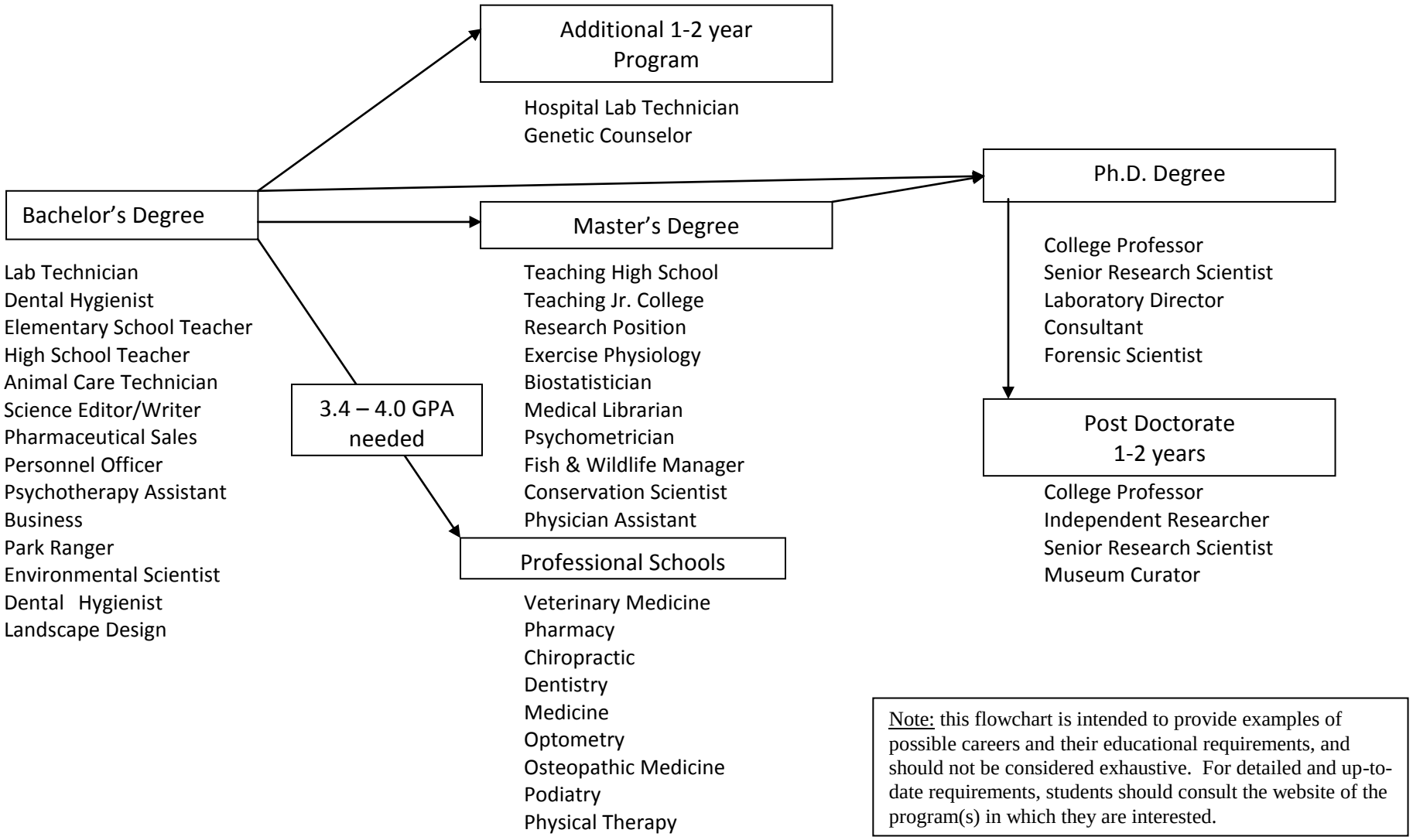
1. Consider the variety of choices that will be open to you after graduation; immediate full-time employment, further schooling, etc.
2. Plan for your choices.

SENIOR YEAR

1. Take necessary examinations (graduate study, government, jobs, and professional school).
2. Complete applications for graduate/professional study.
3. Establish your reference/credential file.
4. Attend workshops on resume writing, interview techniques, job search strategies, etc.

Good luck, and Remember - Don't be scared! Be Prepared! There is life after graduation!

Training and Careers in Biology



Note: this flowchart is intended to provide examples of possible careers and their educational requirements, and should not be considered exhaustive. For detailed and up-to-date requirements, students should consult the website of the program(s) in which they are interested.