



Albany College of Pharmacy
AND HEALTH SCIENCES

2015-16
College Catalog



Albany College of Pharmacy
AND HEALTH SCIENCES

2015-16 COLLEGE CALENDAR

FALL SEMESTER 2015

August 21-25	International Student Orientation (Friday-Tuesday)
August 25-30	Orientation (Tuesday-Sunday)
August 31	First Day of Classes (Monday)
September 7	Labor Day (Monday) – No Classes
September 25	Last Day to Drop a Course without academic penalty
October 12-13	Fall Recess (Monday-Tuesday)
October 14	Classes Resume (Wednesday)
November 25-27	Thanksgiving Recess (Wednesday-Friday)
November 30	Classes Resume (Monday)
December 11	Classes End (Friday)
December 14-18	Final Examinations (Monday-Friday)

SPRING SEMESTER 2016

January 18	Martin Luther King Day (Monday) – No Classes
January 19	Classes Resume (Tuesday)
February 12	Last Day to Drop a Course without Penalty
February 15	President's Day (Monday) – No Classes
February 16	Classes Resume (Tuesday)
March 14-18	Spring Recess (Monday-Friday) – No Classes
March 21	Classes Resume (Monday)
April 29	Classes End (Friday)
May 2-6	Final Examinations (Monday – Friday)
May 14	Commencement (Saturday)

SUMMER SESSION 2016

May 23	First Summer Session Begins (Monday)
May 30	Memorial Day (Monday) – No Classes
May 31	Classes Resume (Tuesday)
July 1	First Summer Session Ends (Friday)
July 4–July 8	Summer Break (Monday-Friday)
July 11	Second Summer Session Begins (Monday)
August 19	Second Summer Session Ends (Friday)



Albany College of Pharmacy
AND HEALTH SCIENCES

2016-17 COLLEGE CALENDAR

FALL SEMESTER 2016

August 19-23	International Student Orientation (Friday-Tuesday)
August 23-28	Orientation (Tuesday-Sunday)
August 29	First Day of Classes (Monday)
September 5	Labor Day (Monday) – No Classes
September 23	Last Day to Drop a Course without academic penalty
October 10-11	Fall Recess (Monday-Tuesday)
October 12	Classes Resume (Wednesday)
November 23-25	Thanksgiving Recess (Wednesday-Friday)
November 28	Classes Resume (Monday)
December 9	Classes End (Friday)
December 12-16	Final Examinations (Monday-Friday)

SPRING SEMESTER 2017

January 16	Martin Luther King Day (Monday) – No Classes
January 17	Classes Resume (Tuesday)
February 10	Last Day to Drop a Course without Penalty
February 20	President's Day (Monday) – No Classes
February 21	Classes Resume (Tuesday)
March 13-17	Spring Recess (Monday-Friday) – No Classes
March 20	Classes Resume (Monday)
April 28	Classes End (Friday)
May 1-5	Final Examinations (Monday – Friday)
May 13	Commencement (Saturday)

SUMMER SESSION 2017

May 22	First Summer Session Begins (Monday)
May 29	Memorial Day (Monday) – No Classes
May 30	Classes Resume (Tuesday)
June 30	First Summer Session Ends (Friday)
July 3–July 7	Summer Break (Monday-Friday)
July 10	Second Summer Session Begins (Monday)
August 18	Second Summer Session Ends (Friday)

Experiential Education 2016 – 2017 Calendar

<u>Community IPPE Dates</u>	MODULE	DATES
Session 1		5/23/16-6/10/16
Session 2		6/13/16 – 7/1/16
Break	A	5/23/16 – 7/1/16
Session 3	Break	7/4/16 – 7/8/16
Session 4	B	7/11/16 – 8/19/16
<u>Institutional IPPE Dates</u>	C	8/22/16 – 9/30/16
Session 1	D	10/3/16 – 11/11/16
Session 2	E	11/14/16 – 12/23/16
Session 3	Break	12/26/16 – 12/30/16
Session 4	F	1/2/17 – 2/10/17
Session 5	G	2/13/17 – 3/24/17
<u>IPPE Public Health Dates</u>	H	3/27/17 – 5/5/17
Winter Break Week 1		1/4/16 – 1/8/16
Winter Break Week 2		1/11/16 – 1/15/16
Spring Longitudinal		2/12/16 – 4/22/16
Spring Break Week		3/14/16 – 3/18/16
Week 1		5/16/16 – 5/20/16
Week 2		5/23/16 – 5/27/16
Week 3		6/6/16 – 6/10/16
Week 4		6/13/16 – 6/17/16
Week 5		6/20/16 – 6/24/16
Week 6		6/27/16 – 7/1/16
Week 7		7/11/16 – 7/15/16
Week 8		7/18/16 – 7/22/16
Week 9		7/25/16 – 7/29/16
Week 10		8/1/16 – 8/5/16
Week 11		8/8/16 – 8/12/16
Week 12		8/15/16 – 8/19/16
Week 13		8/22/16 – 8/26/16
<u>IPPE Patient Assessment Dates</u>		
Week 1		5/16/16 – 5/20/16
Week 2		5/23/16 – 5/27/16
Week 3		6/6/16 – 6/10/16
Week 4		6/13/16 – 6/17/16
Week 5		6/20/16 – 6/24/16
Week 6		6/27/16 – 7/1/16
Week 7		7/11/16 – 7/15/16
Week 8		7/18/16 – 7/22/16
Week 9		7/25/16 – 7/29/16
Week 10		8/1/16 – 8/5/16
Week 11		8/8/16 – 8/12/16
Week 12		8/15/16 – 8/19/16
Week 13		8/22/16 – 8/26/16
	VACATION/HOLIDAYS	
		Monday, May 30, 2016(Memorial Day)
		Monday, September 5, 2016 (Labor Day)
		Monday, October 10, 2016 (Columbus Day)*
		Thurs & Friday, November 24 & 25, 2016 (Thanksgiving Holidays)
		Monday, January 16, 2017 (MLK Day)*
		Monday, February 20, 2017 (Presidents Day)*
		*For Columbus Day, Martin L. King Day, and President’s Day, students completing community and institutional APPEs will report to the site for duty; for other sites that are open for business on this day, students assigned to such sites are expected to report to the practice site. If the site is closed for business (or the preceptors are observing the holiday), such as some federal facilities, and the preceptor permits the student to observe the holiday, the student may take the day as a holiday...zero hours are accrued for the holiday on the certification of hours form.
		<u>GRADUATION</u> May 2017



Albany College of Pharmacy
AND HEALTH SCIENCES

BACHELOR OF SCIENCE IN BIOMEDICAL TECHNOLOGY

The Biomedical Technology program allows students to explore the many facets of human health and disease with an emphasis on the contribution of diagnostic laboratory medicine to medical practice. Students in the Biomedical Technology program have a variety of options based on their personal interests and career goals.

The Program provides a strong foundation in basic and clinical sciences. Students are prepared to seek positions in the biomedical device industry such as research, technical support and sales or to pursue admission to MS programs in Physician Assistant Studies. Incoming freshman students may apply for early assurance acceptance to the MS in Physician Assistant Studies at Albany Medical College. (This track does not lead to certification or licensure. See the BS in Clinical Laboratory Sciences.)

The curriculum in Biomedical Technology is designed to assure that all students are able to:

- Interpret Clinical Laboratory Testing
 - Evaluate appropriateness and quality of laboratory specimens and handle them safely
 - Evaluate test results to assure accuracy of analyses and correlate with medical history and diagnosis
- Promote Public Health
 - Promote public awareness of health and disease
- Demonstrate Professionalism
 - Demonstrate professional conduct and interpersonal communication skills with patients, laboratory personnel, other health care professionals and the public
 - Establish and maintain continuing education for self and others to maintain lifelong learning and professional competence
 - Provide leadership in educating other health care professionals on issues related to the clinical laboratory
 - Read and evaluate published professional literature for its pertinence and reliability and explain the basic principles of the scientific method
- Understand Health Care Systems and the Role of the Medical Laboratory
 - Explain the role of the regulatory agencies that oversee the clinical laboratory and of the regulations pertinent to the laboratory and the healthcare organization in which the laboratory resides
 - Explain the organizational structure of healthcare organizations and the role of the clinical laboratory in the provision of patient care
- Practice the principles of diagnostic thought process and evidence based medicine
 - Critically evaluate current publications on diagnostic process including laboratory results
 - Articulate the principles of evidence based medicine in the diagnostic process

BS BIOMEDICAL TECHNOLOGY REQUIRED COURSES

Students complete the core curriculum below in years 1 – 3 and then one of the path specific sets of courses that follow in year 4.

Communications: 9 required credits¹

COM 115: Principles of Communication (3)

BHS 230: Sophomore Seminar (3)

BHS 450: Senior Seminar in Biotechnology (3)

¹All incoming students are assessed for their writing ability. The assessment is designed to direct students to the courses for which they are best prepared in the first year of the curriculum.

Humanities, Culture and Health: 15 required credits

HUM 101, 102 and 201: The Pre-Modern World, The Modern World, The Contemporary World (3, 3, 3)

ETH310: Bioethics (3)

Social Science Elective (3)

Basic Sciences: 41 required credits

BIO 101 and 102: General Biology (4, 4)

BIO 213 and BIO 214: Anatomy and Physiology I/II (3,3)

BIO 215 and BIO 216: Anatomy and Physiology Lab I/II (1,1)

BIO 235: Cell Biology (3)

BIO 236: Cell Biology Laboratory (1)

CHE 101 and 102: General Chemistry (4, 4)

CHE 245: Survey of Organic Chemistry (4)

CHE 311: Biochemistry I (3)

CHS 312: Biochemistry I Lab (1)

MAT 145: Elementary Statistics (3)

Biomedical Sciences: 10 required credits

BHS 201: Medical Terminology (3)

BHS 205: Clinical Instrumentation Analysis (3)

BHS 650: Genetics and Molecular Basis of Disease (4)

BHS 360: Clinical Anatomy (3)

BHS 365: Introduction to Pathology (3)

BHS 450: Senior Seminar in Biomedical Technology (3)

Directed Electives: 12 directed credits

Clinical Sciences: 29 required credits

CLS 327/328: Clinical Microbiology I Lecture and Laboratory (3,1)

CLS 329/330: Clinical Microbiology II Lecture and Laboratory (3,1)

CLS 317/318: Clinical Hematology Lecture and Laboratory (3,1)

CLS 306: Urinalysis and Body Fluids (2)

CLS 337/338: Clinical Immunology Lecture and Laboratory (3,1)

CLS 339/340: Immunohematology Lecture and Laboratory (3,1)

CLS 346/347: Clinical Chemistry Lecture and Laboratory (3,1)

CLS 400: Laboratory Management and Education (3)

Electives: 9 elective credits

BS IN BIOMEDICAL TECHNOLOGY SAMPLE SCHEDULES

Year 1						
Fall Semester			Credits	Spring Semester		Credits
BIO 101	General Biology I		4	BIO 102	General Biology II	4
CHE 101	General Chemistry I		4	CHE 102	General Chemistry II	4
HUM 101	Pre-Modern World		3	MAT 145	Elementary Statistics	3
COM 115	Principles of Communication		3	HUM 102	Modern World	3
	Elective				Elective	3
	Total		17		Total	17

Year 2						
Fall Semester			Credits	Spring Semester		Credits
HUM 201	Contemporary World		3	BHS 230	Sophomore Seminar	3
BHS 205	Clinical Instrumentation Analysis		3	BIO 235	Cell Biology	3
BIO 213	Anatomy and Physiology I		3	BIO 236	Cell Biology Lab	1
BIO 215	Anatomy and Physiology I Lab		1	BIO 214	Anatomy and Physiology II	3
BHS 201	Medical Terminology		3	BIO 216	Anatomy and Physiology II Lab	1
	Elective or Directed Elective in Social Science		3	CHE 245	Survey of Organic Chemistry	4
	Total		17		Elective or Directed Elective in Social Science	3
					Total	18

Year 3						
Fall Semester			Credits	Spring Semester		Credits
CLS 327/328	Clinical Microbiology I		4	CLS 339/340	Immunohematology	4
CHE 311	Biochemistry I		3	CLS 346/347	Clinical Chemistry	4
CHE 312	Biochemistry I Lab		1	CLS 329/330	Clinical Microbiology II	4
CLS 337/338	Clinical Immunology		4	ETH 310	Bioethics	3
CLS 317/318	Clinical Hematology		4	CLS 306	Urinalysis and Body Fluids	2
	Total		16		Total	17

Year 4						
Fall Semester			Credits	Spring Semester		Credits
	Directed Electives		6		Electives	6
BHS 650/652	Genetics and Molecular Basis of Disease		4	BHS 450	Senior Seminar in Biomedical Technology	3
BHS 360	Clinical Anatomy		3			
CLS 400	Laboratory Management and Education		3	BHS 365	Introduction to Pathology	3
	Total		16		Total	12

BS in Biomedical Technology/MS Cytotechnology and Molecular Cytology:

Upon completion of the third year of core courses, students may elect to enter the BS Biotechnology/MS Cytotechnology and Molecular Cytology program. They continue their education with training in microscopic examinations of human cell samples in order to identify inflammatory or cancerous changes in cell morphology. The Cytotechnology and Molecular Cytology program is the largest in the country and the only academic-based program in New York State. Graduates are eligible for accreditation nationally and for licensure in the state of New York State. (For course information, see the MS in Cytotechnology and Molecular Cytology program.)

BS in Biomedical Technology/MS Clinical Laboratory Sciences:

Students electing to pursue the combined BS in Biomedical Technology and the MS in Clinical Laboratory Sciences will complete the first two years of the Biomedical Technology program and use the third year of the curriculum to complete the requirements for admission into the MS program and to take additional coursework in upper level sciences, public health or other health related courses that support entrance into the MS program. (For course information, see the MS in Clinical Laboratory Sciences Program.)

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Albany College of Pharmacy AND HEALTH SCIENCES

BACHELOR OF SCIENCE IN CHEMISTRY

The Chemistry program at ACPHS has two tracks that allow students to follow a traditional sequence of chemistry courses or to specialize in Medicinal Chemistry. The Chemistry program takes a unique interdisciplinary approach to how chemistry contributes to the pharmaceutical sciences. By selecting appropriate electives, graduates have many opportunities including:

- employment in pharmaceutical research, manufacturing, and production technology. The background in pharmaceutically related topics provided by the program provides graduates an advantage when competing for positions traditionally filled by biology or chemistry majors;
- attending graduate school in the biological, chemical, or pharmaceutical sciences. Graduates are prepared for degree programs in such areas as medicinal chemistry, pharmacology, and pharmaceuticals;
- attending professional schools (medical, dental, law);
- completing a Master's in Teaching degree at another institution.

All graduates of the program are expected to fully integrate the theory and practical aspects of chemistry and to:

- demonstrate a working knowledge of traditional and emerging areas of chemistry;
- obtain and interpret information from the scientific literature;
- integrate and apply knowledge to solve complex scientific problems;
- formulate solutions to research problems and demonstrate an understanding of the facilities and expertise necessary for carrying out these solutions;
- possess appropriate laboratory skills including the ability to observe and record results, work safely, self-organize, and manage one's time;
- effectively communicate scientific information both, both orally and in writing;
- engage in work independently and collaboratively in scientific processes;
- understand their ethical and professional responsibilities as well as an awareness of the contemporary societal and global issues facing scientists.

Information regarding joint programs between the BS in Chemistry Program and other institutions can be found in the Articulation Agreements and Joint Degree Programs section.

BS IN CHEMISTRY REQUIRED COURSES

All students, regardless of track selected, will complete the following core curriculum. In addition to the core curriculum, students will be required to complete either the traditional track or the medicinal chemistry track.

CORE CURRICULUM

CHEMISTRY

CHE 101 and 102: General Chemistry I and II (4, 4)

CHE 211 and 221: Organic Chemistry I and II (4, 4)

CHE 345: Physical Chemistry I (3)

CHE 346: Physical Chemistry I lab (1)

CHE 435: Inorganic Chemistry (3)

CHE 450, 452, 454, 456, 458 and 460: Analytical Chemistry Sequence (8)

CHE 311: Biochemistry I (3)

CHE 312: Biochemistry I lab (1)

CHE 490: Undergraduate Research (6)

PSC 454: Research Seminar (1)

OTHER SCIENCES

PHY 201 and 202: College Physics I and II (4, 4)

BIO 101 and 102: General Biology I and II (4, 4)

MATH

MAT 121 and 211: Calculus I and II (4, 4)

MAT 235: Differential Equations (3)

MAT 145: Elementary Statistics (3)

HUMANITIES AND COMMUNICATION¹

HUM 101, 102 and 201: The Pre-Modern World (3), The Modern World (3), The Contemporary World (3)

COM 115: Principles of Communication (3)

PSC 253: Scientific Communication (3)

ELECTIVES

9 credits of humanities and social science electives

¹All incoming students are assessed for their writing ability. The assessment is designed to direct students to the courses for which they are best prepared in the first year of the curriculum.

TRACK CURRICULA

TRADITIONAL TRACK COURSES

CHE 350: Physical Chemistry II (3)

18 credits of free electives

9 credits of advanced chemistry electives chosen from CHE 355: Organic Synthesis (3), CHE 423 or CHE 532G: Methods in Spectroscopy (3), PSC 341: Pharmaceutics I (3), PSC 342: Pharmaceutics (3), CLS 344: Clinical Chemistry (3), CHE 313: Biochemistry II (3), PSC 441: Pharmacokinetics (3), CHE 415: Medicinal Chemistry I (3), CHE 417: Medicinal Chemistry II (3). Other courses may be counted at the discretion of the Program Director.

MEDICINAL CHEMISTRY TRACK COURSES

CHE 313: Biochemistry II (3)

CHE 415 and CHE 417: Medicinal Chemistry I and II (3, 3)

BIO 213 and 215: Anatomy and Physiology I and II (6)

PSC 341 and 342: Pharmaceutics I and II (6)

PSC 441: Pharmacokinetics (3)

9 credits of humanities and social science electives

3 credits of free electives

6 credits of advanced chemistry electives chosen from CHE 355: Organic Synthesis (3), CHE 423 or CHE 532G: Methods in Spectroscopy (3), CLS 344: Clinical Chemistry (3). Other courses may be counted at the discretion of the Program Director.

Total Credits: Traditional Track – 126 credits, Medicinal Chemistry Track – 129 credits

BS IN CHEMISTRY SAMPLE SCHEDULES

TRADITIONAL TRACK SAMPLE SCHEDULE

Year 1						
Fall Semester			Credits	Spring Semester		Credits
CHE 101	General Chemistry I		4	CHE 102	General Chemistry II	4
BIO 101	General Biology I		4	BIO 102	General Biology II	4
HUM 101	The Pre-Modern World		3	HUM 102	The Modern World	3
MAT 121	Calculus I		4	MAT 211	Calculus II	4
COM 115	Principles of Communication		3		Elective	3
	Total		18		Total	18

Year 2						
Fall Semester			Credits	Spring Semester		Credits
CHE 201	Organic Chemistry I		4	CHE 202	Organic Chemistry II	4
PHY 212	College Physics I		4	PHY 222	College Physics II	4
MAT 235	Differential Equations		3	MAT 145	Statistics	3
HUM 201	The Contemporary World		3		Elective	3
	Elective		3		Elective	3
	Total		17		Total	17

Year 3						
Fall Semester			Credits	Spring Semester		Credits
CHE 345	Physical Chemistry I		3	CHE 350	Physical Chemistry II	3
CHE 346	Physical Chemistry I Lab		1		Analytical Chem. Sequence	4
	Analytical Chem. Sequence		4		Chemistry Elective	3
CHE 311	Biochemistry I		3		Elective	3
CHE 312	Biochemistry I Lab		1			
	Elective		3			
	Total		15		Total	13

Year 4						
Fall Semester			Credits	Spring Semester		Credits
CHE 490	Undergraduate Research		3	CHE 490	Undergraduate Research	3
PSC 253	Scientific Communication		3	PSC 454	Research Seminar	1
	Chemistry Elective		3	CHE 435	Inorganic Chemistry	3
	Elective		3		Chemistry Elective	3
	Elective		3		Elective	3
	Total		15		Total	13

MEDICINAL CHEMISTRY TRACK SAMPLE SCHEDULE

Year 1							
Fall Semester			Credits	Spring Semester			Credits
CHE 101	General Chemistry I		4	CHE 102	General Chemistry II		4
BIO 101	General Biology I		4	BIO 102	General Biology II		4
HUM 101	The Pre-Modern World		3	HUM 102	The Modern World		3
MAT 121	Calculus I		4	MAT 211	Calculus II		4
COM 115	Principles of Communication		3		Elective		3
	Total		18		Total		18

Year 2							
Fall Semester			Credits	Spring Semester			Credits
CHE 201	Organic Chemistry I		4	CHE 202	Organic Chemistry II		4
PHY 212	College Physics I		4	PHY 222	College Physics II		4
BIO 213	Anatomy and Physiology I		3	BIO 215	Anatomy and Physiology II		3
HUM 201	The Contemporary World		3	MAT 145	Statistics		3
MAT 235	Differential Equations		3		Elective		3
	Total		17		Total		17

Year 3							
Fall Semester			Credits	Spring Semester			Credits
	Analytical Chem. Sequence		4		Analytical Chem. Sequence		4
CHE 345	Physical Chemistry I		3	CHE 313	Biochemistry II		3
CHE 346	Physical Chemistry I Lab		1	PSC 342	Pharmaceutics II		3
CHE 311	Biochemistry I		3		Chemistry Elective		3
CHE 312	Biochemistry I Lab		1		Elective		3
PSC 341	Pharmaceutics I		3				
	Total		15		Total		16

Year 4							
Fall Semester			Credits	Spring Semester			Credits
CHE 415	Medicinal Chemistry I		3	CHE 417	Medicinal Chemistry II		3
CHE 490	Undergraduate Research		3	CHE 490	Undergraduate Research		3
PSC 441	Pharmacokinetics		3	PSC 454	Research Seminar		1
PSC 253	Scientific Communication		3	CHE 435	Inorganic Chemistry		3
	Chemistry Elective		3		Elective		3
	Total		15		Total		13

ADMISSION INTO THE BS IN CHEMISTRY

STUDENTS ENTERING AS FRESHMAN AND AS UPPER YEAR TRANSFERS

Entry to the program from students outside of the College is handled through the Undergraduate Admissions Office. Incoming students are able to apply college and AP credit to select courses. Current transfer policies are available from the Admissions Office. Once a student has matriculated into the program and started classes, all required coursework must be completed at ACPHS. For more detail see the Undergraduate Admissions section of the catalog.

STUDENTS ENTERING AS INTERNAL TRANSFERS FROM ANOTHER ACPHS PROGRAM

A student currently enrolled at ACPHS is entitled to apply for transfer from one academic program to another contingent upon review by the Program Director of the desired program. An application form is available from the Program Director, the Registrar's office, or on the Registrar's website located on Blackboard. The Program Director will review applications and the decision to grant the transfer request will be based upon the feasibility of the student to enroll in courses required for the program requested. The review will consider the schedule of course offerings and the student's record of completed courses. The timeframe for completion of all program requirements will be dependent on the student's record of completed coursework at the time of the program transfer. It should be noted that the granting of the transfer request may require additional time to satisfy all new program requirements.

Updated August 2015



Albany College of Pharmacy
AND HEALTH SCIENCES

BACHELOR OF SCIENCE IN CLINICAL LABORATORY SCIENCES

The Clinical Laboratory Sciences program prepares students to perform a full range of laboratory analyses that are essential for the diagnosis, monitoring and treatment of disease. These laboratory analyses are applicable to the fields of human and veterinary medicine, forensics, drug development and research. Graduates are eligible for national certification through the American Society of Clinical Pathology as well as licensure in the state of New York as Clinical Laboratory Technologists.

The curriculum in Biomedical Technology is designed to assure that all students are able to:

- Perform Clinical Laboratory Testing
 - Evaluate appropriateness and quality of laboratory specimens and handle them safely
 - Accurately and efficiently perform analytic analyses in all areas of the clinical laboratory
 - Evaluate test results to assure accuracy of analyses and correlate with medical history and diagnosis
- Participate in the Daily Management of the Clinical Laboratory
 - Apply and properly follow all safety requirements within the laboratory and health care facility
 - Evaluate new testing methods and instrumentation for accuracy, precision, specificity, sensitivity and appropriateness to patient care
 - Explain the principles of human resources management
- Promote Public Health
 - Promote public awareness of health and disease
 - Recognize the role of the laboratory in disaster management
- Provide Laboratory Information and Education
 - Demonstrate professional conduct and interpersonal communication skills with patients, laboratory personnel, other health care professionals and the public
 - Establish and maintain continuing education for self and others to maintain lifelong learning and professional competence
 - Provide leadership in educating other health care professionals on issues related to the clinical laboratory
 - Read and evaluate published professional literature for its pertinence and reliability and explain the basic principles of the scientific method
- Understand Health Care System and the Role of the Medical Laboratory
 - Explain the role of the regulatory agencies that oversee the clinical laboratory and of the regulations pertinent to the laboratory and the healthcare organization in which the laboratory resides
 - Explain the organizational structure of healthcare organizations and the role of the clinical laboratory in the provision of patient care

BS CLINICAL LABORATORY SCIENCES REQUIRED COURSES

Communications: 9 required credits¹

COM 115: Principles of Communication (3)

BHS 230: Sophomore Seminar (3)

BHS 450: Senior Seminar in Biotechnology (3)

¹All incoming students are assessed for their writing ability. The assessment is designed to direct students to the courses for which they are best prepared in the first year of the curriculum.

Humanities, Culture and Health: 15 required credits

HUM 101, 102 and 201: The Pre-Modern World, The Modern World, The Contemporary World (3, 3, 3)

ETH310: Bioethics (3)

Social Science Elective (3)

Basic Sciences: 41 required credits

BIO 101 and 102: General Biology (4, 4)

BIO 213 and BIO 214: Anatomy and Physiology I/II (3,3)

BIO 215 and BIO 216: Anatomy and Physiology Lab I/II (1,1)

BIO 235: Cell Biology (3)

BIO 236: Cell Biology Laboratory (1)

CHE 101 and 102: General Chemistry (4, 4)

CHE 245: Survey of Organic Chemistry (4)

CHE 311: Biochemistry I (3)

CHS 312: Biochemistry I Lab (1)

MAT 115: Introduction to Lab Data (2)

MAT 145: Elementary Statistics (3)

Biomedical Sciences: 10 required credits

BHS 201: Medical Terminology (3)

BHS 205: Clinical Instrumentation Analysis (3)

BHS 650/652: Genetics and Molecular Basis of Disease Lecture and Laboratory (3,1)

Clinical Sciences: 29 required credits

CLS 327/328: Clinical Microbiology I Lecture and Laboratory (3,1)

CLS 329/330: Clinical Microbiology II Lecture and Laboratory (3,1)

CLS 317/318: Clinical Hematology Lecture and Laboratory (3,1)

CLS 306: Urinalysis and Body Fluids (2)

CLS 337/338: Clinical Immunology Lecture and Laboratory (3,1)

CLS 339/340: Immunohematology Lecture and Laboratory (3,1)

CLS 346/347: Clinical Chemistry Lecture and Laboratory (3,1)

CLS 400: Laboratory Management and Education (3)

Electives: 9 elective credits

BS IN CLINICAL LABORATORY SCIENCES SAMPLE SCHEDULE

Year 1						
Fall Semester			Credits	Spring Semester		Credits
BIO 101	General Biology I		4	BIO 102	General Biology II	4
CHE 101	General Chemistry I		4	CHE 102	General Chemistry II	4
HUM 101	Pre-Modern World		3	MAT 145	Elementary Statistics	3
COM 115	Principles of Communication		3	HUM 102	Modern World	3
	Elective				Elective	3
	Total		17		Total	17

Year 2						
Fall Semester			Credits	Spring Semester		Credits
HUM 201	Contemporary World		3	BHS 230	Sophomore Seminar	3
BHS 205	Clinical Instrumentation Analysis		3	BIO 235	Cell Biology	3
BIO 213	Anatomy and Physiology I		3	BIO 236	Cell Biology Lab	1
BIO 215	Anatomy and Physiology I Lab		1	BIO 214	Anatomy and Physiology II	3
BHS 201	Medical Terminology		3	BIO 216	Anatomy and Physiology II Lab	1
	Elective or Directed Elective in Social Sciences		3	CHE 245	Survey of Organic Chemistry	4
	Total		17		Elective or Directed Elective in Social Science	3
					Total	18

Year 3						
Fall Semester			Credits	Spring Semester		Credits
CLS 327/328	Clinical Microbiology I		4	CLS 339/340	Immunochemistry	4
CHE 311	Biochemistry I		3	CLS 346/347	Clinical Chemistry	4
CHE 312	Biochemistry I Lab		1	CLS 329/330	Clinical Microbiology II	4
CLS 337/338	Clinical Immunology		4	ETH 310	Bioethics	3
CLS 317/318	Clinical Hematology		4	CLS 306	Urinalysis and Body Fluids	2
	Total		16		Total	17

Year 4						
Fall Semester			Credits	Spring Semester		Credits
CLS 401	Clinical Practicum I		9	CLS 402	Clinical Practicum II	9
BHS 650	Genetics and Molecular Basis of Disease		4	CLS 410	Clinical Correlations	3
CLS 400	Laboratory Management and Education		3			
	Total		16		Total	12

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Albany College of Pharmacy AND HEALTH SCIENCES

BACHELOR OF SCIENCE IN MICROBIOLOGY

The goal of the B.S. Microbiology program at Albany College of Pharmacy and Health Sciences is to prepare graduates for employment or advanced study in fields requiring knowledge of microbial life, e.g., health care, public health, biotechnology, pharmaceutical sciences, medical equipment and supplies industry. There is a core of courses for each of these varied employment and educational opportunities and depending upon the student's goals, specific tracks will be chosen in consultation with the microbiology advisors in the Department.

The program has three tracks that allow students to specialize in Biomedical Microbiology, Epidemiology/Public Health, or Industrial/Pharmaceutical Microbiology. All three tracks in the program abide by the core curriculum guidelines of the American Society for Microbiology for the baccalaureate degree program in microbiology. The students graduating from this program will meet the educational requirements (of having a BS with 20 semester hours of microbiology relevant courses) for certification by the National Registry of Microbiologists (NRM), a professional branch of the American College of Microbiology within the American Society for Microbiology (ASM). Graduates will be fully prepared to take the written exam for registered microbiologist or conditional registrant in Pharmaceutical and Medical Device and/or Biological Safety.

All graduates of the program are expected to fully integrate the theory and practical aspects of microbiology and to:

- demonstrate a working knowledge of traditional and emerging areas of microbiology
- obtain, interpret, and apply information about microbiology from the scientific literature
- integrate and apply knowledge to solve complex scientific problems
- formulate hypotheses to explain research problems and demonstrate an understanding of the facilities and expertise necessary for testing these hypotheses
- possess appropriate laboratory skills including the ability to observe and record results, work safely, self-organize and manage one's time
- effectively communicate scientific information both orally and in writing
- work both independently and collaboratively in scientific processes
- understand their ethical and professional responsibilities and be aware of the contemporary societal and global issues facing scientists

The following is a brief description and career objectives for each of the three tracks of the program:

BIOMEDICAL MICROBIOLOGY TRACK will train graduates in understanding how infectious diseases occur. It will serve as the foundation for advanced graduate studies in Microbiology, Immunology, Virology, Cellular and Molecular Biology, and Pharmaceutical Sciences. Graduates would be prepared for entry into the professional schools such as medicine, veterinary, dental, and public health. Graduates may find jobs as research technicians in laboratories working in the area of microbiology and infectious diseases.

PUBLIC HEALTH/INFECTIOUS DISEASE EPIDEMIOLOGY TRACK will offer instruction on the concepts, methods, and application of epidemiological principles related to infectious diseases. Graduates of the program will have an in-depth understanding of the major laboratory and public health aspects of microbial pathogens. They will gain epidemiologic skills relevant to the prevention and control of problems arising from infectious diseases. Graduates will be prepared for careers in academic and industrial research laboratories, international health agencies, nongovernmental organizations and private consulting groups. In addition, they may work in federal, state and local public health agencies or state and local public health laboratories where their technical expertise and population-based perspective will be extremely useful.

INDUSTRIAL/PHARMACEUTICAL MICROBIOLOGY TRACK will prepare the students for the scientific principles, techniques and skills required in industrial microbiology. Specialized study will include biotechnology applications, biochemistry, analytical chemistry and pharmaceutical microbiology. This track will train students in the areas of microbial contamination prevention, investigation, control and aseptic processing. Students will gain experience in pharmaceutical processing and manufacturing and healthcare issues. Graduates will acquire skills required for quality control of raw materials and finished products, knowledge in drug and environmental regulations and guidelines along with learning the principles of Good Manufacturing Practices.

Information regarding joint programs between the BS in Microbiology Program and other institutions can be found in the Articulation Agreements and Joint Degree Programs section.

BS IN MICROBIOLOGY REQUIRED COURSES

All students, regardless of track selected, will complete the following core curriculum. Students will be required to complete one of the tracks described below. Each track contains 9-11 credits of required courses. Students must also choose 5-6 credits from a list of approved track electives.

CORE CURRICULUM

BASIC SCIENCES: 41 REQUIRED CREDITS

BIO 101 and 102: General Biology I and II (4, 4)

CHE 101 and CHE 102: General Chemistry I and II (4, 4)

CHE 211 and 221: Organic Chemistry I and II (4, 4)

PHY 212 and 222: College Physics I and II (4, 4)

MAT 121: Calculus I (4)

MAT 145: Elementary Statistics (3)

HUMANITIES AND COMMUNICATIONS: 16 REQUIRED CREDITS¹

HUM 101, 102 and 201: The Pre-Modern World (3), The Modern World (3), The Contemporary World (3)

COM 115: Principles of Communication (3)

PSC 253: Scientific Communications (3) [or other comparable course]

MICROBIOLOGY: 31 REQUIRED CREDITS

BIO 210: Microbiology (4)

PSC 315: Immunology (3)

PSC 311: Biochemistry (3)

PSC 312: Molecular Biology (3)

BIO 340: Microbial Genetics (3)

BIO 370: Microbial Physiology (3)

BIO 350 and 355: Biomedical Laboratory Techniques I and II (3, 3)

BIO 480 and BIO 485: Microbiology Capstone Experience I and II (3, 3)

Options for Microbiology Capstone Experience - Research (a minimum of 3 credits), Internships, and/or Independent Projects. The plan for the Capstone Experience should be developed by the student in conjunction with the faculty adviser and Program Director and approved in spring of the Junior Year.

ELECTIVES: 21 CREDITS

At least 9 credits must be in the humanities or social sciences.

¹All incoming students are assessed for their writing ability. The assessment is designed to direct students to the courses for which they are best prepared in the first year of the curriculum.

TRACK CURRICULUM

BIOMEDICAL MICROBIOLOGY TRACK

BIO 375: Bacterial Pathogenesis (3)

BIO 235: Cell Biology (3)

BIO 240: Virology (3) or BIO 365: Medical Mycology and Parasitology (3)

A minimum of 5 credits chosen from BIO 225: Genetics (3), BIO 213: Anatomy & Physiology I (3), BIO 215: Anatomy & Physiology II (3), ETH 310: Bioethics (3), BHS 200: Good Laboratory Practices (2), BHS 630G: Advanced Good Lab Practices and Lab Management (3), BIO 240: Virology (3), BIO 365: Medical Mycology and Parasitology (3). Other courses may be counted at the discretion of the Program Director.

PUBLIC HEALTH MICROBIOLOGY/INFECTIOUS DISEASE EPIDEMIOLOGY TRACK

PAD 393: Introduction to Epidemiology (3)

PAD 391: Topics in Public Health (3) or SOC 120: Intro to Public Health (3)

PHM 350: Applied Methods in Epidemiological Research (3)

A minimum of 5 credits chosen from PSC 432: Infectious Disease Pharmacology (3), SOC 335: Public and Health Policy (3), ETH 310: Bioethics (3), HRI 600G: Issues in Global Health (3). Other courses may be counted at the discretion of the Program Director.

INDUSTRIAL/PHARMACEUTICAL MICROBIOLOGY TRACK

BIO 360: Industrial Microbiology and Bioprocessing (3)

BHS 200: Good Laboratory Practices (2) or BHS 630G: Advanced Good Lab Practices and Lab Management (3)

BIO 410: Pharmaceutical Microbiology (3)

PSC 431: Foundations of Pharmaceutical Science (2)

A minimum of 5 credits chosen from PSC 341: Pharmaceutics I (3), PSC 342: Pharmaceutics II (3), CHE 375: Analytical Chemistry I (4), CHE 380: Analytical Chemistry II (4), BIO 455: Toxicology (3), SOC 335: Public and Health Policy (3). Other courses may be counted at the discretion of the Program Director.

TOTAL CREDITS: 120-123 CREDITS

BS IN MICROBIOLOGY SAMPLE SCHEDULES

BIOMEDICAL MICROBIOLOGY SAMPLE SCHEDULE

Year 1									
Fall Semester			Credits		Spring Semester			Credits	
BIO 101	General Biology I		4		BIO 102	General Biology II		4	
CHE 101	General Chemistry I		4		CHE 102	General Chemistry II		4	
HUM 101	The Pre-Modern World		3		HUM 102	The Modern World		3	
MAT 121	Calculus I		4		COM 115	Principles of Communication		3	
						Elective		3	
	Total		15			Total		17	

Year 2									
Fall Semester			Credits		Spring Semester			Credits	
CHE 211	Organic Chemistry I		4		CHE 221	Organic Chemistry II		4	
PHY 212	College Physics I		4		PHY 222	College Physics II		4	
HUM 201	The Contemporary World		3		MAT 145	Elementary Statistics		3	
BIO 210	Microbiology		4		BIO 240 or BIO 365	Virology or Medical Mycology & Parasitology		3	
						Elective		3	
	Total		15			Total		17	

Year 3									
Fall Semester			Credits		Spring Semester			Credits	
PSC 311	Biochemistry		3		PSC 312	Molecular Biology		3	
PSC 315	Immunology		3		BIO 340	Microbial Genetics		3	
BIO 370	Microbial Physiology		3		BIO 355	Biomedical Lab Techniques II		3	
BIO 350	Biomedical Lab Techniques I		3		BIO 235	Cell Biology		3	
	Elective		3			Elective		3	
	Total		15			Total		15	

Year 4									
Fall Semester			Credits		Spring Semester			Credits	
BIO 480	Micro. Capstone Experience I		3		BIO 485	Micro. Capstone Experience II		3	
PSC 253	Scientific Communication		3			Elective/Track Elective*		3	
	Elective/Track Elective*		3			Elective/Track Elective*		3	
	Elective/Track Elective*		3		BIO 375	Bacterial Pathogenesis		3	
	Elective/Track Elective*		3						
	Total		15			Total		13	

*This includes 2x Track Electives, 2x Free Electives

PUBLIC HEALTH/INFECTIOUS DISEASE EPIDEMIOLOGY TRACK SAMPLE SCHEDULE

Year 1							
Fall Semester			Credits	Spring Semester			Credits
BIO 101	General Biology I		4	BIO 102	General Biology II		4
CHE 101	General Chemistry I		4	CHE 102	General Chemistry II		4
HUM 101	The Pre-Modern World		3	HUM 102	The Modern World		3
MAT 121	Calculus I		4	COM 115	Principles of Communication		3
					Elective		3
	Total		15		Total		17

Year 2							
Fall Semester			Credits	Spring Semester			Credits
CHE 211	Organic Chemistry I		4	CHE 221	Organic Chemistry II		4
PHY 212	College Physics I		4	PHY 222	College Physics II		4
HUM 201	The Contemporary World		3	MAT 145	Elementary Statistics		3
BIO 210	Microbiology		4	PAD 391	Topics in Public Health		3
					Elective		3
	Total		15		Total		17

Year 3							
Fall Semester			Credits	Spring Semester			Credits
PSC 311	Biochemistry		3	PSC 312	Molecular Biology		3
PSC 315	Immunology		3	BIO 340	Microbial Genetics		3
PAD 393	Intro to Epidemiology		3	BIO 355	Biomedical Lab Techniques II		3
BIO 370	Microbial Physiology		3		Elective/Track Elective*		3
BIO 350	Biomedical Lab Techniques I		3		Elective		3
	Total		15		Total		15

Year 4							
Fall Semester			Credits	Spring Semester			Credits
BIO 480	Micro. Capstone Experience I		3	BIO 485	Micro. Capstone Experience II		3
PSC 253	Scientific Communication		3	PHM 546	Adv. Topics in Infect. Disease		3
	Elective/Track Elective*		3		Elective/Track Elective*		3
	Elective/Track Elective*		3		Elective		3
	Elective/Track Elective*		3				
	Total		15		Total		12

*This includes 2x Track Electives, 2x Free Electives

INDUSTRIAL/PHARMACEUTICAL MICROBIOLOGY TRACK SAMPLE SCHEDULE

Year 1							
Fall Semester			Credits	Spring Semester			Credits
BIO 101	General Biology I		4	BIO 102	General Biology II		4
CHE 101	General Chemistry I		4	CHE 102	General Chemistry II		4
HUM 101	The Pre-Modern World		3	HUM 102	The Modern World		3
MAT 121	Calculus I		4	COM 115	Principles of Communication		3
					Elective		3
	Total		18		Total		17

Year 2							
Fall Semester			Credits	Spring Semester			Credits
CHE 211	Organic Chemistry I		4	CHE 221	Organic Chemistry II		4
PHY 212	College Physics I		4	PHY 222	College Physics II		4
HUM 201	The Contemporary World		3	MAT 145	Elementary Statistics		3
BIO 210	Microbiology		4	BIO 360	Industrial Micro/Bioprocessing		3
					Elective		3
	Total		15		Total		17

Year 3							
Fall Semester			Credits	Spring Semester			Credits
PSC 311	Biochemistry		3	PSC 312	Molecular Biology		3
PSC 315	Immunology		3	BIO 340	Microbial Genetics		3
BIO 370	Microbial Physiology		3	BIO 355	Biomedical Lab Techniques II		3
BIO 350	Biomedical Lab Techniques I		3	BIO 410	Pharmaceutical Microbiology		3
	Elective/Track Elective*		3		Elective		3
	Total		15		Total		15

Year 4							
Fall Semester			Credits	Spring Semester			Credits
BIO 480	Micro. Capstone Experience I		3	BIO 485	Micro. Capstone Experience II		3
PSC 253	Scientific Communication		3		Elective/Track Elective*		3
PSC 431	Foundations of Pharm. Sci.		2		Elective/Track Elective*		3
BHS 200 or BHS 630G	GLP or Advanced GLP and Lab Management		3		Elective		3
	Elective/Track Elective*		3				
	Elective/Track Elective*		3				
	Total		17		Total		12

*This includes 2x Track Electives, 2x Free General Electives



Albany College of Pharmacy AND HEALTH SCIENCES

BACHELOR OF SCIENCE IN PHARMACEUTICAL SCIENCES

Albany College of Pharmacy and Health Sciences (ACPHS) offers a four year bachelor degree in *Pharmaceutical Sciences*, based on a liberal arts core curriculum designed to foster the development of global citizen scientists. This program challenges students to evolve the critical thinking, communication and leadership skills necessary for self-directed learning and academic independence.

The Pharmaceutical Sciences are focused on the discovery and development of medications which are eventually dispensed by pharmacists and used every day by patients to manage their health. Pharmaceutical Sciences is a broad spectrum discipline encompassing not only basic science knowledge and research skill sets, but also business and marketing expertise. Graduates with an in-depth knowledge of pharmaceutical sciences are in high demand in many health care fields, including the pharmaceutical industry.

PREPARE FOR AN EXCITING CAREER

The Bachelor of Science in Pharmaceutical Sciences (BSPS) program at ACPHS is an excellent launching pad to a wide range of career opportunities and will help set students apart from biology or chemistry majors for a range of positions at pharmaceutical, chemical and biotech companies as well as for graduate, medical, dental and other health and science focused educational pathways. The majority of our graduates have continued on to either medical or graduate education programs (MD, MS, and PhD). Our joint bachelor/master program in pharmaceutical sciences (BS/MSPS) enhances our academic offerings and research focus to allow students to gain both their bachelor and master degree in five years instead of six years.

RESEARCH FOCUSED

Research opportunities provide the foundation for ACPHS's Pharmaceutical Sciences program. Students have many opportunities to be engaged in laboratory-based coursework beginning in their first year, working side-by-side with researchers whose skills have attracted funding from both government and private industry sources. Student research experiences span a wide range of medically-related areas that include cancer, diabetes, chronic kidney disease, addiction and inflammation as well as drug development and drug delivery systems and pharmacokinetics research. The BSPS program now includes an undergraduate Thesis component which includes several courses focused on the science related to the student's research project and the preparation of a written thesis of their work.

PATHWAYS

In recent years, BSPS students have continued their education at graduate, medical schools, physician assistant programs, dental, nurse practitioner programs and law schools. In addition, some have moved directly into the pharmaceutical industry. The combination of classroom instruction and laboratory training in this program is ideal for pursuing opportunities in such fields as Neuroscience, Pharmacology, Drug Discovery and Development, Nanoscale pharmaceuticals and medically related fields that depend on these disciplines.

PROGRAM OF STUDY:

BACHELOR OF SCIENCE IN PHARMACEUTICAL SCIENCES (BSPS) DEGREE

The Albany College of Pharmacy and Health Sciences' four-year bachelor degree in Pharmaceutical Sciences (BSPS) provides a strong foundation in the basic and pharmaceutical sciences. BSPS graduates will be well-prepared for entrance into basic science graduate programs, business, law, medical, dental, veterinary programs of study as well as related health care programs and entry-level positions in pharmaceutical, chemical and biotechnology industries.

(BSPS) DEGREE PROGRAM OUTCOMES:

1. Ethics and Cultural Awareness

A BSPS student is a positive influence on his/her community, guided by ethical behavior and a sense of responsibility.

- Demonstrates cultural awareness through writings, class discussions and oral presentations
- Expresses informed opinions with consideration for ethics, cultural perspective and empathy

2. Critical Thinking and Analysis

A BSPS student is able to apply critical thinking and scientific analysis to complex problems.

- Synthesizes a broad range of data into coherent hypotheses
- Critically evaluates data
- Applies historical and contemporary knowledge to issues of significance to scientific and non-scientific topics

3. Communication

A BSPS student is an effective communicator in a variety of media.

- Writes creatively and intelligently
- Demonstrates facility in technical writing
- Discusses and presents coherent ideas both didactically and through debate

4. Intellectual Curiosity and Acumen

A BSPS student demonstrates mastery of knowledge in his or her area of concentration, is inquisitive and challenging and academically independent.

- Demonstrates confidence while remaining receptive to alternative ideas
- Has the prerequisite skills to actively participate in independent research within their chosen field
Articulates historical, contemporary and cultural perspectives driving their field of interest

5. Leadership

A BSPS student displays leadership

- Through peer mentoring, volunteering and other leadership positions on and off campus, the student will foster curiosity and passion for science in others
- Is well-organized and reliable
- Demonstrates leadership by working with others in a team framework

6. Scientific Reasoning and Application

A BSPS student embodies the principles of scientific reasoning

- Articulates the philosophical foundations of scientific thought
- Formulates hypotheses and tests hypotheses objectively
- Demonstrates knowledge of contemporary standard scientific methodologies
- Employs deductive and inductive reasoning to solve complex problems
- Demonstrates the use of the scientific method as a framework for problem solving

BS IN PHARMACEUTICAL SCIENCES JOINT PROGRAMS AND ARTICULATION AGREEMENTS:

Information regarding joint programs between the BS in Pharmaceutical Sciences Program and other institutions can be found in the Articulation Agreements and Joint Degree Programs section. These include the BSPS/MBA in Healthcare Administration and BSPS/MS in Clinical Leadership in Healthcare Management with Union Graduate College, the BSPS/JD with Albany Law School, the BSPS/MS with ACPHS, and a PA with Albany Medical College.

BS IN PHARMACEUTICAL SCIENCES REQUIRED COURSES

There are currently three concentrations within the BSPS program (Pharmacology, Pharmaceutics, and Pharmaceutical Marketing and Regulatory Science). The required and elective courses for each concentration differs. It is possible for students to complete the requirements for more than one concentration through their elective choices.

REQUIRED COURSES COMMON TO ALL CONCENTRATIONS:

Required courses for all concentrations; other required courses are specific to each concentration and are listed below with each BSPS Concentration.

BIOLOGICAL SCIENCES: 24 REQUIRED CREDITS

General Biology I and II (4,4)

Biochemistry (3)

Molecular Biology (3)

Physiology/Pathophysiology I and II (4,4)

Foundations of Pharmaceutical Science (2)

PHYSICAL SCIENCES AND MATHEMATICS: 31 REQUIRED CREDITS

General Chemistry I and II (4,4)

Organic Chemistry I and II (4,4)

College Physics I and II (4,4)

Elementary Statistics (3)

Calculus I (4)

COMMUNICATIONS AND HUMANITIES: 15 REQUIRED CREDITS

Principles of Communication (3)

The Pre-Modern World, The Modern World, The Contemporary World (3,3,3)

ANY Psychology or Sociology course (3)

INTERDISCIPLINARY: 18 REQUIRED CREDITS

Scientific Reasoning and Analysis 1, 2, 3 (2, 2, 2)

Thesis Research I, II (3, 3)

Thesis 1, 2 (3, 3)

TOTAL REQUIRED COURSES COMMON TO ALL BSPS CONCENTRATIONS: 88 CREDITS

Each BSPS concentration includes additional required and elective courses to fulfill graduation requirements.

Elective requirements for each concentration include:

1. Directed Electives: Directed electives are courses selected with the help of an academic advisor that further the student's academic and career goals. These include any non-required science course and non-science courses closely related to the student's academic and career goals.

2. Liberal Arts Electives: Liberal arts electives include art, music, sociology, ethics, history, psychology, anthropology, foreign language, political science, economics and English.

3. General Education Electives: General education electives are any courses that are not required in the standard curriculum.

CONCENTRATION SPECIFIC REQUIRED AND ELECTIVE COURSES:

BSPS PHARMACOLOGY CONCENTRATION:

BIOLOGICAL SCIENCES: 14 REQUIRED CREDITS

Infectious Disease Pharmacology (2)

Neuropharmacology (3)

Cardiovascular Pharmacology (3)

Pharmacology/Physiology Selective (3, 3)

ELECTIVE REQUIREMENTS: 21 MINIMUM CREDITS

Directed Electives: 6 minimum credits

General Education Electives: 15 minimum credits (9 of these 15 credits must be in the Humanities)

Total required course credits: 102 credits

Total elective course credits: 21 credits

TOTAL GRADUATION CREDITS: 123-135 CREDITS

SAMPLE BSPS CURRICULUM - PHARMACOLOGY CONCENTRATION

Year 1						
Fall Semester			Credits	Spring Semester		
BIO101	General Biology I	4		BIO102	General Biology II	4
CHE101	General Chemistry I	4		CHE102	General Chemistry II	4
				MAT145	Elementary Statistics	3
HUM110	The Pre-Modern World	3		HUM120	The Modern World	3
PSC110	Scientific Reasoning and Analysis I: The Educated Scientist	2		PSC111	Scientific Reasoning and Analysis II: The Ethical Scientist	2
COM115	Principles of Communication	3				
	Total	16		Total	16	

Year 2						
Fall Semester			Credits	Spring Semester		
CHE211	Organic Chemistry I	4		CHE221	Organic Chemistry II	4
PHY212	College Physics I	4		PHY222	College Physics II	4
HUM210	The Contemporary World	3			Directed Elective/Elective	3
MAT121	Calculus I	4		PSC112	Scientific Reasoning and Analysis III: The Scientist in Society	2
	Total	15		Total	13	

Year 3						
Fall Semester			Credits	Spring Semester		
PSC311	Biochemistry	3		PSC312	Molecular Biology	3
PSC321	Physiology/Pathophysiology I	4		PSC322	Physiology/Pathophysiology II	4
PSC410	Thesis 1	3				
	Directed Elective/Elective	3		PSC412	Thesis Research I	3
	Sociology OR Psychology course	3			Directed Elective/Elective	3
					Directed Elective/Elective	3
	Total	16		Total	16	

Year 4						
Fall Semester			Credits	Spring Semester		
PSC431	Foundations of Pharm. Science	2		PSC433	Neuropharmacology	3
				PSC434	Cardiovascular Pharmacology	3
PSC432	Infectious Disease Pharmacology I	2		PSC411	Thesis 2	3
Various	Pharmacology/Physiology Selective	3			Directed Elective/Elective	3
PSC413	Thesis Research II	3			Pharmacology/Physiology Selective	3
	Directed Elective/Elective	3				
	Directed Elective/Elective	3				
	Total	16		Total	15	

BSPS PHARMACEUTICS CONCENTRATION:

PHYSICAL SCIENCES AND MATHEMATICS: 13 REQUIRED CREDITS

Pharmaceutics I and II (3,3)

Pharmacokinetics (3)

Calculus II (4)

ELECTIVE REQUIREMENTS: 18 MINIMUM CREDITS

Directed Electives: 6 minimum credits

General Education Electives: 12 minimum credits (9 of these 12 credits must be in the Humanities)

Total required course credits: 107 credits

Total elective course credits: 18 credits

TOTAL GRADUATION CREDITS: 125-135 CREDITS

SAMPLE BS IN PHARMACEUTICAL SCIENCES CURRICULUM – PHARMACEUTICS CONCENTRATION

Year 1						
Fall Semester			Credits	Spring Semester		
BIO101	General Biology I	4		BIO102	General Biology II	4
CHE101	General Chemistry I	4		CHE102	General Chemistry II	4
				MAT145	Elementary Statistics	3
HUM110	The Pre-Modern World	3		HUM120	The Modern World	3
COM115	Principles of Communication	3		PSC111	Scientific Reasoning and Analysis II: The Ethical Scientist	2
PSC110	Scientific Reasoning and Analysis I: The Educated Scientist	2				
	Total	16		Total		16
Year 2						
Fall Semester			Credits	Spring Semester		
CHE211	Organic Chemistry I	4		CHE221	Organic Chemistry II	4
PHY212	College Physics I	4		PHY222	College Physics II	4
HUM210	The Contemporary World	3		MAT211	Calculus II	4
MAT121	Calculus I	4		PSC112	Scientific Reasoning and Analysis III: The Scientist in Society	2
	Total	15		Total		14
Year 3						
Fall Semester			Credits	Spring Semester		
PSC311	Biochemistry	3		PSC312	Molecular Biology	3
PSC321	Physiology/Pathophysiology I	4		PSC322	Physiology/Pathophysiology II	4
PSC341	Pharmaceutics I	3		PSC342	Pharmaceutics II	3
PSC410	Thesis 1	3		PSC412	Thesis Research I	3
	Psychology OR Sociology course	3			Directed Elective/Elective	3
	Total	16		Total		16
Year 4						
Fall Semester			Credits	Spring Semester		
PSC431	Foundations of Pharm. Science	2		PSC411	Thesis 2	3
					Pharmaceutics Selective	3
PSC441	Pharmacokinetics	3			Directed Elective/Elective	3
PSC413	Thesis Research II	3			Directed Elective/Elective	3
	Pharmaceutics Selective	3			Directed Elective/Elective	3
	Directed Elective/Elective	3				
	Directed Elective/Elective	3				
	Total	17		Total		15

BSPS PHARMACEUTICAL MARKETING AND REGULATORY SCIENCE CONCENTRATION:

PHYSICAL SCIENCES: 6 REQUIRED CREDITS

Pharmaceutics I (3)

Pharmaceutics II (3)

Business, Management and Healthcare: 15 Required Credit Hours

Regulatory Sciences (3)

Health Economics (3)

Principles of Management (3)

US and Global Healthcare Systems (3)

Introduction to Sales and Marketing in the Pharmaceutical Industry (3)

Elective Requirements

Elective Course Requirements: 15 Minimum Credit Hours

Directed Electives: 6 Minimum Credit Hours

General Education Electives: 9 Minimum Credit Hours (*9 of these must be in the Humanities*)

Total Required Course Credits (including Core Courses): 109 Credit Hours

Total Required Elective Course Credits: 15 Credit Hours (Minimum)

Total Credits Required for Graduation: 124-135 Credit Hours

SAMPLE BS IN PHARMACEUTICAL SCIENCES CURRICULUM – PHARMACEUTICS CONCENTRATION

Year 1					
Fall Semester		Credits	Spring Semester		Credits
BIO 101	General Biology I	4	BIO 102	General Biology II	4
CHE 101	General Chemistry I	4	CHE 102	General Chemistry II	4
HUM 110	The Pre-Modern World	3	MAT 145	Elementary Statistics	3
COM 115	Principles of Communication	3	HUM 120	The Modern World	3
PSC 110	Scientific Reasoning and Analysis I: The Educated Scientist	2	PSC 111	Scientific Reasoning and Analysis II: The Ethical Scientist	2
Total Credit Hours		16	Total Credit Hours		16
Year 2					
Fall Semester		Credits	Spring Semester		Credits
CHE 211	Organic Chemistry I	4	CHE 221	Organic Chemistry II	4
PHY 212	College Physics I	4	PHY 222	College Physics II	4
HUM 210	The Contemporary World	3	ECN 317	Health Economics	3
MAT 121	Calculus I	4	PSC 410	Thesis I	3
			PSC 112	Scientific Reasoning and Analysis III: The Scientist in Society	2
Total Credit Hours		15	Total Credit Hours		16
Year 3					
Fall Semester		Credits	Spring Semester		Credits
PSC 311	Biochemistry	3	PSC3 12	Molecular Biology	3
PSC 321	Physiology / Pathophysiology I	4	PSC 322	Physiology / Pathophysiology II	4
PSC 341	Pharmaceutics I	3	PSC 342	Pharmaceutics II	3
PSC412	Thesis Research I	3	PAD 317	Principles of Management	3
TBD	Sociology/Psychology Selective	3	PSC413	Thesis Research II	3
Total Credit Hours		16	Total Credit Hours		16
Year 4					
Fall Semester		Credits	Spring Semester		Credits
PSC 431	Foundations of Pharmaceutical Sciences	2	PSC 312	Regulatory Science	3
PSC 411	Thesis II	3	PAD 351	Introduction to Sales and Marketing in the Pharmaceutical Industry	3
PAD 415	US and Global Healthcare Systems	3	TBD	Directed Elective/Elective	3
TBD	Directed Elective/Elective	3	TBD	Directed Elective/Elective	3
TBD	Directed Elective/Elective	3	TBD	Directed Elective/Elective	3
Total Credit Hours		14	Total Credit Hours		15

BACHELOR OF SCIENCE TRANSFER STUDENTS

IMPORTANT DEADLINES FOR TRANSFER APPLICANTS:

DECEMBER 1

Admissions Priority Deadline for Spring Semester Entry

FEBRUARY 1

Free application for Federal Student Aid (FAFSA) Due

MAY 1

Admissions Priority Deadline for Fall Semester Entry

INSTRUCTIONS FOR BACHELOR OF SCIENCE TRANSFER STUDENTS

To ensure full consideration and place in the incoming class, it is highly recommended that the completed application be submitted by the priority deadlines for spring and fall entry. Applications for transfer admission into the second or third year of the Bachelor of Science programs will be accepted from students who have completed or plan to complete the required coursework, as long as space is available.

An application form must be completed and submitted to the College along with the required \$75 *non-refundable* application fee. The following materials also must be sent to the Office of Admissions:

- List of courses in progress and/or planned
- Official transcript from high school and each college attended
- One (1) letter of recommendation from a science teacher

Applicants who have studied for fewer than 10 years where English is the language of instruction are required to submit scores from the Test of English as a Foreign Language (TOEFL) or the Test of Spoken English (TSE). A minimum score on the TOEFL of 474 paper-based (70% of the maximum score of 677), or 84 Internet-based (70% of the maximum score of 120); and a minimum of 50 on the TSE must be achieved to be considered for admission.

Once a student is notified of acceptance, a non-refundable deposit of \$400, along with the signed Enrollment Confirmation Form, will be required to reserve a place in the incoming class as long as space remains available. In the event that enrollment exceeds capacity, ACPHS reserves the right to return the admissions deposit on the date received. Failure to submit a final transcript and all required forms may result in the withdrawal of a student's acceptance. The College reserves the right to use a wait list for qualified students.

REQUIRED COURSEWORK FOR 2ND YEAR TRANSFER STUDENTS INTO THE BACHELOR OF SCIENCE IN PHARMACEUTICAL SCIENCES PROGRAM:

General Biology	8 semester hours
General Chemistry	8 semester hours
Statistics	3 semester hours
English	6 semester hours
Liberal Arts electives	6 semester hours

REQUIRED COURSEWORK FOR 3RD YEAR TRANSFER STUDENTS INTO THE BACHELOR OF SCIENCE IN PHARMACEUTICAL SCIENCES PROGRAM:

General Biology	8 semester hours
General Chemistry	8 semester hours
Organic Chemistry	8 semester hours
General Physics	8 semester hours
Calculus I or Calculus I & II *	4 or 8 semester hours
Statistics	3 semester hours
English	9 semester hours
Directed elective	9 semester hours
Liberal Arts electives	6 semester hours

* Depends on the concentration

Liberal Arts electives include art, music, sociology, history, ethics, psychology, anthropology, foreign language, political science, economics and English. Other electives include any course that is not required in the standard curriculum list above.

Directed electives are courses selected with the help of an academic advisor that furthers the student's career goals. Directed electives include any non-required science courses or non-science courses closely related to the student's academic and career goals. Examples of such courses include Cell Biology, Immunology, US and Global Health Care, Pharmacoeconomics, and others.

No credit will be accepted for grades lower than "C" (C- is not acceptable) or for physical education courses. Pass/Fail credits will be granted only for first-year courses and/or liberal arts electives. ACPHS reserves the right to refuse the transfer of any previously earned college credits.

Updated August 2015



Albany College of Pharmacy
AND HEALTH SCIENCES

PRE-PHARMACY AND EARLY ASSURANCE

Albany College of Pharmacy and Health Sciences offers a 6 year curriculum (2-year pre-pharmacy and 4-year professional) leading to a Doctor of Pharmacy (PharmD) degree and eligibility for licensure within the profession. Students may enter the pre-pharmacy program through two methods based on the applicant's strength of their application:

- early assurance (guaranteed admission into the first professional year (P1) provided all progression requirements met); or
- general pre-pharmacy (enroll in bachelor's program in Health & Human Sciences; must apply for admission into P1 through PharmCAS).

External students may transfer into the pre-pharmacy program under the early assurance or general pre-pharmacy studies routes of entry if seats are available. Students may opt to complete the four professional years on the Albany or Vermont campus.

PRE-PHARMACY/EARLY ASSURANCE REQUIRED COURSES

NATURAL SCIENCES: 39 REQUIRED CREDITS

CHE 111 and 121: General Chemistry I and II (4, 4)

CHE 211 and 221: Organic Chemistry I and II (4, 4)

PHY 212 and 222: College Physics I and II (4, 4)

BIO 111 and BIO 121: General Biology I and II (4, 4)

BIO 210: Microbiology (4)

3 credits of Bioselectives chosen from BIO 235: Cell Biology (3), BIO 213: Anatomy and Physiology I (3), BIO 215: Anatomy and Physiology II (3), BIO 225: Genetics (3), BIO 375: Bacterial Pathogenesis (3), CLS 305: Clinical Hematology (3), BHS 225: Functional Anatomy (4), BHS 500/510: Applied Neuroscience I and lab (3, 1), BHS 520: Applied Neuroscience II (3). Other courses may be counted as a bioselective with the permission of the Chair of the Department of Basic and Social Sciences.

HUMANITIES, SOCIAL SCIENCE AND COMMUNICATION: 15 REQUIRED CREDITS¹

HUM 101, 102 and 201: The Pre-Modern World (3), The Modern World (3), The Contemporary World (3)

PSY 101: Psychology (3)

COM 115: Principles of Communication (3)

MATHEMATICS: 7 CREDITS

MAT 111: Calculus (4)²

MAT 145: Elementary Statistics (3)

ELECTIVES: Minimum of 9 CREDITS³

9-12 credits of electives

For students entering the 1st pre-pharmacy year in Fall 2015 or later, at least 6 of the 9 required elective credits must be liberal arts credits.

TOTAL CREDITS: 70 CREDITS

¹All incoming students are assessed for their writing ability. The assessment is designed to direct students to the courses for which they are best prepared in the first year of the curriculum.

²Calculus I and II may be substituted for Calculus with 4 credits counting toward elective hours.

³Students completing the PharmD program must have a minimum of 9 elective liberal arts credits and 21 total electives (inclusive of general, liberal arts and professional electives) by graduation. Students may register for an additional 3 credits during the pre-pharmacy years to satisfy the 3 non-professional elective credits designated during the P1-P3 years.

PRE-PHARMACY AND EARLY ASSURANCE SCHEDULE

Year 1						
Fall Semester			Credits	Spring Semester		Credits
BIO 111	General Biology I		4	BIO 121	General Biology II	4
CHE 111	General Chemistry I		4	CHE 121	General Chemistry II	4
MAT 111	Calculus*		4	COM 115	Principles of Communication*	3
HUM 101	The Pre-Modern World		3	HUM 102	The Modern World	3
PSY 101	Psychology		3		Elective	3
	Total		18		Total	17

Year 2						
Fall Semester			Credits	Spring Semester		Credits
CHE 211	Organic Chemistry I		4	CHE 221	Organic Chemistry II	4
PHY 212	College Physics I		4	PHY 222	College Physics II	4
HUM 201	The Contemporary World		3	MAT 145	Elementary Statistics	3
BIO 210	Microbiology		4		Elective	3
	Elective		3		Biology Selective	3
	Total		18		Total	17

*Some students will take these courses in the alternate semesters

Students needing additional writing skill development take COM 101: Academic Reading and Writing and the following schedule of courses.

Year 1						
Fall Semester			Credits	Spring Semester		Credits
BIO 111	General Biology I		4	BIO 121	General Biology II	4
CHE 111	General Chemistry I		4	CHE 121	General Chemistry II	4
COM 101	Academic Reading and Writing		3	COM 115	Principles of Communication	3
HUM 101	The Pre-Modern World		3	HUM 102	The Modern World	3
PSY 101	Psychology		3	MAT 111	Calculus	4
	Total		17		Total	18

Year 2						
Fall Semester			Credits	Spring Semester		Credits
CHE 211	Organic Chemistry I		4	CHE 221	Organic Chemistry II	4
PHY 212	College Physics I		4	PHY 222	College Physics II	4
HUM 201	The Contemporary World		3	MAT 145	Elementary Statistics	3
BIO 210	Microbiology		4		Elective	3
	Elective		3		Biology Selective	3
	Total		18		Total	17

DOCTOR OF PHARMACY: REQUIRED COURSES IN P1-P4

BIOLOGICAL SCIENCES: 17 REQUIRED CREDITS

PSC 311 Biochemistry (3)
PSC 312 Molecular Biology (3)
PSC 315 Immunology (3)
PSC 321; PSC 322 Physiology/Pathophysiology I and II (4,4)

PHARMACEUTICAL SCIENCES: 11 REQUIRED CREDITS

PSC 341; PSC 342 Pharmaceutics I and II (3,3)
PTP 401 Principles of Pharmacology and Medicinal Chemistry Module (2)
PSC 441 Pharmacokinetics (3)

CLINICAL SCIENCES AND PHARMACY PRACTICE: 48 REQUIRED CREDITS

PHM 318 Foundations of Pharmacy (1)
IPS 301, 302, 401, 402, 501, 502 Integrated Problem-Solving Workshops I-VI (7 credits total)
PHM 329 Self-care & Over-the-Counter Medicines (3)
PTP 410, 425, 431, 440, 446, 515, 525, 528, 549 Pathophysiology, Therapeutics, Pharmacology, and Medicinal Chemistry modules (24 credits total)
PSL 331, 332, 431, 432, 531, 532 Pharmacy Skills Labs I-VI (6 credits total)
PHD 410 Drug Information and Biostatistics (2)
PSC 451 Scientific Literature Evaluation (1)
PAD 510 or PAD 511 Jurisprudence (3)
PHD 541 Immunizations (1)
PTP 526 Complementary and Alternative Medicine Module (1)
PHM 911 Orientation to Advanced Pharmacy Practice Experiences (0)

ADMINISTRATIVE AND SOCIAL SCIENCES: 9 REQUIRED CREDITS

PAD 451 US and Global Healthcare Systems (3)
PAD 515 Pharmacoeconomics and Health Policy (3)
PAD 521 Pharmacy Administration (3)

HUMANITIES, CULTURE HEALTH, AND ETHICS: 3 REQUIRED CREDITS

ETH 510 Healthcare and Human Values (3)

EXPERIENTIAL EDUCATION: 50 CREDITS

CLK 800 Community Pharmacy Introductory Pharmacy Practice Experience (3)
CLK 928 Health and Wellness Introductory Pharmacy Practice Experience (1)
CLK 803 Team-Based Care Introductory Pharmacy Practice Experience (1)
CLK 802 Institutional Pharmacy Introductory Pharmacy Practice Experience (3)
CLK 811+ Advanced Pharmacy Practice Experiences (42 credits total)

FOR CLASS OF 2014-16:

Total of 24 Elective Credits required to graduate

- Minimum of 9 credits must be designated as Liberal Arts Elective Credit

FOR CLASS OF 2017 and beyond:**Total of 21 Elective Credits required to graduate**

- Minimum of 9 credits must be designated as Professional Elective Credit and taken during the PharmD program years (P1-P3)
- Minimum of 9 credits must be designated as Liberal Arts Elective Credit*

*Some professional electives may also satisfy the Liberal Arts Elective Credit designation.

DOCTOR OF PHARMACY PROFESSIONAL CURRICULAR GRID

Professional Year 1 (P1)					
Fall Semester		Credits	Spring Semester		Credits
PSC 341	Pharmaceutics I	3	PSC 342	Pharmaceutics II	3
PSC 321	Physiology/Pathophysiology I	4	PSC 322	Physiology/Pathophysiology II	4
CHE 311 or PSC 311	Biochemistry	3	PSC 312	Molecular Biology	3
PSC 315	Immunology	3	PHM 329	Self Care/OTC	3
PHM 318	Foundations of Pharmacy	1	PSL 332	Pharmacy Skills Lab II	1
PSL 331	Pharmacy Skills Lab I	1	IPS 302	Integrated Problem Solving Workshop II	1
IPS 301	Integrated Problem Solving Workshop I	1		Professional Elective ^a	3
	Total	16		Total	18

Introductory Pharmacy Practice Experience - Summer after P1 year

Community (3 credits)

Health and Wellness (1 credit)

Professional Year 2 (P2)					
Fall Semester		Credits	Spring Semester		Credits
PTP 401	Principles of Pharmacology and Medicinal Chemistry	2	PTP 425	PTP&M – Endocrine	2
PSC 441	Pharmacokinetics	3	PTP 431	PTP&M – GI/Nutrition	2
PTP 440	PTP&M – Cardiovascular	4	PTP 446	PTP&M – Infectious Disease	4
PTP 410	PTP&M – Respiratory Disease	1	PAD 451	US and Global Health Care Systems	3
PHD 410	Drug Information/Biostatistics	2	IPS 402	Integrated Problem Solving Workshop IV	1
IPS 401	Integrated Problem Solving Workshop III	1	PSC 451	Scientific Literature Evaluation ^b	1
PSC 451	Scientific Literature Evaluation ^b	1	PSL 432	Pharmacy Skills Lab IV	1
PSL 431	Pharmacy Skills Lab III	1		Professional Elective ^a	3
	Professional Elective ^a	3			
	Total	14-18		Total	13-17

Introductory Pharmacy Practice Experience – Summer after P2

Institutional (3 credits)

Team-Based Care (1 credit)

Professional Year 3 (P3)

Fall Semester		Credits	Spring Semester		Credits
PTP 525	PTP&M – Nephrology/Toxicology	2	PTP 515	PTP&M Rheum/Connective Tissue/Oncology	3
PTP 528	PTP&M – Genitourinary	2	PTP 526	Integrative/Alternative Medicine	1
PTP 549	PTP&M – Neurology/Psychology	4	IPS 502	Integrated Problem Solving Workshop VI	2
IPS 501	Integrated Problem Solving Workshop V	1	PAD 510 or PAD 511	Jurisprudence	3
PHD 541	Immunizations	1	ETH 510	Health Care and Human Values	3
PAD 515	Pharmacoeconomics and Health Policy	3			
PSL 531	Pharmacy Skills Lab V	1	PAD 521	Pharmacy Administration	3
PHM 911	Orientation to APPE	No credit	PSL 532	Pharmacy Skills Lab VI	2
	Professional Elective ^a	3		Professional Elective ^a	3
	Total	14-17		Total	16-19

Professional Year 4 (P4)**Advanced Pharmacy Practice Experiences (42 credits) - Summer, Fall and Spring Semesters**

CLK 929	Community Core Rotation	6
CLK 843 or CLK 930	Institutional Core Rotation	6
CLK 812 – CLK 999	Inpatient Core Rotation	6
CLK 812 – CLK 999	Ambulatory Care Core Rotation	6
	Flexible Core Rotation	6
	Elective	6
	Elective	6
	Total	42

PTPM – Pathophysiology, Therapeutics, Pharmacology, and Medicinal Chemistry

^a Professional electives can be taken any semester^b Students take once in the fall or spring



Albany College of Pharmacy
AND HEALTH SCIENCES

ACADEMIC STANDARDS FOR BS IN BIOMEDICAL TECHNOLOGY

Students enrolled in the Bachelor of Science in Biomedical Technology program must meet the following academic standards:

COURSE REMEDIATION

- Any grade of F must be remediated by pre-pharmacy students.
- Students will not be allowed to remediate a required course during the academic year (fall or spring semester) at another institution if the same course is available to them at ACPHS. If the required course is not available at ACPHS, students may be allowed to remediate the required course at another accredited institution if the course is pre-approved by the course professor or course coordinator (see Registrar's page on the Intranet for approval form). Students must earn a grade of C or better in courses repeated at other institutions.
- Independent study cannot be used for remedial purposes.
- Upon course remediation of a required or elective course, a record of both courses will remain on the official transcript. If completed at ACPHS, the higher of the two course grades will be used in the calculation of the GPA. If completed elsewhere, neither the original nor the remediated course grade will be used in GPA calculations.

ACADEMIC PROBATION

A student will be placed on probation if any of the following conditions exist within a semester:

- A semester or cumulative GPA below 2.0
- Two or more grades below C-
- A single grade of F

A student on academic probation must improve academically and meet the conditions of probation recommended by the Academic Standards Committee and administered by the Dean of Students.

While on academic probation a student may be ineligible to hold a class and student organization office, join a fraternity, participate in intercollegiate athletics or provide service on College committees. In some cases, financial aid may be jeopardized.

A student's academic probation period will end when the student successfully addresses all of the conditions that placed the student on probation. The summer semester can only be used to address course grades and cumulative GPA deficiencies, not the prior semester's GPA.

ACADEMIC DISMISSAL

A student may be dismissed from the College if one of the following conditions exists:

- Two instances of probation (whether consecutive or non-consecutive)
- A semester GPA below 1.6

Academic dismissal usually is not invoked until academic probation has been imposed. However, academic dismissal may be recommended before probation when a student's academic record is significantly below average performance. Students who are academically dismissed from the College are not permitted to enroll in or attend courses at the College, or to earn credit toward degrees offered at ACPHS.

ACADEMIC APPEALS

Students are permitted to appeal decisions made by the Academic Standards Committee. Appeal requests must be submitted in writing to the Dean of Students. The letter should contain a statement referencing the original decision by the Academic Standards Committee and an explanation addressing why it is being appealed. The basis for such appeals should involve cases of unusual or extenuating circumstances that directly impacted the student's ability to meet ACPHS academic standards. In the event that extenuating circumstances are identified, appropriate documentation supporting the assertion by a competent, qualified professional must be included when applicable. The College reserves the right to require further evaluation.

Deadlines for appeal are January 5 following the fall semester, June 5 following the spring semester, and August 20 following the summer semester. While there are deadlines for student appeals, appeals are heard on a rolling basis by the Academic Standing Appeals Committee.

Updated January 2016 – Academic Probation Update as per Dean of Students



Albany College of Pharmacy AND HEALTH SCIENCES

ACADEMIC STANDARDS FOR BS IN CHEMISTRY

Students enrolled in the Bachelor of Science in Chemistry program must meet the following academic standards.

COURSE REMEDIATION

- Any grade of F must be remediated by pre-pharmacy students.
- Students will not be allowed to remediate a required course during the academic year (fall or spring semester) at another institution if the same course is available to them at ACPHS. If the required course is not available at ACPHS, students may be allowed to remediate the required course at another accredited institution if the course is pre-approved by the course professor or course coordinator (see Registrar's page on the Intranet for approval form). Students must earn a grade of C or better in courses repeated at other institutions.
- Independent study cannot be used for remedial purposes.
- Upon course remediation of a required or elective course, a record of both courses will remain on the official transcript. If completed at ACPHS, the higher of the two course grades will be used in the calculation of the GPA. If completed elsewhere, neither the original nor the remediated course grade will be used in GPA calculations.

ACADEMIC PROBATION

A student will be placed on probation if any of the following conditions exist within a semester:

- A semester or cumulative GPA below 2.0
- Two or more grades below C-
- A single grade of F

A student on academic probation must improve academically and meet the conditions of probation recommended by the Academic Standards Committee and administered by the Dean of Students.

While on academic probation a student may be ineligible to hold a class and student organization office, join a fraternity, participate in intercollegiate athletics or provide service on College committees. In some cases, financial aid may be jeopardized.

A student's academic probation period will end when the student successfully addresses all of the conditions that placed the student on probation. The summer semester can only be used to address course grades and cumulative GPA deficiencies, not the prior semester's GPA.

ACADEMIC DISMISSAL

A student may be dismissed from the College if one of the following conditions exists:

- Two instances of probation (whether consecutive or non-consecutive)
- A semester GPA below 1.6

Academic dismissal usually is not invoked until academic probation has been imposed. However, academic dismissal may be recommended before probation when a student's academic record is significantly below average performance. Students who are academically dismissed from the College are not permitted to enroll in or attend courses at the College, or to earn credit toward degrees offered at ACPHS.

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Updated January 2016 – Academic Probation Update as per Dean of Students



Albany College of Pharmacy
AND HEALTH SCIENCES

ACADEMIC STANDARDS FOR BS IN CLINICAL LABORATORY SCIENCES

Students enrolled in the Bachelor of Science in Clinical Laboratory Sciences program must meet the following academic standards:

COURSE REMEDIATION

- Any grade of F must be remediated by pre-pharmacy students.
- Students will not be allowed to remediate a required course during the academic year (fall or spring semester) at another institution if the same course is available to them at ACPHS. If the required course is not available at ACPHS, students may be allowed to remediate the required course at another accredited institution if the course is pre-approved by the course professor or course coordinator (see Registrar's page on the Intranet for approval form). Students must earn a grade of C or better in courses repeated at other institutions.
- Independent study cannot be used for remedial purposes.
- Upon course remediation of a required or elective course, a record of both courses will remain on the official transcript. If completed at ACPHS, the higher of the two course grades will be used in the calculation of the GPA. If completed elsewhere, neither the original nor the remediated course grade will be used in GPA calculations.

ACADEMIC PROBATION

A student will be placed on probation if any of the following conditions exist within a semester:

- A semester or cumulative GPA below 2.0
- Two or more grades below C-
- A single grade of F

A student on academic probation must improve academically and meet the conditions of probation recommended by the Academic Standards Committee and administered by the Dean of Students.

While on academic probation a student may be ineligible to hold a class and student organization office, join a fraternity, participate in intercollegiate athletics or provide service on College committees. In some cases, financial aid may be jeopardized.

A student's academic probation period will end when the student successfully addresses all of the conditions that placed the student on probation. The summer semester can only be used to address course grades and cumulative GPA deficiencies, not the prior semester's GPA.

ACADEMIC DISMISSAL

A student may be dismissed from the College if one of the following conditions exists:

- Two instances of probation (whether consecutive or non-consecutive)
- A semester GPA below 1.6

Academic dismissal usually is not invoked until academic probation has been imposed. However, academic dismissal may be recommended before probation when a student's academic record is significantly below average performance. Students who are academically dismissed from the College are not permitted to enroll in or attend courses at the College, or to earn credit toward degrees offered at ACPHS.

ACADEMIC APPEALS

Students are permitted to appeal decisions made by the Academic Standards Committee. Appeal requests must be submitted in writing to the Dean of Students. The letter should contain a statement referencing the original decision by the Academic Standards Committee and an explanation addressing why it is being appealed. The basis for such appeals should involve cases of unusual or extenuating circumstances that directly impacted the student's ability to meet ACPHS academic standards. In the event that extenuating circumstances are identified, appropriate documentation supporting the assertion by a competent, qualified professional must be included when applicable. The College reserves the right to require further evaluation.

Deadlines for appeal are January 5 following the fall semester, June 5 following the spring semester, and August 20 following the summer semester. While there are deadlines for student appeals, appeals are heard on a rolling basis by the Academic Standing Appeals Committee.

PROGRESSION REQUIREMENT FOR CLINICAL LABORATORY SCIENCES (CLS)

Students in the CLS program must attain and maintain the college standard of semester and cumulative GPA of 2.0 in the first two years of the curriculum. In year three (the first professional year), students must maintain a semester and cumulative professional GPA of 3.0 in order to begin clinical practicum rotations. Courses with a grade below C- must be remediated.

Updated January 2016 – Academic Probation Update as per Dean of Students



Albany College of Pharmacy AND HEALTH SCIENCES

ACADEMIC STANDARDS FOR BS IN HEALTH AND HUMAN SCIENCES

Students enrolled in the Bachelor of Science in Health and Human Sciences (BSHHS) program must meet the following academic standards.

COURSE REMEDIATION

- Any grade of F must be remediated by pre-pharmacy students.
- Students will not be allowed to remediate a required course during the academic year (fall or spring semester) at another institution if the same course is available to them at ACPHS. If the required course is not available at ACPHS, students may be allowed to remediate the required course at another accredited institution if the course is pre-approved by the course professor or course coordinator (see Registrar's page on the Intranet for approval form). Students must earn a grade of C or better in courses repeated at other institutions.
- Independent study cannot be used for remedial purposes.
- Upon course remediation of a required or elective course, a record of both courses will remain on the official transcript. If completed at ACPHS, the higher of the two course grades will be used in the calculation of the GPA. If completed elsewhere, neither the original nor the remediated course grade will be used in GPA calculations.

ACADEMIC PROBATION

A student will be placed on probation if any of the following conditions exist within a semester:

- A semester or cumulative GPA below 2.0
- Two or more grades below C-
- A single grade of F

A student on academic probation must improve academically and meet the conditions of probation recommended by the Academic Standards Committee and administered by the Dean of Students.

While on academic probation a student may be ineligible to hold a class and student organization office, join a fraternity, participate in intercollegiate athletics or provide service on College committees. In some cases, financial aid may be jeopardized.

A student's academic probation period will end when the student successfully addresses all of the conditions that placed the student on probation. The summer semester can only be used to address course grades and cumulative GPA deficiencies, not the prior semester's GPA.

ACADEMIC DISMISSAL

A student may be dismissed from the College if one of the following conditions exists:

- Two instances of probation (whether consecutive or non-consecutive)
- A semester GPA below 1.6

Academic dismissal usually is not invoked until academic probation has been imposed. However, academic dismissal may be recommended before probation when a student's academic record is significantly below average performance. Students who are academically dismissed from the College are not permitted to enroll in or attend courses at the College, or to earn credit toward degrees offered at ACPHS.

ACADEMIC APPEALS

Students are permitted to appeal decisions made by the Academic Standards Committee. Appeal requests must be submitted in writing to the Dean of Students. The letter should contain a statement referencing the original decision by the Academic Standards Committee and an explanation addressing why it is being appealed. The basis for such appeals should involve cases of unusual or extenuating circumstances that directly impacted the student's ability to meet ACPHS academic standards. In the event that extenuating circumstances are identified, appropriate documentation supporting the assertion by a competent, qualified professional must be included when applicable. The College reserves the right to require further evaluation.

Deadlines for appeal are January 5 following the fall semester, June 5 following the spring semester, and August 20 following the summer semester. While there are deadlines for student appeals, appeals are heard on a rolling basis by the Academic Standing Appeals Committee.

Updated January 2016 – Academic Probation Update as per Dean of Students



Albany College of Pharmacy AND HEALTH SCIENCES

ACADEMIC STANDARDS FOR BS IN MICROBIOLOGY

Students enrolled in the Bachelor of Science in Microbiology program must meet the following academic standards.

COURSE REMEDIATION

- Any grade of F must be remediated by pre-pharmacy students.
- Students will not be allowed to remediate a required course during the academic year (fall or spring semester) at another institution if the same course is available to them at ACPHS. If the required course is not available at ACPHS, students may be allowed to remediate the required course at another accredited institution if the course is pre-approved by the course professor or course coordinator (see Registrar's page on the Intranet for approval form). Students must earn a grade of C or better in courses repeated at other institutions.
- Independent study cannot be used for remedial purposes.
- Upon course remediation of a required or elective course, a record of both courses will remain on the official transcript. If completed at ACPHS, the higher of the two course grades will be used in the calculation of the GPA. If completed elsewhere, neither the original nor the remediated course grade will be used in GPA calculations.

ACADEMIC PROBATION

A student will be placed on probation if any of the following conditions exist within a semester:

- A semester or cumulative GPA below 2.0
- Two or more grades below C-
- A single grade of F

A student on academic probation must improve academically and meet the conditions of probation recommended by the Academic Standards Committee and administered by the Dean of Students.

While on academic probation a student may be ineligible to hold a class and student organization office, join a fraternity, participate in intercollegiate athletics or provide service on College committees. In some cases, financial aid may be jeopardized.

A student's academic probation period will end when the student successfully addresses all of the conditions that placed the student on probation. The summer semester can only be used to address course grades and cumulative GPA deficiencies, not the prior semester's GPA.

ACADEMIC DISMISSAL

A student may be dismissed from the College if one of the following conditions exists:

- Two instances of probation (whether consecutive or non-consecutive)
- A semester GPA below 1.6

Academic dismissal usually is not invoked until academic probation has been imposed. However, academic dismissal may be recommended before probation when a student's academic record is significantly below average performance. Students who are academically dismissed from the College are not permitted to enroll in or attend courses at the College, or to earn credit toward degrees offered at ACPHS.

ACADEMIC APPEALS

Students are permitted to appeal decisions made by the Academic Standards Committee. Appeal requests must be submitted in writing to the Associate Dean of Student Academic Support. The letter should contain a statement referencing the original decision by the Academic Standards Committee and an explanation addressing why it is being appealed. The basis for such appeals should involve cases of unusual or extenuating circumstances that directly impacted the student's ability to meet the ACPHS academic standards. In the event that extenuating circumstances are identified, appropriate documentation supporting the assertion by a competent, qualified professional must be included when applicable. The College reserves the right to require further evaluation.

Deadlines for appeal are January 5 following the fall semester, June 5 following the spring semester, and August 20 following the summer semester. While there are deadlines for student appeals, appeals are heard on a rolling basis by the Academic Standing Appeals Committee.

Updated August 2015



Albany College of Pharmacy AND HEALTH SCIENCES

ACADEMIC STANDARDS FOR BS IN PHARMACEUTICAL SCIENCES

Students in the Bachelor of Science in Pharmaceutical Sciences (BSPS) program must meet the following academic standards.

ACADEMIC PROBATION

A student will be placed on probation if any of the following conditions exist within a semester:

- A semester or cumulative GPA below 2.0
- Two or more grades below C-
- A single grade of F

A student on academic probation must improve academically and meet the conditions of probation recommended by the Academic Standards Committee and administered by the Dean of Students.

While on academic probation a student may be ineligible to hold a class and student organization office, join a fraternity, participate in intercollegiate athletics or provide service on College committees. In some cases, financial aid may be jeopardized.

A student's academic probation period will end when the student successfully addresses all of the conditions that placed the student on probation. The summer semester can only be used to address course grades and cumulative GPA deficiencies, not the prior semester's GPA.

ACADEMIC DISMISSAL

A student may be dismissed from the College if one of the following conditions exists:

- Two instances of probation (whether consecutive or non-consecutive)
- A semester GPA below 1.6

Academic dismissal usually is not invoked until academic probation has been imposed. However, academic dismissal may be recommended before probation when a student's academic record is significantly below average performance. Students who are academically dismissed from the College are not permitted to enroll in or attend courses at the College, or to earn credit toward degrees offered at ACPHS.

ACADEMIC APPEALS

Students are permitted to appeal decisions made by the Academic Standards Committee. Appeal requests must be submitted in writing to the Dean of Students. The letter should contain a statement referencing the original decision by the Academic Standards Committee and an explanation addressing why it is being appealed. The basis for such appeals should involve cases of unusual or extenuating circumstances that directly impacted the student's ability to meet the ACPHS' academic standards. In the event that extenuating circumstances are identified, appropriate documentation supporting the assertion by a competent, qualified professional must be included when applicable. The College reserves the right to require further evaluation.

Deadlines for appeal are January 5 following the fall semester, June 5 following the spring semester and August 20 following the summer semester. While there are deadlines for student appeals, appeals are heard on a rolling basis by the Academic Standing Appeals Committee.

Also, see the Academic Regulations section for additional College-wide Academic Standards.

Updated January 2016 – Academic Probation Update as per Dean of Students



Albany College of Pharmacy AND HEALTH SCIENCES

ACADEMIC STANDARDS FOR PRE-PHARMACY AND EARLY ASSURANCE

Students enrolled in the Pre-Pharmacy Program as either general pre-pharmacy or early assurance students must adhere to the following academic standards:

GENERAL REQUIREMENTS

- Upon matriculation, all required courses must be taken at ACPHS.

TRANSFER CREDITS

- Incoming Pre-pharmacy students are able to apply college and AP credit to select pre-pharmacy courses. Current transfer policies are available in the Admissions Office.
- Decisions regarding the transfer of AP and College credit become final.

SUMMER SESSIONS

Pre-pharmacy students are allowed to take courses during the summer as long as doing so meets the General Academic Requirements and Course Repeat policies.

- For a student enrolled in 9 or more credit hours at ACPHS during the summer semester, all academic regulations apply. For students enrolled in less than 9 credit hours, course grade performance will be factored into their overall academic record and academic status will be determined at the end of the next (fall) semester.
- A summer course failure results in a probationary status with all the corresponding implications of probation.
- A maximum of 10 semester hours of coursework is allowed during any summer semester at institutions other than ACPHS

COURSE REPEAT & REMEDIATION

Course Repeat: The experience is structured such that the student is responsible for all original course objectives. The original course grade remains on the student's transcript, but is not used in the calculation of the ACPHS GPA.

- Any grade of "F" must be repeated if the course is required for a student's degree.
- Students may repeat a course with permission of their advisor and course instructor by completing the "course permission form" (see Registrar's page on the intranet for form). If a repeated course is completed at an institution other than ACPHS, it must be completed with a *higher grade* than the original course grade in order to have the credits transferred back to the College (minimum transferrable grade is a "C").
- Students will not be allowed to repeat a course during the academic year (fall or spring semester) at another institution if the same course is offered and will fit within the student's required course schedule at ACPHS. If the required course is not available at ACPHS, students may be allowed to repeat the course at another accredited institution and must be pre-approved according to the course permission policy.
- When repeating a required or elective course, a record of both courses will remain on the official transcript. If completed at ACPHS, the higher of the two course grades will be used in the calculation of the GPA. If completed elsewhere, neither the original nor the repeated course grade will be used in GPA calculations. The cumulative GPA will be updated during the term the course was repeated.
- Independent study cannot be used for the purpose of repeating a course.
- In almost all cases, repeated coursework required for entry into the first professional year of the pharmacy program (P1) must be completed by May 31 preceding P1 entry. In select cases, per the permission of the Pharmacy Admissions and Academic Standards Committee (PAASC), a student may be granted an allowance to repeat a specific course/s over the summer preceding P1, and granted a conditional acceptance into P1 pending the outcome of the summer repeat.

Course Remediation: The experience is structured such that the student is responsible for improving performance on only a portion of original course objectives. Course remediation may occur either during the course (within-course remediation) or after a course is completed (post-course remediation).

- Course coordinators have the authority to permit or not to permit remediation of course elements. It is the course coordinator's responsibility to determine what is permissible for remediation and it is expected that this will vary by course.
- If remediation is permitted within a course, the syllabus should include a list of the course elements that may be remediated, the criteria for what is permissible for remediation (i.e. a grade below a certain threshold on a course element) and the policy for calculating the final grade to include the remediated elements.
- All course remediation (within- and post-course) must be completed within two weeks of final grade submission to the Registrar, or for the fall semester, one week prior to the spring semester. Once remediation is complete, the course coordinator may request a grade change for the course in question. The original course grade will not show on the student's transcript or be included in the GPA calculations.

In the case of post-course remediation, the final grade earned in the term of the course must be submitted to the registrar at the close of the semester. Submission of a grade of incomplete is not acceptable. The Academic Standards Committee will review all grades and make take appropriate action (probation or dismissal) based on the submitted grade. If the grade after the remediation process removes the student from a probation or dismissal category, the Academic Standards Committee will reverse any probationary or dismissal recommendations.

ACADEMIC PROBATION

The academic progress of each student is reviewed at the end of each semester in order to identify students who are maintaining successful academic performance, to identify those in academic difficulty, and to offer assistance to such students. Students who do not meet the college-wide academic requirements will be placed on college probation. The expectation is that a student will improve academically, meet the cumulative GPA and individual course requirements, and will be removed from probation. A pre-pharmacy student will be placed on program probation if any of the following conditions exist:

- A semester or cumulative GPA below 2.0
- Two or more required course grades below C-
- A single grade of F

A student on academic probation must improve academically and meet the conditions of probation recommended by the Academic Standards Committee and administered by the Dean of Students.

While on academic probation a student may be ineligible to hold a class and student organization office, join a fraternity, participate in intercollegiate athletics or provide service on College committees. In some cases, financial aid may be jeopardized.

A student's academic probation period will end as soon as the student demonstrates successful remediation of any deficiency.

ACADEMIC DISMISSAL

A pre-pharmacy student may be dismissed from the College if any of the following conditions exist:

- Two instances of probation (whether consecutive or nonconsecutive)
- A semester GPA below 1.6

Academic dismissal usually is not invoked until academic probation has been imposed. However, academic dismissal may be recommended before probation when a student's academic record is significantly below average performance. Students who are academically dismissed from the College are not permitted to enroll in or attend courses at the College, or to earn credit toward degrees offered at ACPHS.

ACADEMIC APPEALS

Academic probation and dismissal decisions are made by the Academic Standards Committee. Students are permitted to appeal these decisions. Appeal requests must be submitted in writing to the Dean of Students. The letter should contain a statement referencing the original decision and an explanation addressing why it is being appealed. The basis for such appeals should involve cases of unusual or extenuating circumstances that directly impacted the student's ability to meet the ACPHS academic standards. In the event that extenuating circumstances are identified, appropriate documentation supporting the assertion by a competent, qualified professional must be included when applicable. The College reserves the right to require further evaluation. Deadlines for appeal are January 5 following the fall semester, June 5 following the spring semester, and August 20 following the summer semester. While there are deadlines for student appeals, appeals are heard on a rolling basis by the Academic Standing Appeals Committee.

INTERNAL CONVERSION FROM GENERAL PRE-PHARMACY TO EARLY ASSURANCE STATUS

Students in the general pre-pharmacy program who attain an overall GPA of 3.0 at the end of the first semester of the second pre-pharmacy year will be reviewed by ACPHS Pharmacy Admissions and Academic Standards Committee and may be offered an Early Assurance classification. These students are eligible for P1 admission without further application provided all progression requirements are met (see the following section for details).

PROGRESSION REQUIREMENTS FOR ADMISSION IN THE PHARMD PROGRAM

Progression into the first professional year of the PharmD program is handled by the Pharmacy Admissions and Academic Standards Committee. Progression requirements can be found with information for the School of Pharmacy and Pharmaceutical Sciences in the “Doctor of Pharmacy Program Admissions Requirements” section.

Updated September 2015



Albany College of Pharmacy
AND HEALTH SCIENCES

ACADEMIC STANDARDS FOR DOCTOR OF PHARMACY PROGRAM

Students enrolled in the Doctor of Pharmacy Program at ACPHS must adhere to the following academic standards:
(Applies to P1 students in Fall of 2011–Class of 2015 and beyond)

PHARMD (P1 – P4): PROFESSIONAL GPA

The professional GPA is determined using grades earned in all professional courses. Professional courses are defined as all required courses in years P1-P4.

Beginning with P1 students in the AY 2013-14, grades for professional electives will be included into the professional GPA (for P1 students - class of 2017 and beyond).

A minimum cumulative professional GPA of 2.5 must be achieved to graduate at the end of P4 of the PharmD program. Failure to achieve this standard may result in College dismissal.

A graded approach to GPA throughout the professional years will be used, as follows:

1. Achieve cumulative professional GPA of 2.1 at the end of P1
2. Achieve cumulative professional GPA of 2.2 at the end of P2
3. Achieve cumulative professional GPA of 2.3 at the end of P3

Failure to achieve these graded standards will result in academic probation.

The table below lists the expected minimum cumulative professional GPA required to remain in Good Academic Standing within the pharmacy program, semester by semester:

End of Fall P1	2.0	End of Spring P1	2.1
End of Fall P2	2.1	End of Spring P2	2.2
End of Fall P3	2.2	End of Spring P3	2.3
End of Fall P4	2.3	To Graduate Spring P4	2.5

Students who do not meet these programmatic standards may be retained on probation; may be dismissed from the pharmacy program (SOPPs); or may be dismissed by the college (ACPHS).

PHARMD PROGRAM: EXPERIENTIAL EDUCATION REQUIREMENTS

All curricular requirements must be completed successfully before students may enter the Advanced Pharmacy Practice Experiences (APPEs).

This clarification pertains to experiential consequences if students fall below Good Academic Standing (GAS) in the pharmacy program, and are retained on probation.

For the IPPE 1 rotations: Students who complete P1 and do not meet the GPA standard (cumulative professional GPA of 2.1) necessary for GAS and who are retained on probation are not allowed to progress into their community and public health IPPEs. Instead, students will use the summer and ensuing months to remediate deficiencies to attain good academic standing (GPA 2.1 by end of fall P2) in the School of Pharmacy. Once good academic standing is achieved, students are eligible to complete their community and public health IPPEs, as scheduled by Experiential Education, either later in the summer following P1, schedule permitting and GAS achieved, or in the summer following P2.

For the IPPE 2 rotations: Students who complete P2 and do not meet the GPA standard (cumulative professional GPA of 2.2) necessary for GAS and who are retained on probation are not allowed to progress into their institutional and patient assessment IPPEs. Instead, students will use the summer months to remediate deficiencies to attain good academic standing (GPA 2.2 by end of fall P3) in the School of Pharmacy. Once good academic standing is achieved, students are eligible to complete their institutional and patient assessment IPPEs, as scheduled by Experiential Education, either later in the summer following P2, schedule permitting and GAS achieved, or in the summer following P3, typically scheduled during Module A of APPE calendar. All IPPEs must be successfully completed prior to beginning APPEs.

EXPERIENTIAL HONORS

10% of the graduating class will be honored at commencement for exemplary performance on experiential rotations. Preceptors will nominate students for this honor, and honorees are selected by Division of Experiential Education.

PHARMD (P1-P3) COURSE WAIVER REQUIREMENTS FOR MATRICULATED STUDENTS

New students accepted to the ACPHS are required to take all required courses in the program at the College. This requirement may be waived for students with academic credit for biochemistry, molecular biology and/or immunology courses taken at other academic institutions. Waiving the requirement will be considered if:

- Academic credit for the course was earned within the last three years from an accredited academic institution;
- A grade of B or better was earned in the course;
- The course is a 300-level (third year) course.

PROCEDURE FOR COURSE WAIVER

1. Students submit a request for course waiver in writing to the Office of Admissions, along with the course description and syllabus from the academic institution where course credit was earned.
2. The Office of Admissions will forward the course description and syllabus to the chair of the department that offers the course at ACPHS.
3. The department chair will identify a credentialed faculty member in the department (usually course coordinator) to review and evaluate the course description syllabus. The faculty member will make a written recommendation (with supporting rationale) about whether the course fulfills ACPHS requirements to the department chair.
4. The department chair will review the recommendation on the course made by the faculty member, and make a departmental recommendation on the course to the Pharmacy Admissions and Academic Standards Committee.
5. The Pharmacy and Graduate Admissions Committee will review all materials available related to the request for the course waiver, including letter of request from the student, student transcript, course description, course syllabus and department recommendation. The Pharmacy Admissions and Academic Standards Committee will grant or deny the request for a waiver based on evaluation of all materials provided and forward this decision to the Office of Admissions. The Office of Admissions will send all decisions on course waiver requests directly to the student in writing, pending receipt of final grades for courses for which a waiver is requested.

PHARMD PROGRAM (P1-P4) ACADEMIC PROBATION

A student will be placed on probation if any of the following conditions exist within a semester:

- A cumulative professional GPA below the thresholds listed in the table below, by semester.

End of Fall P1	2.0	End of Spring P1	2.1
End of Fall P2	2.1	End of Spring P2	2.2
End of Fall P3	2.2	End of Spring P3	2.3
End of Fall P4	2.3	To Graduate Spring P4	2.5

- Any grade point average (GPA) below 2.0 (semester, cumulative, professional semester);
- A single grade of F
- Two or more grades below C-
- Clerkship grade below C.

A student on academic probation must improve academically and meet the conditions of probation recommended by the Academic Standards Committee and administered by the Dean of Students.

While on academic probation a student may be ineligible to hold a class and student organization office, join a fraternity, participate in intercollegiate athletics or provide service on College committees. In some cases, financial aid may be jeopardized.

A student's academic probation period will end when the student successfully addresses all of the conditions that placed the student on probation. The summer semester can only be used to address course grades and cumulative GPA deficiencies, not the prior semester's GPA.

PHARMD PROGRAM (P1-P4) ACADEMIC DISMISSAL

A student may be dismissed from the College for any of the following academic reasons:

- Two instances of probation (whether consecutive or non-consecutive)
- A semester GPA below 1.6
- Three introductory or advanced pharmacy practice experience (IPPE/APPE) grades of less than C
- Two introductory or advanced pharmacy practice experience (IPPE/APPE) grades of F

Academic dismissal usually is not invoked until academic probation has been imposed. However, academic dismissal may be recommended before probation when a student's academic record is significantly below average performance. Students who are academically dismissed from the College are not permitted to enroll in or attend courses at the College, or to earn credit toward degrees offered at ACPHS.

PHARMD PROGRAM (P1-P4): APPEAL POLICY FOR DISMISSALS

Students are permitted to appeal decisions made by the Academic Standards Committee. Appeal requests must be submitted in writing to the Dean of Students. The letter of appeal from the student should contain a statement referencing the original decision by the Academic Standards Committee and an explanation addressing why it is being appealed. The basis for such appeals should involve cases of unusual or extenuating circumstances that directly impacted the student's ability to meet ACPHS academic standards. In the event that extenuating circumstances are identified, appropriate documentation supporting the assertion by a competent, qualified professional must be included when applicable. The College reserves the right to require further evaluation.

Deadlines for appeal are January 5 following the fall semester, June 5 following the spring semester and August 20 following the summer semester. While there are deadlines for student appeals, appeals are heard on a rolling basis by the Academic Standing Appeals Committee.

PHARMD PROGRAM (P1-P4): REPEAT OF DEFICIENT PROFESSIONAL COURSEWORK

Students in the professional years may repeat courses preferentially at ACPHS or may do so at another accredited professional level school if the course is pre-approved by the course coordinator and department chair (See registrar's website for approval form). Students must earn a grade of B or better in courses repeated at other institutions. A specific course may be repeated only one time. Record of both courses will remain on the official transcript. A student's progression through the program may be delayed as a result of the required course repeat. A failure in a pass/fail course will place the student on academic probation and must be repeated.

PHARMD PROGRAM (P1-P4) READMISSION POLICY FOR DOCTOR OF PHARMACY PROGRAM

Individuals who have been dismissed from the Pharmacy Program for academic reasons may apply to ACPHS through PharmCAS (see <http://www.pharmcas.org> for details and application deadlines). The same admission standards for the P1 applicants will apply. The Pharmacy Admissions and Academic Standards Committee will make a recommendation for class year placement for students dismissed from ACPHS in the P2, P3 or P4 year. Contact the Pharmacy Admissions office for further information (pharmadmissions@acphs.edu).

PHARMD PROGRAM REQUIREMENTS FOR GRADUATION

Candidates for the PharmD degree satisfy all of the academic requirements of the program and are approved for conferral of the degree by a majority vote of the faculty. Graduation requirements include having:

- Completed Professional Years (P1-P4) at ACPHS
- Completed the necessary required and elective courses and semester hours
- Earned a cumulative professional GPA of 2.5 or better at the end of P4
- Paid all College-related financial obligations
- Returned all material belonging to the College

The College reserves the right to change the requirements for graduation.

Updated January 2016 – Academic Probation Update as per Dean of Students



Albany College of Pharmacy
AND HEALTH SCIENCES

PHARM D TRANSFER STUDENTS:

PHARM D PROGRAM (P1-P4) REQUIREMENTS FOR ADMISSION OF TRANSFER STUDENTS AND ACPHS BS STUDENTS:

Transfer applicants or ACPHS students enrolled in BS programs seeking admission into the professional years of the PharmD program must apply through PharmCAS. Course grades of C or better are required on transfer for all pre-pharmacy required coursework. Average entering statistics for accepted P1 students include:

- A cumulative GPA of 3.2 (minimum GPA considered is 2.5)
- A cumulative Math/Science GPA of 3.0 (minimum math/science GPA considered is 2.5, based on all attempts at relevant coursework)
- A Composite PCAT score in the 51st percentile (minimum acceptable composite PCAT score is in 20th percentile)
- Minimum score of 3 on PCAT writing
- Successful completion of interview

Qualified applicants will be invited to campus to complete an interview. The interview will include a face-to-face conversation with faculty/staff members of the college. The results of the interview will be a factor in the admissions decision. External applicants will be admitted on a competitive space-available basis. Preference is extended to ACPHS students applying from BS programs.

PHARM D PROGRAM (P1-P4) ADDITIONAL REQUIREMENTS FOR ADMISSION OF INTERNATIONAL STUDENTS:

- Applicants who have studied for fewer than 4 years where English is not the language of instruction are required to submit scores from the Test of English as a Foreign Language (TOEFL) or the Test of Spoken English (TSE). A minimum score on the TOEFL of 474 paper-based (70% of the maximum score of 677), or 84 Internet-based (70% of the maximum score of 120); and a minimum of 50 on the TSE must be achieved to be considered for admission.
- Applicants with international transcripts must submit a credential evaluation completed through the World Education Service (WES).

IMPORTANT DEADLINES FOR TRANSFER APPLICANTS INTO THE PHARM D PROGRAM:

SEPTEMBER 1: Early Decision application deadline through PharmCAS.

FEBRUARY 1: Free Application for Federal Student Aid (FAFSA) Deadline - *(All students)*

MARCH 1: Regular Admission Priority Deadline

INSTRUCTIONS FOR TRANSFER ENTRY INTO THE PROFESSIONAL PHARMD PROGRAM:

Applications for transfer admission into the Doctor of Pharmacy will be accepted from students who have completed or plan to complete the required coursework. Applicants must complete an application form through the Pharmacy College Application Service (PharmCAS), which will collect and process all transfer applications to the College. Applicants will have to submit a complete Web-based application comprised of biographical data, postsecondary institutions attended, academic course history, work experience, extracurricular activities, letters of recommendation and a personal statement and official transcripts from all accredited institutions attended. Two letters of recommendation are required, however 3 are recommended. At least one letter must be from a math or science professor, or from a health care professional who has worked with the applicant in a clinical setting. Please visit www.PharmCAS.org to access information on application requirements as well as policies and procedures. PCAT scores are submitted via PharmCAS. The PharmCAS code for PCAT is 104. Applicants who have studied for fewer than four years where English is the language of instruction are required to submit scores from the Test of English as a Foreign Language (TOEFL) or the Test of Spoken English (TSE). The TOEFL is offered in a paper or internet based format to be considered for admission. Applicants must achieve a minimum score on the TOEFL of 474 paper-based (70% of the maximum score of 677), or 84 Internet-based (70% of the maximum score of 120). For applicants selecting TSE exam, a minimum score of 50 is required. Applicants must present evidence of graduation from an approved or accredited secondary school.

REQUIRED COURSEWORK FOR TRANSFER INTO THE FIRST YEAR OF THE DOCTOR OF PHARMACY PROGRAM:

General Chemistry I & II 8 semester hours
General Biology I & II 8 semester hours
Biology (200 level or higher) 3 semester hours
Organic Chemistry I & II 8 semester hours
Statistics 3 semester hours
Calculus I 4 semester hours
Microbiology 4 semester hours
Physics I & II 8 semester hours
General Psychology 3 semester hours
Humanities 9 semester hours
Public Speaking 3 semester hours
Electives 9 semester hours (at least 6 of the 9 semester hours must be liberal arts credits)

Humanities credits can be taken from English literature, composition, US History, Western Civilization or cross-disciplinary humanities credits.

Liberal arts electives include art, music, sociology, history, psychology, anthropology, foreign language, political science, economics and English. Other electives include any course that is not required in the standard curriculum list above.

No credit will be accepted for grades lower than "C" (C- is not acceptable) or for physical education courses. ACPHS reserves the right to refuse the transfer of any previously earned college credits.

Students accepted into the PharmD program are required to take all courses in the program at the College beginning in the first session. This requirement may be waived for PharmD students with credit for biochemistry, molecular biology and/or immunology taken at other institutions. Course waiver request forms can be obtained from the Office of Pharmacy Admissions.

NON-ACADEMIC REQUIREMENTS FOR INTRODUCTORY AND ADVANCED PHARMACY PRACTICE EXPERIENCE (APPE):

Prior to IPPEs, students must register as a pharmacy intern in the state that the rotation will be performed.

Prior to APPEs, students must have the following:

- Successful completion of IPPE.

Prior to IPPEs and APPEs, students must have the following:

- A copy of personal immunization records, which will be on file at the College (in the event a site requests to see them).
- Proof of a recent physical exam (recommended to be performed approximately two weeks prior to the start of rotations, so that it remains valid through the duration of APPEs) - Students will be provided with appropriate forms to complete.
- Tuberculosis Screening test (PPD skin test or IGRA blood test) - Students will be provided with appropriate forms to complete.
- CPR or Basic Life Support Certification, valid for the duration of APPE rotations

Some clinical sites may have their own requirements as well, including a criminal background check, an antibody titer (laboratory blood test, which indicates proof of immunity, as opposed to providing proof of having received the vaccine), etc. Specific requirements, if any, would be noted in the rotation site's record within the E*Value database, and would be communicated to the appropriate students via email in advance of the rotation by Experiential Education staff. Institutions hosting experiential education may deny a student's participation in the experiential program because of the inability to produce an appropriate health clearance, which could result in delayed graduation or in the inability to graduate from the program.

CAMPUS TRANSFER POLICY

(For PharmD Students in the Professional Years)

Students who matriculate into the Albany NY or Colchester VT campus are required to remain at that campus. In the event of an unforeseen change in circumstances, a student may request a campus transfer from the original campus to the other campus. Students should provide their justified request in writing to the Dean of the School of Pharmacy and Pharmaceutical Sciences. The Dean, in conjunction with the Associate Dean of the Vermont Campus, will review the request on a case by case basis, examine campus minimum/maximum enrollment targets, and respond to the student within three weeks of receipt of the request. The decision of the Dean is final.

Updated July 2015



Albany College of Pharmacy AND HEALTH SCIENCES

COLLEGE-WIDE ACADEMIC STANDARDS

Academic regulations for all programs at ACPHS are developed and adopted by the faculty and are administered by the College administration. Oversight of the academic regulations is conducted by the Academic Standards Committee, a committee of faculty that reviews student academic records and makes recommendations regarding academic status to the Dean of Students. Students who fail to meet the minimum standards required for good academic standing will be notified of the decisions of the Academic Standards Committee in writing by the Dean of Students.

ACADEMIC STANDING

The academic standing of all students is reviewed at the end of the each semester in order to assist students in maintaining the appropriate level of academic performance to assure their successful completion of their program of study. Students are encouraged to avail themselves of the academic advising and tutoring resources available at the College in order to prevent and address areas of difficulty. A student with a pattern of academic performance that demonstrates difficulty may be required to seek guidance and assistance. Each program has specific academic regulations which must be met in order to remain in the program. A student enrolled at the College is entitled to apply for transfer from one academic program to another.

GRADING AND GRADE-POINT AVERAGES

Faculty are responsible for assigning grades in each course. Grades, grade point average equivalents and numerical grade equivalents are listed below.

- A grade of I (incomplete) may be assigned when a student fails to complete the requirements of the course within the semester of enrollment due to extenuating circumstances. The incomplete work must be made up before the end of the following semester (excluding summer sessions), otherwise the grade of I will be converted to an F by the Registrar.
- A student who withdraws from a course within the first four weeks of an academic semester will be assigned the grade of W (withdrew).
- Students who are granted withdrawal later than four weeks into an academic semester will be assigned the grade of WP (withdrew passing) or WF (withdrew failing). The date of withdrawal from a course, or the College, is that date on which a written notice of withdrawal is received by the Registrar. Withdrawal from a course will not be allowed beyond eight weeks into the semester except by permission of the Dean of Students after consultation with the course instructor/coordinator.
- Some courses are graded on a pass/fail basis. Grades of P, W and WP are not calculated into the GPA.
- Grades of F and WF are calculated into the GPA.
- In the event of an unresolved conflict between an instructor and a student over a course grade, the student should refer to the "Course Concerns" policy found in this catalog.
- Semester, cumulative and professional GPAs are calculated by dividing the total quality points earned by the total credits.

- Earned quality points for each course are calculated by multiplying the number of credits for that course by the GPA equivalent. For example, a student taking Physiology/Pathophysiology I (4 credit course) receiving a grade of B+ (GPA=3.3) would earn 13.2 quality points (4 credits x 3.3 GPA=13.2). The total (semester, cumulative, or professional) quality points earned is determined by adding the quality points of all courses.
- To determine academic standing, GPAs are rounded to a tenth of a point (0.1).
- Students are required to maintain minimum semester, cumulative and professional GPAs as required by their program.

LETTER GRADE, NUMERICAL GRADE AND GPA EQUIVALENTS *

Letter Grade	Numerical Equivalent	GPA Equivalent
A+	> 97	4.0
A	93-96	4.0
A-	90-92	3.7
B+	87-89	3.3
B	83-86	3.0
B-	80-82	2.7
C+	77-79	2.3
C	73-76	2.0
C-	70-72	1.7
D+	67-69	1.3
D	63-66	1.0
D-	60-62	0.7
F	< 60	0.0

***The above numerical equivalents are provided as a guideline to faculty and students. Please consult individual course syllabi for course grading and rounding policies.**

COURSE REPEAT & REMEDIATION

Course Repeat: The experience is structured such that the student is responsible for all original course objectives. The original course grade remains on the student's transcript, but is not used in the calculation of the ACPHS GPA.

- Any grade of "F" must be repeated if the course is required for a student's degree.
- Students may repeat a course with permission of their advisor and course instructor by completing the "course permission form" (see Registrar's page on the Intranet for form). If a repeated course is completed at an institution other than ACPHS, it must be completed with a *higher grade* than the original course grade in order to have the credits transferred back to the College (minimum transferrable grade is a "C"). See separate regulations for years P1-P4.
- Students will not be allowed to repeat a course during the academic year (fall or spring semester) at another institution if the same course is offered and will fit within the student's required course schedule at ACPHS. If the required course is not available at ACPHS, students may be allowed to repeat the course at another accredited institution and must be pre-approved according to the course permission policy.
- When repeating a required or elective course, a record of both courses will remain on the official transcript. If completed at ACPHS, the higher of the two course grades will be used in the calculation of the GPA. If completed elsewhere, neither the original nor the repeated course grade will be used in GPA calculations. The cumulative GPA will be updated during the term the course was repeated.
- Independent study cannot be used for the purpose of repeating a course.

Course Remediation: The experience is structured such that the student is responsible for improving performance on only a portion of original course objectives. Course remediation may occur either during the course (within-course remediation) or after a course is completed (post-course remediation).

- Course coordinators have the authority to permit or not to permit remediation of course elements. It is the course coordinator's responsibility to determine what is permissible for remediation and it is expected that this will vary by course.
- If remediation is permitted within a course, the syllabus should include a list of the course elements that may be remediated, the criteria for what is permissible for remediation (i.e. a grade below a certain threshold on a course element) and the policy for calculating the final grade to include the remediated elements.
- All course remediation (within- and post-course) must be completed within two weeks of final grade submission to the Registrar, or for the fall semester, one week prior to the spring semester. Once remediation is complete, the course coordinator may request a grade change for the course in question. The original course grade will not show on the student's transcript or be included in the GPA calculations.
- In the case of post-course remediation, the final grade earned in the term of the course must be submitted to the registrar at the close of the semester. Submission of a grade of incomplete is not acceptable. The Academic Standards Committee will review all grades and make take appropriate action (probation or dismissal) based on the submitted grade. If the grade after the remediation process removes the student from a probation or dismissal category, the Academic Standards Committee will reverse any probationary or dismissal recommendations.

ATTENDANCE POLICIES

Students are expected to attend all assigned classes. Students who have documented absences which exceed 10 percent of the total number of scheduled instructional hours for any given course may, at the discretion of the instructor, receive a grade of I or F and/or be refused admission to the final examination. The College expects instructors to be reasonable in accommodating students whose absence from class resulted from:

- (1) personal illness; or
- (2) family bereavement and/or other compelling circumstances

Instructors and the College have the right to request documentation verifying the basis of any absences resulting from the above factors.

Any student who believes that his or her final grade for a course has been reduced unfairly because of attendance factors has the right to appeal that grade if an attempt to resolve the issue with the instructor is unsuccessful. Procedures for a grade appeal are described under the "Course Concerns" policy found below.

COURSE CONCERNS

Students are encouraged to discuss concerns about grading and other academic issues with faculty according to the following sequence:

1. The first step of the appeals process is a discussion with the faculty member teaching the course or section of the course, in collaboration with the course coordinator, where applicable. The appeal process must be initiated within two weeks of the examination, assignment or academic incident that is the subject of the appeal.
2. If the concern is not resolved satisfactorily through discussion with the faculty member, the student should consult the course coordinator.
3. In the event that a mutually acceptable resolution is not achieved with the course coordinator, the student may appeal in writing to the department chair.
4. If the issue is still unresolved at this stage, the final step in the appeal process is to submit a written appeal, including any supporting documents, to the School's Dean. The decision of the School's Dean is final.

ACADEMIC APPEALS

Students are permitted to appeal decisions made by the Academic Standards Committee. Appeal requests must be submitted in writing to the Dean of Students. The letter should contain a statement referencing the original decision by the Academic Standards Committee and an explanation addressing why it is being appealed. The basis for such appeals should involve cases of unusual or extenuating circumstances that directly impacted the student's ability to meet the ACPHS' academic standards. In the event that extenuating circumstances are identified, appropriate documentation supporting the assertion by a competent, qualified professional must be included when applicable. The College reserves the right to require further evaluation. **Deadlines for appeal are January 5 following the fall semester, June 5 following the spring semester and August 20 following the summer semester.** While there are deadlines for student appeals, appeals are heard on a rolling basis.

LEAVE OF ABSENCE

A student requesting leave of absence from the College is required to provide written notice to the Dean of Students in the Division of Student Affairs. For leave, the request should state the reason(s) for the leave and the duration desired. Additionally, for leave of absence requests, a meeting with the Dean of Students is required and supporting documentation must be provided. Leaves are limited to one year and may be granted for medical reasons or for other extenuating personal circumstances.

WITHDRAWING FROM THE COLLEGE

A student who is withdrawing from the College must provide written notice to Registrar@acphs.edu.

INDEPENDENT STUDY AND/OR RESEARCH

Students may register for up to three credit hours per semester under the supervision of a faculty member. Independent study varies with the student and the project, according to the judgment of the supervising faculty member(s). Interested students with cumulative overall and professional GPAs of 2.5 or higher must submit to the Registrar a written plan for the independent study. This plan shall include the faculty supervisor's description of how student performance will be evaluated and the approval of the department chair. **Deadline for submission of this plan is the first week of the semester.** Forms can be found on the ACPHS Intranet at <https://intranet.acphs.edu> Academics Tab/Registrar or in LIB310.

EXTERNAL CROSS REGISTRATION FOR ACPHS STUDENTS

A voluntary consortium of the public and independent colleges within the Capital Region, was formed to explore avenues in which institutions might cooperate for the mutual benefit of students. Both credits and grades for elective courses taken at one of the colleges or universities belonging to the consortium will be recorded on the student's ACPHS transcript for fall and spring semesters only. Each member college provides diverse course offerings and campus life. Through a cooperative agreement with other colleges in the consortium, ACPHS students may take one course per semester at another member undergraduate campus without paying tuition, provided the course is not available at ACPHS. All fees in excess of tuition are the responsibility of the student. Students interested in taking a graduate-level course must contact the Dean of Graduate Studies to obtain appropriate clearance. Procedures and regulations governing cross-registration are available in the office of the registrar or on the Registrar's web site. Other members of the consortium include Adirondack Community College, The College of Saint Rose, Empire State College, Hudson Valley Community College, Maria College, Rensselaer Polytechnic Institute, The Sage Colleges, Schenectady County Community College, Siena College, Skidmore College, Union College, Union Graduate College of Union University and the University at Albany-SUNY. Permission must be granted by the registrar prior to enrollment in elective courses at other institutions (both consortia and non-consortia). Only students needing elective credit to fulfill their requirements at ACPHS are eligible to cross-register. Transfer credit only (no grade) will be granted for elective courses taken at any non-consortia institution and during the summer semester at consortia institutions. A minimum grade of C (C- is not acceptable) is required to receive transfer credit. There are special conditions for those students repeating a course; please refer to the "Course Repeat" section in this document. *Note: A similar arrangement exists for students at the Vermont campus with St. Michael's College.*

POLICY FOR INTERNAL TRANSFER INTO AN ACPHS B.S. PROGRAM

A student currently enrolled at the ACPHS is entitled to apply for transfer from one academic program to another contingent upon review by the Program Director of the desired program. An application form is available from the Program Director, the Registrar's office, or on the ACPHS Intranet at <https://intranet.acphs.edu> Academics tab/Registrar. The Program Director will review applications and the decision to grant the transfer request will be based upon the feasibility of the student to enroll in courses required for the program requested. The review will consider the schedule of course offerings and the student's record of completed courses. The timeframe for completion of all program requirements will be dependent on the student's record of completed coursework at the time of the program transfer. It should be noted that the granting of the transfer request may require additional time to satisfy all new program requirements. *Please Note: Students wishing to enter the Doctor of Pharmacy program are required to apply through PharmCAS, Pharmacy College Application Service, at www.PharmCAS.org.

DEAN'S LIST

Dean's List standing is given to full-time students, excluding those in the fourth professional year of the pharmacy program, who have a semester GPA of 3.5 or greater, provided there are no other deficiencies. Students in the fourth professional year of the pharmacy program will be eligible to earn recognition in the form of Experiential Honors (see below) in place of Dean's List recognition.

GRADUATION ACADEMIC HONORS FOR UNDERGRADUATES

Prior to May 2014

Summa Cum Laude	3.8 – 4.0
Magna Cum Laude	3.5 – 3.7
Cum Laude	3.3 – 3.4

Beginning with the graduating class of 2014, graduation academic honors changed as follows and only didactic coursework taken at ACPHS will count in the computation of academic honors, regardless of the degree program:

Summa Cum Laude	3.9 – 4.0
Magna Cum Laude	3.7 – 3.8
Cum Laude	3.5 – 3.6

REQUIREMENTS FOR GRADUATION

Candidates for all degrees must have satisfied all of the academic requirements and be approved for conferral of the degree by a majority vote of the faculty.

EXPERIENTIAL HONORS

10% of the graduating class will be honored at commencement for exemplary performance on experiential rotations. Preceptors will nominate students for this honor, and honorees are selected by the Division of Experiential Education.

PREREQUISITES

Waiving the prerequisite requirement(s) can only be granted if a written/electronic approval from the course instructor is received by the Registrar office. Replacing ACPHS courses by similar courses from other academic institutions must receive prior approval of ACPHS course professor or course coordinator.

ACADEMIC PROBATION & DISMISSAL

The following college wide descriptions of academic probation and academic dismissal apply to all students. See program specific requirements for additional regulations.

ACADEMIC PROBATION

A student will be placed on probation if any of the following conditions exist within a semester:

- A semester or cumulative GPA below 2.0
- Two or more grades below C-
- A single grade of F

A student on academic probation must improve academically and meet the conditions of probation recommended by the Academic Standards Committee and administered by the Dean of Students.

While on academic probation a student may be ineligible to hold a class and student organization office, join a fraternity, participate in intercollegiate athletics or provide service on College committees. In some cases, financial aid may be jeopardized.

A student's academic probation period will end when the student successfully addresses all of the conditions that placed the student on probation. The summer semester can only be used to address course grades and cumulative GPA deficiencies, not the prior semester's GPA.

ACADEMIC DISMISSAL

A student may be dismissed from the College if one of the following conditions exists:

- Two instances of probation (whether consecutive or non-consecutive)
- A semester GPA below 1.6

Academic dismissal usually is not invoked until academic probation has been imposed. However, academic dismissal may be recommended before probation when a student's academic record is significantly below average performance. Students who are academically dismissed from the College are not permitted to enroll in or attend courses at the College, or to earn credit toward degrees offered at ACPHS.

REINSTATEMENT POLICY

The policy applies only to students in B.S. and pre-pharmacy programs. Individuals who have been dismissed from the College for academic reasons may apply for reinstatement to the program from which they were dismissed. To be considered for reinstatement the applicant must:

1. Complete at least one semester of full time enrollment (12 or more credits) at another college or university which includes a minimum of 3 science courses, consistent with the ACPHS curriculum, at the appropriate level of course work. Appropriate level is defined as courses at the level of the year of dismissal.
2. Submit course selection to the Dean of Students for approval prior to enrollment in those courses.
3. Earn grades of B or better in order to be considered for reinstatement.
4. Submit a cover letter, transcript and a letter of recommendation from the college or university attended to the ACPHS Office of the Dean of Students by May 15 or August 15.

The Dean of Students will obtain comment from the appropriate program director and forward all application materials to the Academic Standards Committee. Completed applications will be reviewed twice per year in May and August. Applicants will be notified by the Dean of Students approximately one week after the review is complete. Students reinstated will be placed on academic probation for one academic year after their return to the College.

AP AND COURSE CREDIT TRANSFER POLICIES

The granting of transfer credit for an ACPHS course is at the discretion of the Department Chair or designee in which the course is offered. The substitution of courses, or waiving of course requirements, for a student is at the discretion of the Department Chair or designee in which the student's program resides.

Updated January, 2016



Albany College of Pharmacy AND HEALTH SCIENCES

GRADUATION RATES

In compliance with the Student Right to Know Act, ACPHS is pleased to share information on our graduation rates. Six years represents 150% of normal completion time for those seeking a bachelor's degree and 100% of normal time for those seeking a first professional degree. Transfer students enter with prior college experience and so may require fewer semesters to complete their degree programs.

FIRST-YEAR RETENTION RATES

The chart below represents ACPHS's first-year retention from Year One to Year Two for the last five academic years.

FIRST-YEAR RETENTION RATES (STUDENTS PROGRESSING FROM YEAR ONE TO YEAR TWO)

Academic Year	Total Enrolled	Withdrew Passing	Academic Dismissals	Total Attrition	Academic% Retention*	Total % Retention**
10-11	260	21	17	38	93.4	85.3
11-12	262	20	12	32	95.0	87.7
12-13	289	15	24	39	94.3	86.5
13-14	286	41	16	57	94.4	80.1
14-15	254	16	16	32	93.7	80.0
Avg.	270.2	22.6	17	39.6	94.2	83.9

* % Academic Retention is based on an adjusted total enrollment that excludes students who withdrew passing.

** % Total Retention is based on the total attrition number divided by the total enrolled number. Total Enrolled – based on enrollment as of October 15th for Fall and new transfers for Spring.

First-year retention rates are important because they measure the rate at which entering freshmen in a fall semester enroll the following fall semester. Research has found that students are more likely to drop out of postsecondary education during the first year than any other time. Therefore, implementation of policies that help to increase retention rates either within institutions or through transfer, increase the likelihood of students progressing to graduation.

Updated July 2015



Albany College of Pharmacy
AND HEALTH SCIENCES

GUIDE TO ACPHS COURSE PREFIXES

ART	ART
BIOMEDICAL/HEALTH SCIENCES	BHS
BIOLOGY	BIO
CHEMISTRY	CHE
INTRODUCTORY & ADVANCED PHARMACY PRACTICE EXPERIENCE ROTATIONS	CLK
CLINICAL LABORATORY SCIENCES	CLS
COMMUNICATIONS	COM
CYTOTECHNOLOGY	CYT
ECONOMICS	ECN
EDUCATION	EDU
ETHICS	ETH
GENERAL	GEN
HEALTH & HUMAN SCIENCES	HHS
HISTORY	HIS
HEALTH RESEARCH AND INFORMATICS	HRI
SOCIAL SCIENCES	HSS
HUMANITIES	HUM
INTEGRATED PROBLEM SOLVING	IPS
LITERATURE	LIT
MATHEMATICS	MAT
MUSIC	MUS
PHARMACY ADMINISTRATION	PAD
PHARMACY	PHD
PHILOSOPHY & RELIGION	PHI
PHARMACY	PHM
PHYSICS	PHY
PHARMACEUTICAL SCIENCES	PSC
PHARMACY SKILLS LAB	PSL
PSYCHOLOGY	PSY
PHARMACOTHERAPY/PHARMACOLOGY/ MEDICINAL CHEMISTRY	PTP
SOCIOLOGY	SOC
UGC	UNION GRADUATE COLLEGE

ACPHS COURSE DESCRIPTIONS

Courses with the following prefixes can be used to satisfy the liberal arts requirement: HUM, EDU, ENG, ART, PHI, ETH, PSY, HIS, MUS, SOC; as well as BHS 230 and BHS 350. COM courses at the 100 and 200 level can also be used to satisfy the liberal arts requirement.

Courses with a prefix of LIT are cross listed as ENG. Students wishing to have the ENG number appear on their transcript should contact the Registrar's office.

Courses with a "G" at end of prefix and number are graduate courses.

ART 105 *Introduction to Drawing* (formerly LAS 141). This course assumes that anyone can learn to draw better if they first learn to see better. Following Betty Edwards' *Drawing on the Right Side of the Brain*, the course will present the different problems people encounter when trying to draw what they see (or think they see). Class time is primarily spent drawing, although there are some brief quizzes on the reading. Students keep a sketchbook outside of class, write three essays and one museum paper, participate in biweekly critiques and turn in a portfolio of drawings and papers at the end of the semester. **(3)**

ART 110 *History of Cinema* (formerly LAS 261). This course will trace the history of film from its beginnings in the 1890s until today. Through an investigation of the technological, economic, social and aesthetic influences on cinema, the course provides students with a background in film history as well as critical and analytical skills to read not only films but also visual texts. **(3)**

ART 210 *Masterpieces of Art* (formerly LAS 118). This course investigates various masterpieces of Western art, including architecture, painting and sculpture. Each class meeting is devoted to a separate work of art, and students discuss what makes that work a masterpiece. Individual perceptions and reactions are encouraged. **(3)**; **Prerequisite:** HUM 102

ART 215 *Figure Drawing* (formerly LAS 201). The human figure presents special challenges for the artist. This course covers a brief history of the human figure in art and how to draw the figure from the inside out, beginning with studies of the skeleton and muscles, and then copying works of the masters and drawing from a model. **(3)**; **Prerequisite:** Art 105 Recommended

ART 220 *Museum Experience*. Why bother going to a museum when all that old stuff is online anyway? This course offers students the opportunity to explore national, local, and regional art museums, report on the experience, and create not only a virtual exhibit but also a brochure highlighting a museum for future visitors from ACPHS. One-third of the class hours will be in the classroom or on class trips; the rest will be completed individually and online. This elective complements and enhances the three semester Humanities sequence, which focuses on masterpieces of civilization and builds upon the notion, as Lionel Trilling stated, that "there is a certain minimum of our intellectual and spiritual tradition which a man must experience and understand if he is to be called educated." **(3)**

BHS 201 *Medical Terminology*. This course will provide a systems approach to learning medical terminology. The course is self-paced and offered online. It will present medical terminology through a unique combination of anatomy and physiology, word-building principles, and phonetic "sounds like" pronunciations. It is well suited for students who want to learn medical terminology in the context of anatomy and physiology. **(3)**; **Prerequisite:** Sophomore standing or permission of the instructor.

BHS 205 *Clinical Instrumentation Analysis*. This course covers the principles and operation of a variety of instruments used in clinical laboratories and medical research. The physical and chemical properties of matter that make measurement possible and the application of these principles to analyses involving spectral, electrochemical, chromatographic, colligative and nuclear instrumentation. The laboratory offers hands on experience with the principles and operation of a variety of instruments used in clinical laboratories and medical research. **(3)**; **Prerequisite:** CHE102

BHS 230 *Sophomore Seminar in Biomedical Technology*. The course facilitates the student's exposure to scientific literature and in developing the ability to critically evaluate the literature in terms of its validity and conclusions. Students are expected to master scientific writing skills, information retrieval, bibliography preparation per accepted scientific convention. Writing skills will be polished and demonstrable through preparation of a research presentation and critique. **(3)**

BHS 360 *Clinical Anatomy*. This course provides a clinical approach to the understanding of human anatomy. Integration of structure and function of organ systems will be emphasized as a way to comprehend pathologic alterations not only to the organ system but to the body as a whole. This approach will focus on the relevant medical terminology, morphology, physiology, biochemistry and clinical anatomic manifestations of disease. At the conclusion of this course, students will possess an anatomic understanding of the human body as it relates to normal physiologic function as well as disease presentation, progression and treatment. Interpretation of basic anatomic findings likely to be reported in commonly used medical imaging techniques such as CAT and MRI scans will be presented. This is an elective for non-BT students. **(3); Prerequisite:** BIO 121

BHS 365 *Introduction to Human Pathology*. The purpose of this course is to fill the void between commonly taught descriptive pathology and published treatment guidelines for most common diseases in the US today. This will be accomplished through systemic presentations including topics of pathogenesis, traditional pathologic anatomic alterations, as well as diagnostic and therapeutic mechanisms of major diseases in America. Emphasis will be on pathology as a way to understand the presentation of disease, the diagnosis of disease, and therapeutic outcomes. At the completion of this course, students will be able to interpret the results of frequently ordered laboratory tests (thyroid function tests, liver function tests, arterial blood gases, basic bacterial culture results, basic metabolic and hematologic profiles, lipid profiles, basic serologic tests, and selected molecular diagnostics) in light of common disease states. This is an elective for non-BT students. **(3); Prerequisite:** BIO 215 or PSC 322

BHS 410 *Clinical Correlations for Health Care Professionals*. This advanced level course is directed to students who anticipate employment situations in direct patient care. The purpose of this course is to reduce the perceived gap between previously completed course work and its relevance to the patient encounter. To this end, carefully selected clinical cases will serve to illustrate correlative anatomic, pathologic, physiologic, and laboratory findings as they relate to the presentation and treatment of the patient. The concept of differential diagnosis will also be explored. By the completion of this course, students are expected to be able to identify basic common disease presentations including organ system, salient pathology and lab findings, and potential therapy. **(3); Prerequisite:** BIO 215.

BHS 450 *Senior Seminar in Biotechnology*. This is a student-driven course dealing with discussion of contemporary issues and state-of-the-art diagnosis and technology in medicine. The student is required to critically review the literature and present during class time while incorporating knowledge gained through previous years in the didactic and laboratory components. The course culminates in a student-sponsored research symposium open to the college community. **(3)**

BHS 490 *Independent Study in Biotechnology and Health Sciences*. This is a mentor-student proposed elective course project dealing with contemporary issues in biotechnology and medicine. The student under faculty advisement must submit a proposal to the Department Chair for approval. Approval must also be sought if students wish to use this course for remediation of credits. The topic of the course may be didactic, literature review or laboratory research. Only students in their junior and senior years are eligible. **(1-3); Prerequisite:** Junior or Senior status.

BHS 600 G *Capstone Project in Health Sciences*. The capstone project is an integrative activity with a variety of final products based on the degree program and type of project undertaken. It is an opportunity for a student to explore an area of particular interest and to gain additional training in one or more areas of the diagnostic laboratory. The scope of the projects will vary based on the clinical site or investigators involved and may include but not limited to clinical correlations, an exhaustive case study presentation, research laboratory projects, new technique verification studies, epidemiologic/infection control analysis and continuing education presentation (written and oral) on emerging disease or technologies. The common elements for each project is the production of a high quality project (research project or exhaustive case studies), the requirement for oral presentation of the final project and review by a committee of three faculty members. **(3)**

BHS 610 G Cellular Pathophysiology/Histology I. This course will emphasize the normal microscopic histology and function of epithelia, connective tissue, cartilage and bone, muscle, nerve, blood vessels, respiratory system, female reproductive system, skin, lymphatic system, gastrointestinal system, urinary system, male reproductive system, and endocrine system. This will serve as a basis to appreciate of altered microanatomy caused by pathologic forces. **(3)**

BHS 620 G Cellular Pathophysiology/Histology II. This course is the continuation of Cellular Pathology and Histology I. Fundamental concepts of general pathology with an emphasis placed on inflammatory and neoplastic states of man are taught by sequential organ system analysis. This course also complements concurrent courses in cytotechnology and molecular diagnostics. Students are expected to develop graded visual diagnostic skills in histopathology and correlative needle aspiration cytopathology. **(3)**

BHS 630 G Advanced Good Laboratory Practices and Laboratory Management. This course provides training in the principles of good laboratory practice. Topics include safety, federal and state regulations, quality assurance, financial management, principals of adult education and evidence based medicine. **(3)**

BHS 650 G Genetics and Molecular Basis of Disease. The focus of this course is on the heritability and molecular basis of disease as well as the laboratory techniques used in the detection of genetic mutations and the diagnosis of disease. The impact of genetics as a predisposing factor, such as in the case of birth defects, breast cancer, Alzheimer's Disease, alcoholism and some autoimmune disorders, will be discussed. The laboratory experience will provide hands-on experience with DNA isolation, quantification, and characterization. **(3); Prerequisite:** CHE 311/312 or equivalent

BHS 655 G Research Design. This graduate-level course will introduce students to the research methods used in the biological sciences. Topics to be covered include research design, data collection and documentation, critical literature review, preparation of a NIH-style grant application, and academic presentations and publications. Class discussions, workshops, and writing assignments will provide students with opportunities to both practice learned research methods as well as apply these methods toward the design of a potential thesis research project. **(2)**

BHS 660 G Molecular Diagnostics. This course is an application of molecular concepts to the identification and of infectious agents, genetic risk of disease, presence and/or occurrence of mutations as a consequence of infections or toxic exposure. The use of genomic profiles as biomarkers associated with cancer and cancer risk, autoimmunity and hereditary disorders, as well as determination of histocompatibility will be discussed. **(3); Prerequisite:** BHS 650 or PSC 312

BHS 670 G Flow Cytometry. This course introduces the principles and applications of flow cytometry through lectures and laboratory/group work. Major topics include clinical applications and disease diagnosis and research applications. Technical issues such as selections of fluorochromes, principles of fluorescence detection, spectral overlap and compensation, experimental design, data collection and multi-parameter analyses will be emphasized in the laboratory experience. **(3)**

BHS 675 G In situ Hybridization. This course is an introduction to the theory and application of molecular hybridization and *in situ* hybridization techniques. Selection of probes, their application and appropriate detection systems will for both RNA and DNA *in situ* hybridization techniques will be discussed in lecture and laboratory. A focus of the course will be the applications of hybridization techniques to the diagnosis and prognosis of human disease. **(3); Prerequisite:** BHS 650 or PSC 312.

BHS 705 G Contemporary Issues in Infectious Disease. Microbial agents are among the most adaptive organisms that precipitate diseases. Because of this rapid adaptation they pose a challenge to effective therapy. This course explores contemporary microbial challenges such as HIV, West Nile Virus, HPV, multi-drug resistant TB, malaria and MRSA. Therapeutic strategies, whether through vaccination or new drug development, will be discussed through a case study approach and reading of current literature. This is an elective for non-BT students. **(3)** Prerequisites: BHS 250 or equivalent or permission of the Instructor.

BHS 820 G Principles of Pharmacogenomics. This course will provide a wide array of topics in the field pharmacogenomics and explore the growing importance of pharmacogenomics in the delivery and diagnosis pertinent to personalized medicine and therapeutic management. Students will be introduced to genomic concepts in genetic testing, future drug design, study interpretation, and clinical therapeutic decision making. The course will be divided into two sections. The first part of the course will examine the application of pharmacogenomics in medicine and drug design. In the second part of the course, the student will have the opportunity to apply pharmacogenomic concepts and decision making. This will be implemented via a patient case study developed by the student, or a written paper illustrating the influence of pharmacogenomics in medicine. **(2).**

BHS 825 G Nanotoxicology. Advances in drug formulations, cosmetics and manufacturing processes has embraced the use of nanoparticles as an efficient means for targeting biological and engineering processes. Nevertheless, based on our understanding of the toxicity of particulate matter and the altered physiochemical properties of these material, there is concern over the impact of naturally occurring and manufactured nanomaterials on human and ecological health. **(3)**

BHS 830 G Grand Rounds in Pathology. This course is composed of case presentations and discussion of surgical pathology, forensics, and radiation oncology in the medical grand rounds format. Pathologists and/ or other specialty physicians from hospitals in the Capitol District will present patient symptomatology, the process of diagnostics and patient management and clinical. **(1)**

BIO 101 General Biology I. This course emphasizes critical thinking and scientific analysis while dealing with the molecular and cellular aspects of life. Major topics covered include biological molecules, cellular structure, cellular metabolism, Mendelian genetics, molecular genetics and classification of organisms. Laboratory exercises concentrate on the scientific process and method while examining cell structure, tissue structure, molecular genetics and biotechnology. The themes of self-discovery and individual scientific investigation run throughout this course. This is the initial course in biological sciences for BS students. Course prerequisites requiring BIO 101 are also satisfied by BIO 111 and vice versa. **(4);** Lecture and Laboratory

BIO 102 General Biology II. This course continues to emphasize critical scientific thinking while focusing on the principles of evolution, the diversity of animal life and the complex interactions that occur between organisms and their environment. Major topics covered include evolutionary theory, a phylogenetic survey of animals, an introduction to the comparative physiology of the major vertebrate organ systems. The final area covered in the course is Ecology. Topics in this section include population ecology, community ecology, ecosystems, biomes and a discussion of the future challenges to the biosphere. Laboratory exercises continue to concentrate on scientific thinking and self-discovery. This is the second course in the biological sciences for BS Students. Course prerequisites requiring BIO 102 are also satisfied by BIO 121 and vice versa. **(4); Prerequisite:** BIO 101 or permission of the instructor. Lecture and Laboratory

BIO 111 General Biology I. This course focuses on the molecular and cellular aspects of life. Major topics covered include biological molecules, cellular structure, cellular metabolism, Mendelian genetics, molecular genetics and classification of organisms, viruses, bacteria, protista, fungi, nonvascular and vascular plants. Laboratory exercises concentrate on cell structure, tissue structure, molecular genetics and biotechnology. This is the initial course in biological sciences for PharmD students. Course prerequisites requiring BIO 111 are also satisfied by BIO 101 and vice versa. **(4);** Lecture and Laboratory

BIO 121 General Biology II. This course focuses on the diversity of animal life and the complex interactions that occur within and between organisms with a strong emphasis on human systems. Major topics covered include population genetics, evolutionary theory, human evolution, a phylogenetic survey of animals, comparative anatomy of vertebrates, comparative physiology of the major vertebrate organ systems, cellular mechanisms of development, embryology, population and community ecology, and future challenges to the biosphere. Laboratory exercises concentrate on comparative anatomy and physiology with a strong emphasis on human biology. This is the second course in the biological sciences for PharmD students. Course prerequisites requiring BIO 121 are also satisfied by BIO 102 and vice versa. **(4); Prerequisite:** BIO 111 or permission of the instructor; Lecture and Laboratory

BIO 156 Nutrition. This one semester course will teach the fundamental concepts of nutrition relevant to contemporary issues in health. It will present an inter-disciplinary approach by integrating knowledge from the fields of anatomy, physiology, chemistry and microbiology. Food balancing and the selection of nutritionally adequate diets will be examined. The effects of food additives, processing, and the safety of our food supply will be explored. Nutritional changes throughout the lifecycle will also be discussed. Students will be asked to assess and evaluate research and literature in the field of nutrition. **(3)**

BIO 161 Community Health. This introductory course will provide the student with the knowledge and skills for healthy decision making in the areas of personal and community wellness and safety. Students will discuss critical and contemporary health issues including psychological health, nutrition, fitness and weight management, chemical abuse, human sexuality, parenting, aging, death and dying, the environment and the health care system. **(3)**

BIO 210 Microbiology (formerly BIO 312). The goal of this course is to cover the fundamentals of microbiology and infectious diseases. The first half of the course focuses on the general characteristics of prokaryotes, eukaryotes & viruses and explores the basic concepts in microbial physiology and genetics. The mechanisms by which antimicrobials control the growth of microorganisms are also discussed. The second half of the course examines the causative agents and pathogenesis of infectious diseases caused by medically important bacteria, viruses, fungi and protozoa. Diagnosis and treatment of these diseases are also discussed via clinical case studies to foster active learning by the students. The laboratory component provides hands-on experience to students with sterile technique, staining, various biochemical tests and molecular techniques. **(4); Prerequisites:** BIO 101/111, BIO 102/121; Lecture and Laboratory

BIO 213 Anatomy and Physiology I. This lecture course will provide an introduction to the function, regulation and integration of organs and organ systems involved in human physiology. This course will begin with a review of the basic cell and tissue concepts covered in General Biology. Following that will be a detailed discussion of membrane potentials, the anatomy and physiology of the nervous system, major sensory organs, and central nervous system function. This knowledge will then be applied in a discussion of muscle structure and function. Finally the endocrine system and body coordination will be covered. **(3); Prerequisites:** BIO 101/111, BIO 102/121

BIO 214 Anatomy and Physiology I Laboratory. (1); Corequisite: BIO 213

BIO 215 Anatomy and Physiology II. This lecture course continues an introduction to the function, regulation and integration of organs and organ systems involved in human physiology. This course will focus on the cardiovascular system, respiratory, renal and gastrointestinal systems. Also dealt with will be aspects of metabolism and temperature regulation. The final section of the course will discuss host defense as a system and then review an integrated approach to the organ systems via the use of clinical case problems. **(3); Prerequisite:** BIO 213 or permission of the instructor

BIO 216 Anatomy and Physiology II Laboratory. (1); Corequisite: BIO 215

BIO 225 Genetics. This lecture-based course will cover the basic principles of genetics, primarily as they relate to mammalian and human biology. Major topics to be covered include genomic structure, organization, and function, processes of genetic recombination, DNA mutation and repair, mechanisms of gene regulation, concepts of Mendelian inheritance, selection, genetic mapping, genetic engineering, population genetics, developmental genetics, and model organisms. The role of genetics in human health and disease will also be discussed, with an emphasis on mechanisms, diagnosis, and current treatments for genetic diseases. **(3); Prerequisites:** BIO 101 or BIO 101/111, BIO 102 /121, or permission from the instructor.

BIO 235 Cell Biology. Students will identify and describe the functions of all the organelles in the cell as they relate to the acquisition and metabolism of energy sources, regulation of the cell cycle, and communication between cells. Case studies, group projects, and the analysis of primary research in modern topics in cell biology such as botox, and stem cell research, and cancer are used to develop an in-depth understanding of cell biology and its role in biomedical science. **(3); Prerequisites:** BIO 101/111, BIO 102/121

BIO 236 Cell Biology Laboratory. In this laboratory course designed to complement the Cell Biology lecture, students will investigate and manipulate cellular reactions involved in energy acquisition, metabolism, and cellular transport. Students will work in groups, applying knowledge gained in lecture to solve problem sets related to the laboratory topics. Students will also participate in discussion of primary research presented in lecture. **(1); Corequisite:** BIO 235

BIO 240 Virology. This lecture-based course provides an introduction to the field of virology. Topics presented will include virus structure, viral genetics, steps in viral replication, diseases and pathogenesis, and natural history of a variety of medically important viruses. The discovery and activity of contemporary anti-viral drugs and therapeutics will also be discussed. Case studies, group discussions, and analyses of current scientific literature will be used to foster an in-depth understanding of virology and its relationship to human health. **(3); Prerequisites:** BIO 101/111, BIO 102/121, BIO 210

BIO 255 Biotechnology. This survey course will provide the student with a broad knowledge of modern biotechnology (including its pharmaceutical and industrial aspects). A number of cutting-edge topics will be discussed, such as: recombinant expression of foreign genes, production and engineering of therapeutic proteins, structure- and mechanism-based drug design, and nanobiotechnology. The course will rely on a combination of lectures, literature discussions, and recorded seminars. **(3); Prerequisites:** BIO 101/111, BIO 102/121; BIO 210; CHE 211.

BIO 290 Undergraduate Research. This course provides an opportunity for students to obtain a hands-on research experience under the guidance of a faculty member. The number of credit hours and scope of the project undertaken are at the discretion of the faculty member involved. BIO 290 is generally reserved for introductory level experiences and/or smaller scale projects. Students are expected to perform three hours of research related work per credit hour earned. **(1-3); Prerequisite:** permission of the instructor

BIO 327 Plant Biochemistry and Natural Products. This course is an introduction to the study of biomedically important molecules derived from plant metabolism usually known as natural products or herbals. The course will provide an overview of the various aspects of natural product research. An emphasis of the course will be the scientific investigation of natural products to evaluate their utility as therapeutic agents in human medicine. An important theme of the course is the integration of knowledge from prior courses in organic chemistry, biochemistry, and physiology. Topics covered include a review of basic plant biochemistry (including photosynthesis), primary plant metabolism, and secondary plant metabolism. Secondary plant metabolites include the polyketides; the phenylpropanoids, polyphenolics, lignins, tannins, flavanoids, isoprenoids, terpenes, and the alkaloids. The later part of the course will focus on the biological effects of natural products especially in human medicine. **(3); Prerequisite:** CHE 211 or CHE 245 and BIO 215 or PSC 322 or permission of the instructor.

BIO 335 Topics in Physiology and Pathophysiology. This course expands upon the concepts introduced in BIO 213/215. The course involves in-depth exploration of one or more of the core areas in pathophysiology. Topics covered may include cardiovascular pathophysiology, pulmonary pathophysiology, renal pathophysiology, hematology, cancer and inflammatory diseases. There is a strong emphasis on integration of knowledge developed in other courses in the curriculum such as medicinal chemistry, pharmacology and pharmacotherapy. **(3); Prerequisites:** BIO 215 or PSC 322 or permission of the instructor.

BIO 340 Microbial Genetics. This course will cover fundamental concepts of microbial genetics and will provide an understanding in the structure, maintenance, expression and exchange of genetic materials in microbial cells. In particular, the mechanisms of DNA replication, transcription, translation, and methods for regulation of gene expression will be discussed. The course will also emphasize topics like transduction, transformation, conjugation, transposition and DNA mutation and repair. Application of these concepts to investigate research problems in Bioinformatics and Proteomics is also presented. **(3); Prerequisites:** BIO210

BIO 350 Biomedical Laboratory Techniques I. In the first course of this series, emphasis will be placed on imparting hands-on training in immunology and biochemistry laboratory techniques and application of these techniques to investigate research problems. Students will be trained in good laboratory practices, lab safety, proper handling of equipment, use of standard protocols, incorporation of appropriate controls, data collection, analysis and interpretation of experimental results. **(3); Prerequisites:** BIO 210; CHE 201/211

BIO 355 *Biomedical Laboratory Techniques II.* In the second course of this series, emphasis will be placed on imparting hands-on training in laboratory techniques routinely used in molecular biology and microbial genetics and application of these techniques to develop and investigate research problems. Students will be trained in good laboratory practices, lab safety, proper handling of equipment, use of standard protocols, incorporation of appropriate controls, data collection, analysis and interpretation of experimental results. **(3); Prerequisites:** BIO 210; CHE 201

BIO 360 *Industrial Microbiology and Bioprocessing.* This course will introduce students to the cultivation and utilization of microbial cells in commercial bioprocess engineering. Topics for discussion will include: microbial physiology and biosynthetic pathways; biotechnology; fermentation systems and downstream processing; biomanufacturing of fuels, biocatalysts, chemicals, pharmaceuticals, and food products including beer, wine, cheese, and yogurt; biomass, bioremediation and biomining; cGMP regulations and compliance procedures; methods of sterilization and disinfection; and safety procedures. **(3); Prerequisite:** BIO 210

BIO 365 *Medical Mycology and Parasitology.* This first half of this course will introduce students to helminth and protozoan parasites of medical and veterinary importance; life cycles, morphology, physiology, taxonomic classification, life cycles, host-parasite relationships, economic and public health aspects and current topics in parasitic diseases. The second half of the course involves a comparative study of the morphology, physiology, ecology, and pathogenicity of medically important fungi. Discussions will include infectious diseases caused by fungi including their etiology, epidemiology, histopathology, diagnosis, and treatment. **(3); Prerequisite:** BIO 210

BIO 370 *Microbial Physiology.* Students will gain a fundamental understanding of cellular composition, membrane transport, energy generation, diversity of metabolic processes, growth and cell death, and techniques used to elucidate physiological processes in prokaryotes. **(3); Prerequisites:** BIO 210; CHE 201/211

BIO 375 *Bacterial Pathogenesis.* This course will focus on the mechanisms of bacterial pathogenesis along with exploring the fundamental concepts of cellular and molecular basis of host defense against infections. Topics presented will include virulence factors, virulence regulation and evasion strategies utilized by bacteria to escape host defense mechanisms. Special emphasis will be placed on discussion of bio-warfare agents and what makes them highly virulent. Intervention strategies, including vaccination and anti-microbial therapy along with bacterial resistance mechanisms will also be discussed. We will use the assigned text, current literature and case studies to focus on selected model organisms that will introduce the major concepts in microbial pathogenesis. Data analysis from primary literature will form a major component of the course. **(3); Prerequisite:** BIO 210.

BIO 410 *Pharmaceutical Microbiology.* This course will introduce the principles of microbiology as applied to manufacturing aspects of pharmaceutical industry. It will cover a wide range of topics including the nature of micro-organisms, contamination sources and control, sterilization and disinfection, and sterility testing methodologies. Antimicrobial agents, their modes of action and mechanisms of drug resistance will be discussed in detail. The students will also acquire knowledge of various microbiological assays and evaluation methods of antimicrobials. Drug designing and regulatory requirements for conducting clinical trials will be discussed. Good Manufacturing Practices (GMP), Quality Control (QC), and Quality assurance (QA) in the manufacturing processes of pharmaceuticals based on current regulatory requirements will also be discussed. **(3); Prerequisite:** BIO 210

BIO 455 *Toxicology.* This course will provide students with a background in general toxicology and will focus specifically on the toxicology of drugs. The course introduction will include basic mechanisms of toxicity, cellular pathology, and a survey of environmental toxicology. The primary focus of the course will be on drug-induced renal, hepatic, respiratory, neurological, cardiovascular, developmental, and reproductive toxicology. Carcinogenic activity of drugs will also be presented. Examples of specific drug toxicity using case studies will be utilized in the course. Regulatory toxicology will also be addressed, as will typical approaches to preclinical and clinical toxicity risk assessment. **(3); Prerequisites:** BIO 215 or PSC 321, CHE 202/221.

BIO 480 Microbiology Capstone Experience I. Microbiology Capstone Experience is an opportunity for students to integrate information from earlier courses and apply the concepts and skills acquired to a microbiology related research problem or an extramural internship experience. The course will assist students in their learning by bridging their classroom knowledge with real world microbiological issues faced by the researchers and health care professionals in academia and/or industry. Microbiology Capstone Experience is a combination of two senior-level microbiology courses for a total of six credit hours. Students will be required to complete a hypothesis driven independent research project culminating in an oral/written presentation. An approved internship experience in any microbiology or public health laboratory, pharmaceutical industry, or government agency employing microbiologists may be substituted for one semester of Capstone experience. **(3); Prerequisite:** Senior Standing in Microbiology Program or permission of the instructor.

BIO 485 Microbiology Capstone Experience II. Continuation of BIO 480. **(3); Prerequisite:** BIO 480

BIO 490 Undergraduate Research. This course provides an opportunity for students to obtain a hands-on research experience under the guidance of a faculty member. The number of credit hours and scope of the project undertaken are at the discretion of the faculty member involved. BIO 490 is generally reserved for more advanced research projects of students with prior research experience. Students are expected to perform three hours of research related work per credit hour earned. Faculty members may expect students to present their research in venues either internal or external to the college. **(1-3); Prerequisite:** permission of the instructor

BIO 491 Undergraduate Research. This course provides an opportunity for students to obtain PharmD professional elective credit for a hands-on research experience under the guidance of a faculty member. The number of credit hours and scope of the project undertaken are at the discretion of the faculty member involved. BIO 491 is generally reserved for more advanced research projects of students with prior research experience. Students are expected to perform three hours of research related work per credit hour earned. Faculty members may expect students to present their research in venues either internal or external to the college. **(1-3); Prerequisite:** permission of the instructor

BIO 620 G Advanced Topics in Microbiology. This course will explore various cutting-edge topics in Microbiology through Journal club style presentations of primary literature from high impact peer reviewed journals. Each session will begin with a brief overview of the background information by the instructor followed by critical evaluation of the paper through student presentations and group discussions. The course will be divided in four broad themes. The first theme covers general microbial concepts including bacterial physiology and structure, metabolism and genetics. The second theme will explore the microbial virulence mechanisms, anti-microbials, and antibiotic resistance mechanisms, along with discussing novel prophylactic and therapeutic strategies for important bacterial infectious diseases. The third theme of the course will include the nature and biological activities of viruses, virus-host interactions and some important viral diseases. The last theme will focus on the important advances made in the field of host-pathogen interactions including innate and adaptive immune responses against selected pathogens. **(2 or 3 depending on offering); Prerequisite:** Permission of the instructor.

BIO 630 G Advanced Cell Biology. This graduate level course is designed to present foundational principles as well as cutting-edge developments in key areas of eukaryotic cell biology. Focusing on eukaryotic cell structure and function, topics will include: cellular structures and organelles; cell cycling; signal transduction; gene regulation; and intracellular trafficking. This course will consist of both lectures by faculty in their areas of expertise and small discussion groups that delve more deeply into lecture material and primary scientific literature. Students will be expected to demonstrate their knowledge of course material by participation in discussion groups and by examinations. **(3); Prerequisite:** BIO 101/111 and BIO 102/121. **BIO 235 is strongly recommended.**

BIO 640 G Toxicology. This course will provide students with a background in general toxicology and will focus specifically on the toxicology of drugs. The course introduction will include basic mechanisms of toxicity, cellular pathology, and a survey of environmental toxicology. The primary focus of the course will be on drug-induced renal, hepatic, respiratory, neurological, cardiovascular, developmental, and reproductive toxicology. Carcinogenic activity of drugs will also be presented. Examples of specific drug toxicity using case studies will be utilized in the course. Regulatory toxicology will also be addressed, as will typical approaches to preclinical and clinical toxicity risk assessment. **(3); Prerequisites:** BIO 215 or PSC 321, CHE 202/221.

BIO 650 G *Research Design*. This graduate-level course will introduce students to the research methods used in the biological sciences. Topics to be covered include research design, data collection and documentation, critical literature review, preparation of a NIH-style grant application, and academic presentations and publications. Class discussions, workshops, and writing assignments will provide students with opportunities to both practice learned research methods as well as apply these methods toward the design of a potential thesis research project. **(2);**

BIO 660 G *Journal Club*. This course, which is required for all graduate students, is designed to enhance the ability of graduate students to critically evaluate scientific articles published in juried scientific journals. Articles will be selected from current scientific literature in a variety of disciplines in the molecular biosciences, including cell biology, molecular biology, medicinal chemistry biochemistry, microbiology, immunology and infectious diseases. All participants will read and critique the articles. Each student will present at least two articles per semester. **(1)**

BIO 670 G *Research Rotation*. Students will complete two laboratory rotations of seven weeks each in order to facilitate the selection of a thesis research advisor. Students will select a potential mentor based on interests and availability of openings in any given lab. Assignments, based on student preferences, will be made by the program director. Students are expected to spend a minimum of 10 hours per week on laboratory research during the rotation. They are to meet with the faculty advisor at least one hour per week for basic introduction to laboratory principles and practices, and to discuss their research. Students are required to complete reading assignments as directed by the faculty advisor and write a report of the research data and present a ten minute talk summarizing their research at the end of the rotation. **(2)**

BIO 701 G/702 G *Masters Thesis I and II*. The student will identify an appropriate area of research and a thesis advisor. The student will develop a research proposal. The specific topic and nature of the research will be determined by the student and thesis advisor. On receiving approval from the program director, a thesis committee will be established to act in an advisory capacity for the thesis proposal defense. On successful defense of the proposal the student will commence the research. Studies involving humans must be approved the College's IRB. Studies involving animals must be approved by IAUCC. Project involving data collection and management must adhere to GLP requirements. Once the work has been completed, the student will write and defend the thesis. **(3+3)**

BSS 102 *Seminar in Health Professions*. This seminar course will provide you an introduction to many health and science related professions and to the Health and Human Sciences Program at ACPHS. The goal is to present a wide variety of options to you and give you a forum in which to discuss these career choices and the academic paths that will help you reach your goals. Class will meet for approximately 1 hour each week. Students will be required to attend seminar presentations given during class time and outside of class to enhance their knowledge of various career pathways. Presentation topics include academic research, medical education (MD, DO), physician assistant studies, public health, and health policy and communication. As part of this course, students will prepare a résumé including a detailed outline of their plans to enhance their résumé over their time at ACPHS. Students will also prepare an evaluation of each speaker, keeping a record of specific suggestions made by each speaker as a reference document. As a class we will also read a book and learn about the idea of public health through that process. **(1)**

CHE 101/111 *General Chemistry I*. This course provides a solid introduction to the science of chemistry with an emphasis on those concepts necessary to understand the chemistry of biological systems. Topics covered include methods of measurement, thermodynamics, atomic and molecular structure, nomenclature, periodic properties of the elements, chemical bonding, molecular geometry, intermolecular forces, chemical reactions and solutions. In the lab component of this course students perform experiments that illustrate lecture topics, develop laboratory technique, and encourage problem solving skills. PharmD students register for CHE 111, BS students register for CHE 101. Course prerequisites requiring CHE 111 are also satisfied by CHE 101 and vice versa. **(4);** Lecture and Laboratory

CHE 102/121 *General Chemistry II*. This course continues to provide a solid introduction to the science of chemistry by applying many of the topics covered in General Chemistry I to new areas. Special emphasis is again placed on those concepts necessary to understand the chemistry of biological systems. Topics covered include properties of solutions, chemical kinetics, chemical equilibrium, and acid-base equilibrium. In the lab component of this course students perform experiments that illustrate lecture topics, develop laboratory technique, and encourage problem solving skills. PharmD students register for CHE 121, BS students register for CHE 102. Course prerequisites requiring CHE 121 are also satisfied by CHE 102 and vice versa. **(4); Prerequisite:** CHE 101/111; Lecture and Laboratory

CHE 201/211 *Organic Chemistry I*. This course provides a foundation for the study of organic reactions by examining the physical and chemical properties of organic molecules. Areas covered include acid-base chemistry, functional groups, resonance, isomerism, conformations, stereochemistry, charge-distribution and its impact on reaction mechanism, kinetics and thermodynamics, nomenclature, and spectroscopy. The laboratory provides a hands-on experience with methods and instrumentation used in the synthesis, purification and characterization of organic compounds including distillation, crystallization, extraction, chromatography, spectroscopy, kinetics, and polarimetry. The lab also has components in professional writing and ethics. PharmD students register for CHE 211, BS students register for CHE 201. Course prerequisites requiring CHE 211 are also satisfied by CHE 201 and vice versa. **(4); Prerequisite:** CHE 102/121; Lecture and Laboratory

CHE 202/221 *Organic Chemistry II*. This course focuses on the synthesis and reactivity of the major classes of organic compounds with emphasis on mechanistic rationalization and stereochemistry. The application of organic chemistry to the understanding of drug stability, drug reactivity and drug interactions is highlighted. The lab component of this course focuses on the hands-on application and development of experimental techniques designed to develop laboratory skills and promote understanding of the synthesis, identification and purification of organic compounds. PharmD students register for CHE 221, BS students register for CHE 202. Course prerequisites requiring CHE 221 are also satisfied by CHE 202 and vice versa. **(4); Prerequisites:** CHE 201/211; Lecture and Laboratory

CHE 245 *Survey of Organic Chemistry*. This course is a one semester overview of the basics of organic chemistry. Physical and chemical properties of organic molecules, nomenclature, acid-base chemistry, chemical reactions of various classes of organic compounds, and stereochemistry are some of the topics to be covered. Designed to provide students in health science programs the background and understanding of organic chemical principles, it facilitates future coursework in biochemical and biomedical studies. An associated lab component complements the topics covered in lecture and works to develop laboratory skills. **(4); Prerequisite:** CHE 102/121; Lecture and Laboratory

CHE 290 *Undergraduate Research*. This course provides an opportunity for students to obtain a hands-on research experience under the guidance of a faculty member. The number of credit hours and scope of the project undertaken are at the discretion of the faculty member involved. CHE 290 is generally reserved for introductory level experiences and/or smaller scale projects. Students are expected to perform three hours of research related work per credit hour earned. **(1-3); Prerequisite:** permission of the instructor

CHE 311 *Biochemistry I*. This course introduces students to the basic concepts of biochemistry, reviews the key biomolecules (amino acids, proteins and enzymes, carbohydrates, lipids, nucleic acids, coenzymes, vitamins, and other physiologically and pharmacologically active small molecules), and discusses the key metabolic pathways. The relationship between biological function and chemical structure and reactivity are explored using the fundamental chemical and physical principles. **(3); Prerequisite:** CHE 202/211

CHE 312 *Biochemistry Lab I*. This course introduces students to basic methods and techniques commonly used for biochemical manipulations and analyses. **(1); Corequisite:** CHE 311

CHE 313 *Biochemistry II*. This course continues CHE 311 Biochemistry I by discussing some of the more advanced biochemical concepts and phenomena, such as biopolymer structure, signal transduction, fundamental aspects of biotechnology, bioenergetics, molecular biophysics, etc. **(3); Prerequisite:** CHE 311

CHE 318 *Bioorganic Chemistry*. This course provides instruction on introductory topics at the interface between chemistry and biology. The content will focus more specifically on the organic chemistry performed by enzymes in living systems. Enzyme chemistry will be related to how this knowledge has led, and continues to lead to, the discovery of important medicines. **(3); Prerequisites:** CHE 311, BIO 325 or permission of the instructor

CHE 323 *Environmental Chemistry and Toxicology*. This course examines several environmental topics including air and water pollution, sewage disposal, energy resources and radiation, food additives, flavor enhancers and sweeteners, insecticides, plastics and polymers in the environment and the chemistry of home care products. It also considers factors which bring about pollution of water and air and methods of controlling these pollutants. Principles of toxicology and carcinogenesis are considered, as well as the biotransformation of the pollutants aforementioned and other sources and their effect on body tissue. **(3); Prerequisite:** CHE 221

CHE 345 *Physical Chemistry I*. This course covers fundamental concepts of physical chemistry including thermodynamics (with applications to chemical and phase equilibria and electrochemistry), and reaction kinetics and mechanisms. Emphasis is on solving qualitative and quantitative problems using a variety of mathematical methods. The concepts are presented in the context of their importance for understanding of biological systems. Examples include qualitative and quantitative applications of these topics of physical chemistry to specific biological and biomedical problems. **(3); Prerequisites:**PHY 202/222, MAT 235, CHE102/121; **Corequisite:** CHE 346

CHE 346 *Physical Chemistry I Laboratory*. This course introduces students to methods and reasoning of physical chemistry experiments. Fundamental laws, concepts and mathematical relationships that involve physico-chemical properties of matter and energy are studied in experimental setting. Modern experimental methods (including computerized data collection and treatment) are involved. Techniques of data analysis and numerical modeling are applied. Scientific communication skills are emphasized through formal report writing. **(1) Corequisite:** CHE 345

CHE 355 *Organic Synthesis*. This laboratory-based course explores advanced topics in organic synthesis with emphasis on carbon-carbon bond formation, retrosynthetic analysis of complex molecular structures, and chemo-, regio-, and stereoselectivity in organic chemical reactions. Students will apply course concepts in the laboratory by conducting multi-step synthetic sequences that include advanced techniques such as inert atmosphere conditions, analytical and preparative chromatography for purification and analysis and spectroscopic characterization of synthesized products. **(3); Prerequisite:** CHE 221

CHE 390 *Independent Study*. This course provides an opportunity for students to participate in a specialized study project under the guidance of a faculty member. The number of credit hours and scope of the project undertaken are at the discretion of the faculty member involved. Students are expected to perform three hours of project related work per credit hour earned. **(1-3); Prerequisite:** permission of the instructor

CHE 415 *Medicinal Chemistry I*. This course explores the fundamental principles that define the relationship between the chemical structure and biological action of drug molecules. A major focus of the course is the application of these chemical principles to pharmacokinetics, with special emphasis on drug metabolism, and the molecular mechanisms of drug activity, drug resistance and drug synergism. **(3); Prerequisites:** CHE 313 or PSC 311.

CHE 417 *Medicinal Chemistry II*. Strategies for drug development, drug and pro-drug design, and pharmacologic evaluation utilizing the concepts of qualitative and quantitative structure-activity relationships, biological screening assays, combinatorial chemistry, and computer-aided modeling are discussed. **(3); Prerequisites:** CHE 415

CHE 435 *Inorganic Chemistry*. This course focuses on the structure, reactivity, and applications of inorganic compounds. Characterization methods will also be covered such as IR, UVVIS, and NMR. These compounds are found in many areas such as materials science, environmental chemistry, catalysis, bioinorganic processes, and other fields. **(3); Prerequisite:** CHE 202/221

CHE 450, 452, 454, 456, 458 and 460 Analytical Chemistry. The analytical chemistry sequence is offered as a series of short courses. Each course presents the use of a set of analytical techniques to solve chemical and biologically based analytical problems. The underlying scientific principles upon which the techniques are based will be used to show why it can be used as an analytical tool. Practical considerations regarding its capabilities and limitations will also be presented. Lab experiments will be performed that illustrate its use in a laboratory environment. **(variable credits shown below); Prerequisites:** CHE 221

CHE 450 AC - Foundations (1)

This course presents the theoretical basis upon which analytical problems are solved. The analytical process is covered in depth including discussions of: problem identification, selection of an analytical method, sampling, sample preparation, method validations, data collection and interpretation, and reporting.

CHE 452 AC - Atomic and Molecular Spectroscopy (2)

This course covers the use of UV/VIS, FTIR, Fluorescence and Atomic Spectroscopies.

CHE 454 AC - Nuclear Magnetic Resonance (1)

This course covers the theory and use of NMR including a proton and carbon, two dimensional NMR and quantitative NMR techniques.

CHE 456 AC - Gas and Liquid Chromatography (2)

This course focuses on the use of GC and HPLC.

CHE 458 AC - Mass Spectroscopy (1)

This course covers the use of MS and hyphenated MS techniques.

CHE 460 AC - Miscellaneous Methods (1)

This course presents the use of titrimetric, thermal, and enzymatic methods

CHE 490 Undergraduate Research. This course provides an opportunity for students to obtain a hands-on research experience under the guidance of a faculty member. The number of credit hours and scope of the project undertaken are at the discretion of the faculty member involved. CHE 490 is generally reserved for more advanced research projects of students with prior research experience. Students are expected to perform three hours of research related work per credit hour earned. Faculty members may expect students to present their research in venues either internal or external to the college. Students completing CHE 490 to satisfy the research requirement of the chemistry program will be expected to do so. **(1-3); Prerequisite:** permission of the instructor

CHE 523 G Methods in Spectroscopy (formerly CHE 623). This lecture course covers the theoretical bases of IR, NMR and UV/visible spectroscopies with applications to the elucidation of the structure and function of organic molecules. Included are spectroscopic analyses which focus on biomedical applications including investigations of drug transport, composition of drug formulations, and kinetics of drug metabolism. An overview of chromatographic methods and the coupling of these methods to spectroscopic analyses will also be discussed. **(3); Prerequisite:** CHE 202/221

CHE 640 G Principles of Medicinal Chemistry. A study of the relationship between drug design and drug action based on the principles of physical organic chemistry and reaction mechanisms. Properties of polarity, bonding, stereochemistry, and acidity will be used to explain how changes in drug structure modulate transport, receptor interactions, enzyme-mediated reactions, drug resistance, DNA interactions, and metabolism. **(3); Prerequisite:** CHE 202/221. **Recommended:** PSC 311 or CHE 311

CLK 799 Introductory Pharmacy Practice Experience Plus (IPPE Plus) – Community Pharmacy. This experientially-based, 3 credit, elective course will expose students to the basic day-to-day operations of a community pharmacy and is offered on a limited basis to students who have very little or no community pharmacy work experience. The course objectives mirror the CIPPE course objectives with emphasis on communication skills and medication knowledge. This course will be offered at no additional tuition cost to the student and will be evaluated as a Pass with Honors, Pass, Pass with Reservation, or Fail. The grades will be included in the student's record. Specific assignments have been designed to provide students with the opportunity to apply the knowledge and skills gained through classroom and laboratory instruction into an actual practice setting. **(3); Prerequisites:** state issued intern permit (if required), successful completion of CIPPE (CLK 800), and CPR certification.

CLK 800 *Introductory Pharmacy Practice Experience (IPPE) – Community Pharmacy.* This experientially-based, 3 credit, required course will expose students to the basic day-to-day operations of a community pharmacy. Specific assignments have been designed to provide students with the opportunity to apply the knowledge and skills gained through classroom and laboratory instruction into an actual practice setting. Other activities involve students gaining new knowledge and skills essential to community pharmacy practice. Students will participate in and demonstrate an understanding of the “flow” of processing and dispensing a prescription medication order, evaluate medication orders for accuracy and completeness and describe the medication distribution system employed by the pharmacy. This course will prepare the student for their advanced pharmacy practice experiences in the fourth professional year and is a prerequisite for CLK811+. **(3); Prerequisites:** New York State intern permit, which necessitates satisfactory completion of the first professional year curriculum, or equivalent for the State, completing rotation in, and CPR certification.

CLK 802 *Introductory Pharmacy Practice Experience (IPPE) - Institutional.* This experientially-based, 3 credits, required course will expose students to the basic day-to-day operations of an institutional pharmacy. Each student will have the opportunity to apply knowledge gained through didactic learning and lab by placement in an actual practice setting. Specific assignments have been designed which require the application of classroom knowledge and skills to be further developed during these on-site training experiences. Students will demonstrate an understanding of the proper procedure for preparation of intravenous products using aseptic technique, describe the “flow” of processing an order, evaluate institutional orders for accuracy and completeness and describe the medication distribution system employed by the pharmacy. This course will prepare the student for their Institutional Advanced Pharmacy Practice Experience in the fourth professional year. **(3); Prerequisites:** New York State intern permit or equivalent for the State in which rotation will be completed.

CLK 803 *Introductory Pharmacy Practice Experience (IPPE) - Patient-Assessment.* This experientially-based, 1 credit, required course will expose students to the basic day-to-day operations of a patient care setting. Each student will have the opportunity to apply knowledge gained through didactic learning and lab by being placed in an actual practice setting. Specific assignments have been designed which require the application of classroom knowledge and skills to be further developed during these on-site training experiences. Students will gather and organize information from patient medical charts, conduct patient interviews to obtain an accurate medication history, identify medication related problems, present a patient case in a structured format (ex. SOAP note) and prepare responses to drug information inquiries. This course will prepare the student for their Advanced Pharmacy Practice Experiences in the fourth professional year. **(1); Prerequisites:** New York State intern permit or equivalent for the State in which rotation will be completed.

CLK 811+ *Advanced Pharmacy Practice Experiences (APPEs).* APPEs are “hands-on” experiences designed to build on the academic base obtained in the didactic portions and the IPPEs in the PharmD program. The purpose of the APPEs is to provide the student with a broad exposure to various pharmacy practice environments in order for the student to develop skills in making independent judgments and integrating fundamental knowledge into clinical applications. APPEs span a 12-month period (May-May) and are subdivided into modules; each student is required to complete six APPE modules (36 academic credits). APPEs are scheduled by the College and typically require the student to be at the practice site at least eight hours daily. Each student must complete required and elective modules as follows: Required APPEs: community pharmacy (6 weeks); ambulatory care (6 weeks); institutional pharmacy (6 weeks) and inpatient (6 weeks). Inpatient and ambulatory care rotations are direct patient care rotations in settings including but not limited to anticoagulation; diabetes care/endocrinology; family practice; home care; internal medicine; nephrology; nutrition; primary care; AIDS; cardiology; critical care; geriatrics; hematology/oncology; infectious diseases; pediatrics and psychiatry. Two elective APPEs, of 6 weeks each, are required and may include direct patient care APPEs (community, ambulatory care or inpatient setting) or non-patient care APPEs such as: managed care; antimicrobial management; clinical toxicology; consultant pharmacy; drug programs management; governmental affairs/ regulatory; health information management; home infusion pharmacotherapy; long-term care; nuclear pharmacy, pharmaceutical industry; pharmacoepidemiology; pharmacy administration; pharmacy association management; pharmacy database management; pharmacy education and research. **Prerequisites:** Must have successfully completed all required didactic coursework and all IPPEs. Also, successful completion of Top 280 exam and CPR certification.

CLK 812+ Ambulatory Care Advanced Pharmacy Practice Experience. This required, 6- week advanced practice experience provides students with practical experience in the setting of ambulatory care. The sites available are varied and include, but are not limited to, clinics/offices in the field of diabetes; adult /pediatric medicine; oncology; home health care; neurology; nephrology; nutrition; anticoagulation and pain management. This experience introduces the student to the practical application of pharmaceutical care, enhances student abilities to identify and resolve medication related problems, refines medication information skills and provides an opportunity for the student to participate in multidisciplinary patient care in an ambulatory care setting. This experience will be offered in the P4 year. The student must have completed all required courses up to the P4 year. **(6)**

CLK 928 Public Health Introductory Pharmacy Practice Experience. This required, 40 hour introductory practice experience provides the students with practical experience in promoting health improvement, wellness and disease prevention. The experience sites available are varied and include, but are not limited to, the Capital District YMCA; American Cancer Society; New York State Public Health Departments (located in various counties of New York State); American Diabetes Association; senior care centers; assisted living facilities; Brain Injury Association; Alzheimer's Association and health care consortiums. **(1)**

CLK 930/931 Institutional and Inpatient Advanced Pharmacy Practice Experiences. This required, 6-week each, Advanced Pharmacy Practice Experiences provide students with practical experience in the institutional care setting. They include all aspects of institutional practice and acute care medicine including medication distribution, patient assessment and monitoring, pharmacotherapy assessment, medication control and procurement, medication use systems, drug information services and administrative functions. **(6 each)**

CLS 307 Urinalysis and Body Fluids. This course covers the physiology and pathophysiology of renal function and the renal function tests including chemical and microscopic examination of urine. The theory and performance of body fluids analysis will include fecal specimens, spinal fluid and other body fluids. Clinical correlation of other laboratory results with body fluid results and patient diagnosis is emphasized. **(1); Prerequisite:** BIO 215

CLS 308 Urinalysis and Body Fluids Lab. This laboratory experience includes performance of analysis of urine, body fluids, fecal specimens, and semen. Laboratory safety, quality control, and troubleshooting will be emphasized. **(1); Corequisite:** CLS 307

CLS 317 Hematology. This course will address the evaluation of blood cells and body fluids in the clinical hematology laboratory. The lecture and laboratory will highlight physiology, pathophysiology and laboratory testing of blood and bone marrow cells, evaluation of hemostasis and hemostatic disorders and the laboratory evaluation of formed elements found in other body fluids. This is an elective for non-BT students. **(3); Prerequisite:** BIO 101/111, BIO 102/121

CLS 318 Hematology Laboratory. Students will perform a variety of manual and automated techniques used in both hematology and hemostasis and correlate results with hematologic disease states ranging from anemia to leukemia and including thrombotic and bleeding disorders. Emphasis is placed on problem solving experience with respect to both theoretical and practical applications. **(1); Corequisite:** CLS 317

CLS 327 Clinical Microbiology I. This course will focus on the study of aerobic bacteria. The diagnostic techniques involved in identifying the organisms, the significance of different organisms in various clinical specimens, the presentation of microbial disease states and the application of principles of infection control will be presented. **(3); Prerequisite:** BIO 101/111, BIO 102/121

CLS 328 Clinical Microbiology I Laboratory. Students will perform laboratory analysis of a variety of specimens, analyze and record laboratory data, identify aerobic bacteria and sources of infection and, comply with all safety procedures, **(1); Corequisite:** CLS 327.

CLS 329 Clinical Microbiology II. This course is a continuation of the Clinical Microbiology I and will focus on anaerobic bacteria, mycology, and parasitology. The diagnostic techniques involved in identifying the organisms, the significance of different organisms in various clinical specimens, the presentation of microbial disease states and the application of principles of infection control will be presented. **(3); Prerequisite:** CLS 327

CLS 330 Clinical Microbiology II Laboratory. Students will perform laboratory analysis of a variety of specimens, analyze and record laboratory data, identify anaerobic bacteria, parasites, fungus and yeasts. Students will learn and comply with all safety procedures. **(1); Corequisite:** CLS 329.

CLS 337 Clinical Immunology. This course covers basic immunologic theory and concepts in relation to the principles and performance of procedures used in the laboratory diagnosis of infectious and immunologic disease. Specific topics include antigen-antibody reactions, complement and complement fixation, immunoassays, immunofluorescence, microbial serology and autoimmune diseases. Emphasis is placed on problem solving experience with respect to both theoretical and practical applications. **(3); Prerequisite:** BIO 101/111, BIO 102/121

CLS 338 Clinical Immunology Laboratory. Students will perform many of the immunologic techniques used to determine antigen and antibody specificities and contribute to diagnosis of disease states including autoimmune viral, bacterial, fungal, and parasitic diseases. Emphasis is placed on problem solving experience with respect to both theoretical and practical applications. **(1); Corequisite:** CLS 337

CLS 339 Immunohematology. This course will apply immunologic principles to the study of immunohematology including blood groups, transfusion therapy, investigation of transfusion reactions and related pathologic mechanisms. Donor selection, blood processing and handling as well as compliance with all regulatory bodies will be emphasized. Discussion will also include other human tissues available for therapeutic and surgical use. **(3); Prerequisite:** CLS 337

CLS 340 Immunohematology Laboratory. Students will perform both manual and automated techniques to determine blood type, identify compatible donor blood, identify unexpected antibodies, determine hemolytic disease of the newborn and investigate transfusion reactions. Emphasis is placed on problem solving experience with respect to both theoretical and practical applications. **(3); Corequisite:** CLS 339

CLS 346 Clinical Chemistry. This course applies biochemical principles to the study of clinical chemistry and its application to diagnosis and treatment of patients. The significance of lipids, carbohydrates, proteins, enzymatic measurements, and acid-base balance as they apply to diagnoses of cardiovascular, pulmonary, renal and metabolic diseases is emphasized. **(3); Prerequisite:** CHE 311 or equivalent

CLS 347 Clinical Chemistry Laboratory. Students will perform both manual and automated techniques focused on the measurement of chemical analytes in human specimens and correlate the results with the pathophysiology of disease presentation. Emphasis is placed on problem solving experience with respect to both theoretical and practical applications. **(1); Corequisite:** CLS 346

CLS 400 Laboratory Management and Education. This course presents the principles of laboratory administration including the healthcare delivery system in the US, reimbursement methodologies for laboratory testing, accreditation and inspection process, total quality management, principles of adult education, research design and laboratory information systems management. Topics related to organizational theory will be reviewed including supervision, motivation, teamwork development, and diversity in the workplace. **(3); Prerequisite:** Enrollment in CLS Program

CLS 401; CLS 402 Clinical Practicum I and II. Students will participate in a number of experiential exercises in various affiliated hospital and laboratory sites. Rotations will include Clinical Microbiology, Clinical Chemistry, Immunohematology, Hematology and Coagulation, Immunology/Serology and Molecular Diagnostic testing. The clinical practicum experience will include specimen tracking, performance of routine analyses, demonstration of specialty testing, observation of automated instrumentation and management processes, including quality control and quality assurance activities. **(9); Prerequisite:** Completion of all CLS 300 level courses.

CLS 410 Clinical Correlations. Through case study and extensive literature review, this course is the culmination of the CLS curriculum. The results of testing in all laboratory disciplines are applied to the diagnosis of the patient, the resolution of pre-analytic, analytic and post-analytic issues and the appropriate management of the clinical laboratory. **(3); Corequisite:** CLS 402.

CLS 520 G *Clinical Hematology and Hemostasis*. This course will address the evaluation of blood cells and body fluids in the clinical hematology laboratory. The lecture and laboratory will highlight physiology, pathophysiology and laboratory testing of blood and bone marrow cells, evaluation of hemostasis and hemostatic disorders and the laboratory evaluation of formed elements found in other body fluids. **(4)**

CLS 525 G *Urinalysis and Body Fluids*. This course includes the medical biochemistry of renal function and the interpretation of urinalysis and body fluid (spinal fluid, seminal fluid, and other body fluids) testing. Emphasis is on clinical significance and interpretation of laboratory results, specimen collection and preservation, biochemical test procedures, clinical microscopy and cytology of urine sediment. **(2)**

CLS 530 G *Clinical Immunology*. The content of this course includes development of the immune system, immunoglobulin structure and genetics, antigen-antibody reactions, the major histocompatibility complex and antigen presentation, and immune responses to infectious organisms and tumors. The lecture and laboratory will focus on diagnostic techniques employed in the identification of viral and bacterial diseases and the diagnosis of autoimmune diseases, allergies, immune deficiencies and AIDS. **(4)**

CLS 535 G *Immunohematology*. Immunohematology is the laboratory application of immunologic principles to the identification of appropriate blood and blood products for transfusion and body tissues for transplant. The course will cover characteristics of red cell and white cell specific antigens, donor qualification and blood processing as well as the techniques for identification of auto- and allo-antibodies important to transfusion medicine and transfusion service specific regulations and quality control requirements. **(4); Prerequisite:** CLS 530

CLS 540 G *Clinical Chemistry*. This combined lecture/laboratory course focuses on basic concepts of laboratory instrumentation, troubleshooting techniques and the operation, evaluation and selection of instruments. Lectures emphasize chemical measurements of physiologic indicators of normal and abnormal human metabolism and address the elements of clinical chemistry and its application to diagnosis and treatment of patients. The significance of lipids, carbohydrates, proteins, enzymatic measurements, acid-base balance as they apply to diagnoses of cardiovascular, pulmonary, renal and metabolic diseases is emphasized through hands-on measurement and correlation with pathophysiology. **(3)**

CLS 545 G *Clinical Instrumental Analysis*. This course focuses on the application of instrumental methods, including spectrophotometry, fluorometry, electroanalytical, and chromatographic methods to the clinical laboratory. Principles of quality control, quality assurance and problem solving will be emphasized. **(2)**

CLS 550 G *Clinical Microbiology I*. This course will focus on the study of aerobic bacteria. The diagnostic techniques involved in identifying the organisms, the significance of different organisms in various clinical specimens, the presentation of microbial disease states and the application of principles of infection control will be presented. The student will be familiarized with the methods used for transport, processing, identification and reporting of bacteria from specimens taken from the human body. Students will analyze and record laboratory data, comply with all safety procedures and learn to determine drug susceptibility, drug resistance and identify sources of infection. **(4)**

CLS 560 G *Clinical Microbiology II*. This course follows similar principles as CLS550, but will focus on the study of medically relevant parasites and fungi. Students will also learn key aspects of mycological, and anaerobic infections. By participating in both classes CLS550 and CLS560 students will become proficient in traditional microbiology, as well as contemporary immune- and molecular-based identification technology. **(4)**

CLS 670 G; CLS 680 *Clinical Practicum I and II*. Students will participate in a number of experiential exercises in the affiliated hospital and laboratory sites. Rotations will include Clinical Microbiology, Clinical Chemistry, Immunohematology, Hematology and Coagulation, Immunology/Serology and Molecular Diagnostic testing. The clinical practicum experience will include specimen tracking, performance of routine analyses, demonstration of specialty testing, observation of automated instrumentation and management processes, including quality control and quality assurance activities. **(9); Prerequisite:** Completion of all CLS 500 level courses.

CLS690 G Clinical Correlations. Students will evaluate a series of case studies which integrate all disciplines of laboratory diagnostic medicine. The cases will require knowledge of laboratory test result normal, factors that affect the accuracy of laboratory test results, quality management principles, and the ability to integrate diverse information to arrive at a diagnosis, corrective action or quality improvement recommendation. **(2); Corequisite:** CLS 680.

COM 101 Academic Reading and Writing. This course introduces students to critical writing and reading in academic contexts and offers them the opportunity to develop essential skills in comprehending, analyzing and evaluating college-level texts; effectively addressing writing assignments; inventing, drafting and revising; and seeking, providing and responding to constructive feedback. Through multiple writing activities and individualized coaching, students are presented with and practice the fundamentals of academic communication such as synthesizing multiple sources, sustaining a coherent argument and revising for clarity of style. Special attention is paid to conventions of standard written English. **(3)**

COM 102 Group Communication. This hybrid course (½ online and ½ face-to-face) is introductory and designed to provide basic understanding of the group dynamic and process. Critical facets of group functioning are studied and experienced to apply key concepts that are relevant to group development, team building, roles, problem-solving, and leadership. These concepts will be examined in a variety of group settings to help students understand critical events which occur in both large and small cohorts. **(3)**

COM 115 Principles of Communication. This course is aimed primarily toward introducing students to academic literacy practices, including reading, writing, researching and using sources, speaking, collaborating with peers and using visuals. Students will establish a solid communication skill set to serve as a foundation for the rest of their academic and professional career. In addition, students also will engage in activities to understand both the basic principles and processes of communication, as well as the tools that make communication possible. **(3)**

COM 120 Introduction to Public Speaking (formerly LAS 241). This interactive, workshop-style course introduces students to the core communication skills required for effective public speaking. Students will learn to design and present messages in two primary genres: speaking to inform and speaking to persuade. Specific skills/topics to be addressed include: verbal and nonverbal delivery mechanics, managing speech anxiety, grabbing attention, organizational structures, language style, Powerpoint design and usage, audience analysis, and job interviewing skills. In addition to scripted messages, students will develop confidence with extemporaneous (improvisational) speaking. **(3)**

COM 150 Introduction to Journalism (formerly LAS 144). This course is designed to introduce students to the basic concepts of journalism by exploring and evaluating issues and events occurring during the college years. Students will write at least four articles for Mortar and Pestle each semester. This course may be taken three times, giving a sense of continuity to the newspaper and enabling students to earn a total of three liberal arts credits. **(1)**

COM 171 American Sign Language I. Level 1 is an introductory level course for students with little or no prior experience in Sign Language. Expressive and receptive sign skills will be addressed as well as the manual alphabet for fingerspelling, basic grammatical structures, and how to develop vocabulary through sign production. The students will also learn about various forms of sign language and deaf culture. Class time will be devoted in developing basic conversations and the skills will be practiced in whole group discussions as well as small group exercises and discussions. Signs skills will also be enhanced outside the classroom through grammar and comprehensive exercises. **(3)**

COM 172 American Sign Language II. Expressive and receptive sign skills will be addressed as well as the manual alphabet for finger spelling, basic grammatical structures, and how to develop vocabulary through sign production. The students will also learn about various forms of sign language and deaf culture. Class time will be devoted in developing basic conversations and the skills will be practiced in whole group discussions as well as small group exercises and discussions. Signs skills will also be enhanced outside the classroom through grammar and comprehensive exercises. **(3); Prerequisite:** COM 171

COM 175 Academic Writing and Presentations for ESL I. This course is designed for nonnative English speakers who are proficient in English but need to improve their academic writing and presentation skills. Students will gain confidence in academic writing and speaking in order to increase fluency and proficiency. The course will also enable students to develop a practical understanding of the conventions of academic writing and presentations. Students will also have opportunities to work with and get feedback on writing and presentation assignments in other courses. **(3)**

COM 211 Spanish for Health Careers I. The Spanish for Health Careers I and II sequence will provide students with specific vocabulary, grammar and cultural competencies that will be directly applicable to interaction with Spanish-speaking clients within a health care context. Particular emphasis will be placed upon the building of speaking/listening communication skills. Students will primarily communicate in the present tense and will be introduced to expression in the past tense. As the Spanish for Health Careers I Course is an introductory level language course, previous knowledge of Spanish will be helpful but not necessary. **(3)**

COM 212 Spanish for Health Careers II: The Spanish for Health Careers II is the second course in the sequence that provides students with specific vocabulary, grammar and cultural competencies that will be directly applicable to interaction with Spanish-speaking clients within a health care context. **(3); Prerequisite:** COM 211 or permission of the instructor

COM 230 Overcoming Communication Hurdles in Health Care (formerly LAS 251). This course addresses the development of students' reading, writing, speaking and listening abilities. Through a mix of mini-lectures, workshops and active learning activities, students are presented information fundamental to understanding communication as a critical element in the delivery of health care. Through case studies, individual and group assignments, students will apply the communication strategies presented in class to situations of increasing rhetorical complexity and personal responsibility. **(3); Prerequisite:** COM 115

COM 242 Interpersonal Communication (formerly LAS 242). This course introduces students to the social scientific discipline of interpersonal communication. Interpersonal communication provides the building blocks from which all larger forms of social organization are created and maintained. Friendships, intimate relationships, families, football teams, juries, hiring committees, PR firms, hospitals, political campaigns, and governments all rely at some level on interpersonal communication. The course is divided into two large units. The first unit covers foundational theories in the area of interpersonal communication. The second unit covers what might be considered "problematic" aspects of interpersonal communication (e.g. conflict, deception, social predicaments). Throughout the course, concepts from interpersonal communication are applied to different health care settings, demonstrating how interpersonal dynamics affect the delivery and receipt of health care. **(3); Prerequisite:** COM 115

COM 251 Communication and Conflict. This course offers a broad overview of the study of conflict from a communication perspective. It introduces students to current theoretical and applied issues in the study of conflict management using social science theories to help explain the process of interacting with others. Specifically, the course examines the nature, causes, and techniques for managing conflict across a wide variety of situations including societal clashes, psychological turmoil, group decision-making, intimate relationships, and organizational interaction. While each of these situations differs in important ways, there are commonalities in how conflict functions across them. We will look at those commonalities to understand the role of communication in conflict. The assignments and class activities focus upon the theories, models, principles, and concepts of conflict and their application to a variety of relationships. **(3); Prerequisite:** COM 115

COM 315 Health Campaigns. Communication campaigns play an important role in public health and safety. The overarching goal of this course is to examine strategies and outcomes of informative and persuasive health communication campaigns. The course will first provide an overview of the history of campaigns, audience analysis, formative research, theory, design, and evaluation, and second, examination of specific health campaigns. This course will include a hands-on group project designing and implementing a health message intervention that will give students practical experience and will allow students to develop professional communication and teamwork competencies. Principles covered in this course are fundamental to the field of Health Communication. **(3); Prerequisite:** Junior Level Standing, or permission of the instructor.

COM 320 Patient-Provider Communication. A great deal of health care is delivered interpersonally. When health providers and health consumers interact, they coordinate their social and communicative activities in order to realize the practical goals of a therapeutic partnership. This course exposes students to a range of communicative challenges that health providers and health consumers experience when they interact. Various communication strategies for overcoming these challenges will be discussed and evaluated. Applying an ecological perspective on health care, relationships between macro-level factors (culture, gender, economics) and micro-level factors (interpersonal relationships, interaction) will be discussed. **(3); Prerequisite:** Junior Level Standing, or permission of the instructor.

COM 330 Intercultural Communication in Healthcare. Modern health care systems require practitioners to provide care to patients with diverse values, beliefs, experiences, and behaviors. This course exposes students to the communication challenges that patients and providers navigate as part of an intercultural therapeutic partnership, with special emphasis on the ways in which health care delivery can be tailored to patients' unique social, cultural, and linguistic needs. The course uses the term "culture" broadly and inclusively, highlighting traditional racial/ethnic cultures (e.g. Middle Eastern), national cultures (e.g. Mexican) and co-cultures (e.g. African American), while also including contemporary notions of cultural membership (e.g. cultures of medicine, cultures of disability, LGBTQ). Key topics include: minority health disparities, health literacy, barriers to health care access, cultural variations in communication style, the use of medical interpreters, traditional and complementary medicine, and culturally-specific media environments that influence health beliefs and behaviors. **(3); Prerequisite:** Junior Level Standing, or permission of the instructor.

COM 339 Professional and Technical Writing. This hybrid course (½ online and ½ face-to-face) addresses the development of students' writing abilities through a mix of mini-lectures, workshops and active learning activities. Students are presented information fundamental to understanding written communication as a critical element in the delivery of health care. Through case studies, individual and group assignments, students will apply the rhetorical strategies presented in class to situations ranging from the general to discipline/ profession specific. **(3); Prerequisite:** COM 115.

COM 390 Independent Study in Communication. This is a mentor-student proposed elective course project focused on communication. The student under faculty advisement must submit a proposal to the Department Chair for approval. **(1-3); Prerequisite:** Permission of Instructor

CYT 510 G Cytopathology of the Female Genital Tract (FGT). This course begins as a survey of the cytotechnology profession, its scope of practice and issues of responsibility and ethics. Future trends in the profession and flexibility in adoption of new and novel technologies alongside traditional diagnostic tools will be discussed. Then the course will present the basic principles of cytopathology applied to cellular samples obtained from the female reproductive system. Topics covered are the gross and microscopic anatomy, physiology and pathology of the uterine-cervix. This course will establish a foundation for identifying and understanding the basic epithelial cell types. Benign, reactive, and infectious conditions will be discussed. Infectious organisms and the cellular changes they produce will be identified. Pre-malignant and malignant conditions will be discussed and identified on cytologic specimens obtained primarily from the Pap Test. In the laboratory students will learn in an experiential setting by examining both pre-diagnosed and unknown cases from the FGT that demonstrate a wide variety of benign to malignant conditions. Cellular changes induced by therapies and environmental entities will be examined and criteria to identify these will be discussed. **(4)**

CYT 520 Exfoliative Non-Gynecologic Cytopathology I. This course will present the basic principles of cytopathology applied to the cellular samples obtained from a variety of body sites through brushings, washings and scrapings. Gross and microscopic anatomy, physiology and pathology of these sites will be explored. Specimens from the Respiratory Tract and Gastro-intestinal Tract will be examined. This course will expand on the foundation for identifying and understanding the basic epithelial cell types covered in Cytopathology of the FGT. Benign, reactive and infectious conditions will be discussed. Infectious organisms and the cellular changes they produce will be identified. Atypical and malignant conditions and their cellular appearance on a variety of cytologic specimens will be explored. Cellular changes induced by therapies and environmental entities will be discussed and their role in rendering a final diagnosis will be recognized. In the laboratory students will learn in an experiential setting by examining both pre-diagnosed and unknown cases from these sites that demonstrate a wide variety of benign to malignant conditions. **(2); Prerequisite:** CYT 510.

CYT 530 G *Exfoliative Non-Gynecologic Cytopathology II*. This course will present the basic principles of cytopathology applied to the cellular samples obtained from a variety of body sites through brushings, washings and scrapings. Gross and microscopic anatomy, physiology and pathology of these sites will be explored. Specimens from the Genital Urinary System, Body Cavity Fluids and Cerebral Spinal Fluid will be examined. Benign, reactive and infectious conditions will be discussed. Infectious organisms and the cellular changes they produce will be identified. Atypical and malignant conditions and their cellular appearance on a variety of cytologic specimens will be explored. Cellular changes induced by therapies and environmental entities will be discussed and their role in rendering a final diagnosis will be recognized. In the laboratory students will learn in an experiential setting by examining both pre-diagnosed and unknown cases from these sites that demonstrate a wide variety of benign to malignant conditions. **(2); Prerequisite:** CYT 520.

CYT 540 G; CYT 550 G *Cytopreparatory Techniques I and II*. This course will develop the skills necessary to prepare a wide variety of specimens and teaches how to select and apply the appropriate staining technique for each. Students will learn to develop a Cytology Preparation Manual and how to comply with all State, OSHA and Federal regulations in a working laboratory. Emphasis will be placed on safe, efficient and effective handling techniques. Likewise, quality control documentation, safety, and standard precautions will be taught and exercised. Students will make a collection of representative slides from a variety of body sites using expired specimens donated from clinical affiliates. **(1)**

CYT 560 G *Fine Needle Aspiration Cytology I*. This course will present the basic principles of cytopathology applied to the cellular samples obtained through fine needle aspiration (FNA) from a variety of body sites where lesions can be identified by Radiological techniques. Gross and microscopic anatomy, physiology and pathology of these sites will be explored. Specimens from the liver, pancreas, ovary, kidney, adrenal glands and central nervous system will be examined. Benign, reactive and infectious conditions will be discussed. Infectious organisms and the cellular changes they produce will be identified. Atypical and malignant conditions and their cellular appearance will be explored. Cellular changes induced by therapies and environmental entities will be discussed and their role in rendering a final diagnosis will be recognized. In the laboratory students will learn in an experiential setting by examining both pre-diagnosed and unknown cases from these sites that demonstrate a wide variety of benign to malignant conditions. **(3); Prerequisite:** CYT 530.

CYT 570 G *Fine Needle Aspiration Cytology II*. This course will present the basic principles of cytopathology applied to the cellular samples obtained through fine needle aspiration (FNA) from a variety of body sites where lesions can be identified by Radiological techniques. Gross and microscopic anatomy, physiology and pathology of these sites will be explored. Specimens from the breast, thyroid, salivary glands and lymph nodes will be examined. The course will also include FNA of unusual lesions like: mediastinal lesions, bone and soft tissue lesions and pediatric tumors. Benign, reactive and infectious conditions will be discussed. Infectious organisms and the cellular changes they produce will be identified. Atypical and malignant conditions and their cellular appearance will be explored. Cellular changes induced by therapies and environmental entities will be discussed and their role in rendering a final diagnosis will be recognized. Students will also gain an understanding of basic immunological principles as they pertain to health and disease. In the laboratory students will learn in an experiential setting by examining both pre-diagnosed and unknown cases from these sites that demonstrate a wide variety of benign to malignant conditions. **(3); Prerequisite:** CYT 560.

CYT 590 G *Clinical Practicum I*. This course will consist of a clinical rotation lasting seven weeks. Students will “shadow” a teaching cytotechnologist through their daily routine and participate in all laboratory activities as permitted. Students are expected to pre-screen cases that will later be re-screened by the teaching cytotechnologist, participate in preparation and staining of specimens, and any FNA, tumor board, tissue correlation and patient follow-up activities that their teaching cytotechnologist deems appropriate. **(6); Prerequisite:** CYT 570.

CYT 600 G *Clinical Practicum II*. This course will consist of a clinical rotation lasting twelve weeks. Students will “shadow” a teaching cytotechnologist through their daily routine and participate in all laboratory activities as permitted. Students are expected to pre-screen cases that will later be re-screened by the teaching cytotechnologist, participate in preparation and staining of specimens, and any FNA, tumor board, tissue correlation and patient follow-up activities that their teaching cytotechnologist deems appropriate. This second rotation will culminate with the completion of the Capstone Project. **(6); Prerequisite:** CYT 590.

ECN 101 *Introduction to Economics*. The course covers basic economic principles applied to current social issues and problems. Topics covered will typically include inflation, unemployment, wage and price controls, welfare, social security, national debt, health programs, food prices, pollution, crime, mass transit, revenue sharing, multinationals, population, and energy. This course will prepare students to master fundamental economic concepts, applying tools (graphs, statistics, equations) to the understanding of operations and institutions of economic systems. Students will study the basic economic principles of micro and macroeconomics, international economics, comparative economics systems, measurement and methods. **(3)**

ECN 301 *Regulatory Economics*: The objective of this course is to introduce you to the role of government in markets where competition "fails." In this course you will learn the importance of market structure and industrial performance, including the strategic interaction of firms. We will examine the behavior of individual markets in some detail, focusing on cost analysis, the determinants of market demand, investment behavior, market power, and the implications of government regulatory behavior. A particular focus will be placed on the regulation of pharmaceutical industry. **(3)**.

ECN 317. *Health Economics*. In this course, we will learn how to apply economic tools to the study of health and medical care issues. We will examine the special features of medical care as a commodity, the demand for health and medical care services, the economic explanations for the behavior of medical care providers (i.e., physicians and hospitals), the functioning of insurance markets, and technology diffusion. Our discussions will touch on current policy topics such as the prospective payment system, relative value scales, insurance reform, rationing, and price regulation. We will also be examining the role of and economic justification for government involvement in the medical care system. Finally, we will use the tools we have learned to review and analyze various proposals for health care reform. **(3)**.

ECN 321 *Economic Quantitative Analysis I*. Economic quantitative analysis is a broad subject area, with topics ranging from basic statistics to advanced regression techniques. This course takes a mathematical modeling approach. The format is designed to provide a foundation in linear programming and probabilistic techniques. A wide range of decision making tools will be developed and used. This is the first in a two-course sequence. **(3)**;
Prerequisites: MAT145 and MAT 111

ECN 325. *Econometrics*. This course introduces students to multiple regression methods for analyzing data in economics and related disciplines. Extensions include regression with discrete random variables, instrumental variables regression, analysis of random experiments and quasi-experiments, and regression with time series data. Accordingly, the emphasis of the course is on empirical applications. **(3)**

ECN 335 *Ecological Economics*. Ecology is the natural science that deals with relationships among all organisms and their environments. Ecological studies traditionally have focused on interpreting the non-human world and have provided little explicit application to human society. Economics is the social science that deals with the production, distribution and consumption of human goods and services. Traditional or "neoclassical" economics often has disregarded ecological principles, thus leading to ecologically untenable policy implications. Ecological economics fuses ecology and economics to assess the capabilities of natural ecosystems to support economic systems. It interprets economic systems as an evolutionary function of the physical and biological environment. Conversely, ecological economics assesses the effects of human economies on the natural world. Ecological economics rests upon a foundation of ecological principles, producing policy implications that are often quite distinct from those of neoclassical economics. This is a transdisciplinary course, incorporating relevant principles and practices from political science, psychology and physics in addition to ecology and economics. Students are not required to construct mathematical models. **(3)**

ECN 345 *Economic Development*. The focus is on development problems and policies at domestic or country and global levels. The specific topics covered at country level include poverty and inequality, population and migration, human capital, agriculture and the environment, as well as the role of political institutions in economic development. At the global level, the course will cover topics such as trade theory and policy, foreign aid and investment and debt issues. The course will conclude by discussing critical issues for the 21st century such as health, globalization and the environment. **(3)**

ECN 421 *Economic Quantitative Analysis II*. This course is a continuation of Economic Quantitative Analysis I and takes a mathematical modeling approach. The format is designed to provide a foundation in linear algebra and advanced mathematics, such as differential equations. A wide range of decision-making tools will be developed and used. **(3); Prerequisite:** ECN 321

EDU 301 *Teaching/Learning in Higher Education*. This is primarily an online course, with four face-to-face meetings, that develops knowledge and skills in various aspects of teaching and learning. Students will analyze and expose the teaching process. In addition, students will participate in didactic teaching moments and shadow a professor/class in session. Theories and styles of learning; personality factors related to learning; and implications of effective intellectual, emotional and social functioning included within the context of structuring education for the adult learner will be studied. The goal of this course is to provide students with the theory and practice behind academia, plus expose pharmacy education and the professorate as a profession. **(3)**

EDU 502 *Seminar in Academic Health*. This online self-paced comprehensive seminar course examines research in critical areas related to the trends of an academic health professional. Students will discover examples of pedagogical advances in the health profession including interprofessional education, simulation, and experiential learning. Students will bring their knowledge as a health subject matter expert (Pharmacy, Nursing, Physical Therapy, Medical, Dentistry, etc.) and explore the world of academia. This seminar will focus on a particular subject, in which everyone present is requested to actively participate through blogs, presentations, and research. **(3)**

ETH 115 *Ethics of Belief (formerly LAS 108)*. This course will attempt to investigate the meaning and implications of the following question: What is the moral obligation of people and institutions who claim to know something that is not obviously true, such as the claims of artists, religious believers, politicians, economists, philosophers, scientists and ordinary people on the street? This question forces people who claim to know things to take a special responsibility for their opinions and beliefs. There is another question this course will consider: What is the moral obligation of people and institutions that know or suspect that knowledge claims of others are not true, but false and potentially dangerous? A variety of short readings from a diverse spectrum of knowledge claims and beliefs will be examined closely. Any answers to the two basic questions addressed by the course will come about through the mutual efforts of the instructor and students. **(3)**

ETH 310 *Bioethics (formerly LAS 225)*. In this course students consider the impact of modern medical technology, including drugs, on matters of ethics and policy. . The course focuses on reading and application of ethical theory, as it applies to critically understanding and improving morally-grounded clinical care. Topics will vary, but may include genetic counseling, reproductive ethics, end-of-life care, do-not-resuscitate orders, informed consent in treatment and in research, the right to and the right to refuse treatment, and the allocation of scarce medical resources. In addition, we make use of case studies, occasionally films, and/or presentations with expert guests. **(3); Prerequisite:** Junior Level Standing, or permission of the Instructor

ETH 315 *Health, Disease, and Authority in Medicine*. Modern medicine has heavily relied upon scientific authority to make factual claims about health and disease. Providing good medical care, however, involves knowing more than "just the facts." This class is an opportunity to think carefully about biomedicine's proper role in defining core medical and public health concepts like health, disease, and illness. What is the proper role of technology in health care? What are the basis and limits of clinical diagnoses? What authority do patients have to speak about their own health conditions? How do answering these questions improve our ability to provide morally grounded patient care? **(3); Prerequisite:** Junior Level standing or permission of instructor.

ETH 410 *Special Topics in Bioethics*. This reading-intensive seminar will focus on philosophical theory and its applications to contemporary problems in medicine, science, and technology. Our rigorous group investigation of active moral problems and philosophical questions will draw from both modern and historical texts. Topics will vary based on the instructor's and students' needs and interests. Please note: this is not intended to be an overview course in ethics; instead, we will read deeply around a focused set of topics. **(3); Prerequisite:** Junior Level standing or permission of instructor.

ETH 510 *Health Care and Human Values (formerly LAS 611)*. This capstone experience involves readings from literature and current publications that deal with ethical issues in health care and medical research. This course exposes the students to theories of ethical decision making and to works that treat such topics as the responsibilities of the scientist, the use of drugs in our society, cultural communication gaps in health care, health care in the developing world, and euthanasia; it provides the students with the opportunity to explore the ethical dimensions of these topics in written and discussion form. **(3); Prerequisite:** Fifth Year Standing in the PharmD program, or permission of instructor.

GEN 141 *Introduction to Law*. This course will introduce students to various aspects of the legal system in the United States. Students will understand the history that formed the foundation for American law and the administration of justice, including a review of Constitutional Law and the evolution of the Supreme Court's review of the Amendments over time. Legislative, Judicial, and Administrative processes will be reviewed. Students will distinguish between civil and criminal cases, review landmark decisions of the U.S. Supreme Court, and study various areas of law in detail including Criminal Law & Procedure, as well as various types of Civil Laws & Procedure, including Family Law, Matrimonial Law and Torts. **(3)**

GEN 245 *Budo and Sado (formerly LAS 245)*. Japanese Martial Arts and the Way of Tea. This course will explore the relationship between Budo (the Japanese martial arts) and Sado (the Way of Tea). Sado is also known as Cha-no-yu or the Tea Ceremony in English. The commonalities and the unique aspects of these disciplines will be examined along with their relevance to modern life. The historical context and cultural milieu of these arts will be considered, particularly with respect to their significance in personal growth and development. Zen Buddhism is a significant part of the foundation of both Budo and Sado and a portion of the course will be allocated to reviewing the tenets of Zen and its training methods. Most importantly, students will undergo significant experiential practice in the physical aspects of various Budo and in the Japanese Tea ceremony (the preparation and drinking of ma-cha or powdered green tea). Approximately half of each week's class time will be allocated to discussion of assigned readings and articles and the other half will be experiential. **(3); Prerequisite:** HUM 102

HHS 401 *Health and Human Sciences Capstone*. The Capstone Experience should be a health related, project or applied experience that synthesizes your training at ACPHS with practical, real-world experiences. One applied public health clinical, research, or community-based experience is required during the senior year. Students can choose to complete the Capstone Experience over 1 or 2 semesters in their senior year at ACPHS and can pursue between 3 and 6 academic credit hours. Students must complete status updates throughout the semester, must present their projects/papers/experiences back to the HHS community at ACPHS, and complete a brief evaluation of their experience. **(3); Prerequisite:** Senior level standing in the Health and Human Sciences Program or permission of the instructor.

HIS 110 *American Government*. This introductory course is designed to familiarize students with the concepts, principles, procedures, institutions and conflicts essential to American government and politics. The course is divided into four parts: The first part focuses on the basic features of our constitutional structure: the separation of powers, federalism, checks and balances, and limited government. The second part concentrates on the political inputs: public opinion, political parties, and interest groups. The third deals with the three branches of government: Congress, the President, and the Supreme Court. The fourth part focuses on the policy outputs of government, both domestic and foreign. The course will place an emphasis on health policy. **(3)**

HIS 115 *American Frontier (formerly LAS 278)*. This course analyzes the concept of the frontier in French, Spanish and English colonial histories and how those merged into the United States frontier. Students will explore the mythological icon of the frontier in American history as well as specific political, environmental, and gender elements of the European, Euro-American and Native American frontiers. Last, students will explore water rights, urbanization, the Dustbowl and other elements of the American West, the region most associated with "the Frontier." **(3)**

HIS 120 *Native Americans Through Their Own Eyes (formerly LAS 275)*. This course addresses Native American history and literature from the perspective of native writers and historians. What are the major issues from their vantage? Has the native concept of "history" and "literature" changed since the advent of literacy? Can only natives write about their communities, and, if so, how does a member of one tribe gain consent to write about another tribe with a different culture? Lastly, what do these writers and historians see as the future of their people? **(3)**

HIS 125 *Southwestern American Indian History (formerly LAS 239)*. In this course, students study various elements of Southwestern Indian culture and history from prehistoric times to the modern era. This is a history rather than an anthropology class, but various elements of Native Southwestern culture and society will be incorporated within the historical narrative. **(3)**

HIS 130 *The Indian in American History (formerly LAS 913)*. This course examines how Native American peoples came to the continent (examined through their own myths and modern anthropological interpretations) and the cultures that developed before 1492. The bulk of the course examines chronological historical interaction between Europeans and natives after 1492 and the way this affected the cultures of both groups. **(3)**

HIS 140 *Early American History*. The course examines the history of areas that came to compose the United States by 1840, using the East Coast, Southwest and Gulf Coast as areas of emphasis. The majority of the course will be devoted to the formation of the "United States of America" along the Atlantic coast and the westward progression of that country across the North American continent. As a class we will examine the major cultures, demographics, military conflicts, and political and religious structures which shaped the growth of the US before 1840. This course stresses historical content but, just as important, hones critical thinking skills concerning how we as Americans interpret history. **(3)**

HIS 141 *Modern American History*. The course examines the history of the United States from 1877 to the present. As a class we will examine the major cultures, demographic shifts, military conflicts, and political and religious structures that shaped the United States during that time. The course stresses historical content but, just as important, hones critical thinking skills concerning how we as Americans interpret history. We will utilize a history text but supplement that not only with primary documents that reflect how people of the time felt about the points we discuss, but also secondary articles interpreting historical events from a modern perspective. Since ACPHS emphasizes health care, a large part of our readings and class discussion will focus on health-related topics, such as the effect Spanish flu had on the United States and the world during the WW I era, or how American reaction to the polio epidemic reflects Cold War policies and attitudes. **(3)**

HIS 210 *Hitler's Empire (formerly LAS 134)*. This course examines Germany, Europe and the world as they were shaped or influenced by Adolf Hitler and the National Socialist movement. Among the issues examined: the historical and cultural factors that account for the rise of National Socialism; the extent to which Hitler's personality shaped National Socialist policy and practice; Nazi racial policies and the Holocaust; the economy of and everyday life in the Third Reich; the foreign policy of National Socialism; the role of the S.S. in the Nazi state and the long-term impact of the National Socialist experience on German and world history. **(3); Prerequisite:** HUM 102

HIS 215 *Vietnam War (formerly LAS 891)*. This course examines America's longest war: its background, course and conclusion; the war on the battlefield and the war at home; and the costs and consequences for both the United States and Vietnam. The course will examine fiction, journalism, historical analysis, political theory, film and popular music. **(3); Prerequisite:** HUM 102

HIS 220 *Era of the Russian Revolution (formerly LAS 330)*. This course examines the rise, dominance and decline of Soviet Communism in the 20th century. Students study the economic, political and social conditions that led to revolution; the ideologies that spurred men and women to action; the personalities involved; the nature of the Communist state that resulted; the reaction of the rest of the world; the revolutions of the 1980s and 1990s and the future of Communism. The focus is on careful analysis and discussion of literature, films, music and art – vehicles for understanding communism and Russian life and culture. **(3); Prerequisite:** HUM 102

HIS 225 *The American Civil War (formerly LAS 265)*. This course offers an introduction to the bloodiest war in American history: the Civil War. The course examines the differences that led to the conflict; the social, political and economic characteristics of the North and South; the nature of the war; emancipation and its consequences; conditions on the home front; the Reconstruction era after the war; and how American memory of the war over the past 140 years has helped to define and shape the nation that the United States is today. **(3); Prerequisite:** HUM 102

HIS 230 *America in a Global Context*. This course explores the relationships between the United States and such regions of the world as the Caribbean, South America, Africa, East Asia, the Pacific Rim, Europe, and North America. Emphasis is on social, cultural, political, and economic interactions over the past two centuries and in the contemporary world. The goal of the course is to illustrate how the United States has always been part of the world, and, at the same time, how the world has always been part of the United States. **(3)**

HIS 310 *International Relations (formerly LAS 127)*. This course examines the changing nature of power in world politics since the end of World War II. Topics include the causes of international conflict, the consequences of international economic competition, ecology, human rights and international law, the future of the individual nation-state and regional and global government, global ideologies of the future and the “hot spots” of the world – today and in the near future. Students are required to develop and maintain a working familiarity with current developments around the globe. **(3); Prerequisite:** HUM 201

HIS 315 *Modern American Foreign Policy (formerly LAS 131)*. This course examines the theory and practice of foreign policy as conducted in the United States in the post-World War II/post-Cold War eras. Topics include historical traditions of U.S. foreign relations, the role of the presidency, Congress and non-governmental organizations in making and influencing foreign policy, concepts of national security and national interest, war as an instrument of foreign policy, the constitutional and legal bases of U.S. foreign policy and contemporary problems in U.S. foreign policy. **(3); Prerequisite:** HUM 201

HIS 320 *American National Character (formerly LAS 333)*. In this course we look into some of the works, from Tocqueville’s *Democracy in America* to Bellah’s *Habits of the Heart*, in which travelers, novelists and social scientists have tried to describe, explore and explain the uniquely American character. **(3); Prerequisite:** HUM 201

HIS 325 *History of the Plagues*. The course examines the history and literature of four plagues: the bubonic plague, the “virgin soil” epidemics of the Americas, the Spanish flu, and AIDS. We will look at physical causes of the diseases, immediate cultural responses, and the way these plagues produced long-lasting effects on local and global cultures, politics, and demographics. **(3); Prerequisites:** HUM 102, COM 115.

HRI 600 G *Issues in Global Health*. This course will introduce students to important concepts of the public health fields and critical links between global health and social and economic development. Students will learn about health inequalities and the socioeconomic context of disease. While the course will be global in coverage, its focus will be on the developing world and on the health of the poor. **(3)**

HRI 610 G *Experimental Design and Research Methods*. Qualitative research has a long history in the social sciences. Its roots can be traced to anthropology, philosophy and sociology and its use as a method of inquiry goes back to the early decades of the twentieth century. Qualitative approaches are becoming part of alternative forms of research in medicine as practitioners look at the complex health issues that are often confronted. Qualitative research tends to seek answers to problems about which little is known and its aim is to elicit explanations from the “patient’s point of view”; thus seeking the *meaning* or the *experience* of the individual. In other words, qualitative methods enable researchers to access areas of inquiry not typically amenable to quantitative research. In contrast, the use of “objective” measures based on diagnostic criteria, whether physiologically or laboratory-based often rely on numbers, but cannot be completely removed from qualitative aspects of a diagnosis. The aim of this course is to introduce some of the qualitative and quantitative research methods currently used in health care research and to explore how they can be appropriately and fruitfully employed. **(3)**

HRI 620 G *Diseases and Social Perception.* Diseases have meanings and those meanings translate into the way in which sufferers and society perceive and engage with their disease. Discourse on disease is often most charged when the disease in question threatens to cross borders, socioeconomic, national, or otherwise and, in these instances, the media is often complicit with “othering” the disease in a way that may have very real, material consequences. Examples from recent media coverage that have “otherized” the etiology of diseases, whether the disease covered is SARS as an Asian disease, the swine flu as a Mexican disease, Tuberculosis as an immigrant disease, or HIV/AIDs as a Haitian disease. In addition, effective therapy and support is often hampered by how social perception stigmatizes diseases such as mental illness, autism, Down syndrome and the like. This is no less so in the case of the sufferer’s self-image: when a woman undergoes a radical mastectomy, or when one is the victim of a disfiguring accident. The outcome, in terms of disease management and resources, is further influenced by the media’s shaping of society’s perception of the “disease of the day” through language. Through a look at several case studies and current literature, this course will focus on the ways in which disease takes on meaning and, in many cases, emerges as a signifier for something altogether different. **(3)**

HRI 630 G *Global Challenges in Environmental Medicine.* Environmental impact on human health with the development of what often reaches epidemic proportions of concern is not limited to the interaction between an etiological factor and the individual. In fact, what this environment becomes is often determined by human behavior. In a global community, it has become a priority in public health prevention and communication. In an interdependent environment, questions of water and air quality have political and social ramifications, with human health being the victim. The efforts to increase agricultural yields through pesticide and synthetic fertilizer use and chronic illness are no longer issues confined to a village or a limited region. The race for prosperity through industrial development and adoption of the superficial trappings of prosperity are not without their medical consequences. Through the use of case studies, the interplay between culture, geopolitics, ecology and medicine, are explored: from Minamata Bay to the Hudson River to the Faroe Islands; the Amazon to Toms River, New Jersey; the sands of Arabia to Los Angeles; from acid rain to nanoparticles; from the Nile to bottled water. **(3)**

HRI 640 G *Leadership and Professional Development for Health Care Professionals.* This course is designed to introduce the skills, concepts and interactions that are critical for the development and enhancement of leadership in the health care workplace. The lectures, discussions and exercises are targeted to physicians, pharmacists, clinical diagnosticians, nurses, biomedical researchers and industrial professionals. Guests and video topics will supplement the course work. The course requires student participation and student presentations. **(3)**

HRI 650 G *Current Issues in Health Outcomes.* This course focuses on timely and contemporary issue in health outcomes research. It may include such topics as bioinformatics, regulatory issues, recent discoveries and/or strategies in disease diagnosis, issues of public health and disease prevention based on breakthroughs, translational research, recent drug discovery and or diagnostic tools and the impact of genomics. This course requirement may also be satisfied with courses numbered 600 or higher in other related disciplines depending on the student’s interest and background. Other substitutions from other programs must be approved by the department chair. **(3)**

HRI 660 G *Evidence-Based Medicine.* In the age of pharmacogenomics and global health care, it has become evident that the traditional paradigm in medical practice and therapeutics is no longer applicable. Scientific evidence has demonstrated that the diversity in our genetic profiles, diet, nutrition, cultural practices, and religious belief impact on our ability to deliver effective therapy, communicate risk of disease, implement preventative measures and predict the efficiency of health outcomes. Through case studies, these convergent issues are discussed. **(3)**

HRI 701 G *Thesis in Health Outcomes Research I.* Students will pursue a thesis project in a health outcomes research area selected to appropriately match their chosen career goals. In conjunction with work in Scientific Communication, students will perform an in-depth literature search and develop a testable hypothesis. The student and mentor then will work together to define a series of experiments that can be conducted to test the hypothesis. The student will learn the necessary techniques, conduct the experiments and analyze the data under the guidance of the mentor. Work on the project is continued in Thesis in Health Outcomes Research II. **(1 to 6 credits).** In consultation with the Department Chair and Program Director.

HRI 702 G Thesis in Health Outcomes Research II. Students will pursue a thesis project in a health outcomes research area selected to appropriately match their chosen career goals. In conjunction with work in Scientific Writing, students will perform an in-depth literature search and develop a testable hypothesis. The student and mentor then will work together to define a series of experiments that can be conducted to test the hypothesis. The student will learn the necessary techniques, conduct the experiments and analyze the data under the guidance of the mentor. Work on the project is continued from Thesis in Health Outcomes Research I. **(1 to 6 credits)**. In consultation with the Department Chair and Program Director.

HSS 225 Econometrics. This course introduces students to multiple regression methods for analyzing data in economics and related disciplines. Extensions include regression with discrete random variables, instrumental variables regression, analysis of random experiments and quasi-experiments, and regression with time series data. Accordingly, the emphasis of the course is on empirical applications. **(3); Prerequisites:** MAT 145, and MAT 111

HSS 310 Regulatory Economics. This course introduces students to the role of the government in markets where competition “fails” and monopolies result. The course examines the creation of regulations and policies that affect parts of our everyday life, such as telecommunications, transportation and the health industry. Students study the role of governmental agencies, focusing on the environment, health and worker safety. The course makes use of current events to illustrate the role of these regulations and policies. **(3)**

HUM 101 The Pre-Modern World. The first semester in a required three-course sequence, is an interdisciplinary course that surveys major world intellectual and cultural traditions from pre-history to the onset of the Modern Era (circa 1700 C.E.). We will read widely in history, literature, philosophy, fine arts, politics and economics to develop an understanding of the interrelated forces that shaped the dominant cultures across the globe. The study of themes will be employed to engage with the topics of the course including faith and reason, nature and civilization, individual and community, identity and the other, gender, and technology. **(3)**

HUM 102 The Modern World. The second semester in a required three-course sequence, is an interdisciplinary course that builds upon and incorporates ideas and skills from Humanities 101 as it surveys major world intellectual and cultural traditions from the onset of the Modern World (circa 1600 C.E.) to the middle of the 20th century and the post-World War II world (circa 1950). Students read widely in history, literature, philosophy, fine arts, politics, and economics to develop an understanding of the interrelated forces that shaped dominant cultures across the globe. The study of themes (faith and reason, nature and civilization, individual and community, identity and the other, gender, technology) helps students to engage with the topics of the course and develop critical thinking skills. **(3); Prerequisite:** HUM 101

HUM 140 Travel in Literature and Images (formerly LAS 171). In this course, students study travel literature and images beginning with Homer’s *The Odyssey* and ending with contemporary accounts. Students also create their own travel reports to share with the class during the last few weeks of the semester. This course asks students to consider not only how the act of travel but also how representations of travel can help us to understand ourselves, others, and the world. **(3)**

HUM 145 Challenged, Banned, Censored: Visual Art and Literature (formerly LAS 233). This course investigates various works of art and literature that have been, for whatever reason, challenged and banned from the public eye. Censors claim they are preserving the values of society, but their opponents claim they violate an individual’s right to intellectual freedom. Discussions on visual art treat the shocking first Impressionist shows as well as the Nazi exhibit of “Degenerate Art.” Readings include originally challenged or banned works that are now crucial elements of our cultural literacy. **(3)**

HUM 155 African-American Literature and Music (formerly LAS 257). In this course, students study African-American literature and music to understand African-American experiences and culture in historical, national, and global contexts. We consider how African-American literature and music (e.g., spirituals, blues, jazz, soul, and rap) can help us to understand ourselves, others, and the world. **(3)**

HUM 160 Fiction and Film (formerly LAS 334). This course examines five novels critically in terms of the authors’ lives and the society of the time, and then considers the films made from these novels. **(3)**

HUM 165 *Introduction to Greek Mythology through Literature and Film (formerly LAS 337)*. Students examine Greek mythology from several points of view and then see how Greek writers employed myths in several different plays. These plays will be studied as films. **(3)**

HUM 201 *The Contemporary World*. Building on the foundation established in HUM 101 & 102, this course presents a thematic approach to understanding contemporary issues and events. This course requires students to employ the themes of faith and reason, nature and civilization, individual and community, identity and the other, gender, and technology to engage with, understand, and evaluate the contemporary world. Topics and areas may include the following: The U.S. in a Global Context, The Middle East, The Digital Revolution, 21st Century Health Issues, The Use of Natural Resources, Nationalism, Religious Fundamentalism, Globalization, The Post-September 11th World, Contemporary Social Movements, as well as other timely topics and/or areas. **(3); Prerequisite:** HUM 102

HUM 245 *Human Rights in the Age of Genocide*. Designed for students who wish explore the concept of human rights in an era when genocide has become a common warring practice in various regions of the world, this course studies significant genocides of various ethnic and minority groups. The course will look at the universal declaration of human rights and the practices of human rights groups such as Amnesty International, Human Rights Watch and engage the various readings and films/documentaries of genocidal events, the precipitating events and the aftermath of those genocides. **(3); Prerequisite:** HUM 101

HUM 250 *Visual Art and Literature of the 20th Century. What is "modern?" (formerly LAS 234)*. This course concentrates on the growing sense of modernity that began in European culture at the end of the 19th century, moved to the United States after World War II and now is creating the reaction of "post-modernism." Class discussion focuses on the rapidly shifting movements of modern art and parallel developments in literature. **(3); Prerequisite:** HUM 102

HUM 255 *Caribbean Literature and Music (formerly LAS 258)*. In this course, students study Caribbean literature and music to understand Caribbean, and especially Afro-Caribbean, experiences and cultures in historical, national, and global contexts. This course also includes a unit on health and health care in the Caribbean. Overall, this course considers how Caribbean literature and music (e.g., calypso, reggae, dancehall, soca) can help us to understand ourselves, others, and the world. **(3); Prerequisite:** HUM 101

HUM 260 *African Literature, Film, and Music (formerly LAS 252)*. In this course, students study African literature, film, and music to understand African experiences and cultures in historical, national, and global contexts. This course also includes a unit on health and health care in Africa. Overall, this course considers how African literature, film, and music can help us to understand ourselves and others with an emphasis on appreciating the impact of African cultures throughout the world. This course is taught in conjunction with ACPHS's annual Africana Film Series. **(3); Prerequisite:** HUM 101

HUM 265 *Changing Images of Asia (formerly LAS 254)*. The basic assumption underlying this course is that popular novels and related films have had a dramatic, and often negative, impact on shaping our images of Asia, particularly Southeast Asia. This course will critically review and examine popular readings about Asia in general and Southeast Asia in particular and feature films based on the readings. **(3); Prerequisite:** HUM 101

HUM 270 *Japanese Language and Culture I (formerly LAS 240)*. This course offers basic language instruction and an introduction to the history and culture of Japan. Students will learn about the rich cultural history of Japan as a whole and also see its progression from feudal to modern society. The course will critically review literary and popular readings and also feature films and documentaries based on the readings. **(3); Prerequisite:** COM 115

HUM 275 *Japanese Language and Culture II (formerly LAS 260)*. In this second introductory course on Japanese, there is a greater emphasis on language with the goal of developing both conversational and reading skills at a solid basic level. With regard to written language, students will be expected to have already learned the hiragana and katakana syllabaries. This course will make extensive use of kana while beginning to learn kanji (Chinese characters). The conversational aspects of language will focus on expanding vocabulary, grammatical structure, and sentence complexity. The language component will require extensive practice by the student outside of class time. The cultural component of the course will involve modern day Japan (post World War II) and interplay between various media and the evolution of the Japanese language. **(3); Prerequisite:** HUM 270 or permission of the instructor

HUM 280 *Studies in Leadership (formerly LAS 341)*. This course takes a biographical and theoretical approach in exploring the origins and nature of effective leadership. In particular, the course examines the lives of representative “leaders” in selected fields – including the military, business, education, the arts and health care – in order to identify the characteristics of effective leadership and to determine whether those characteristics are innate or learnable. **(3); Prerequisite:** HUM 102

HUM 285 *Culture and Customs of Senegal*. This course introduces students to the culture and customs of Senegal (West Africa) including the role of culture and customs in health and health care. Although this course can be taken without going to Africa, the course prepares students for a 3-week (June - July) study abroad in Senegal. Students who go to Senegal intern in one of the following areas: healthcare, art therapy, orphan care, women’s rights, the environment, or teaching. Pairs of students reside with selected Senegalese families. Activities in the capital Dakar include attending lectures at the West African Research Center and day trips. During a 10-day guided tour of the country, we visit the Holy Sufi City of Touba, small villages, an artist colony, Saloum Delta National Park, and go on wildlife safaris. As determined by a student’s program and in consultation with the course instructor and the student’s program director, a student in an appropriate year of study can earn 3 credits for this course and then additional credit by fulfilling the course requirements of CLK 803 for IPPE in Patient Assessment credit, CLK 806 for IPPE in Public Health credit, or HHS 401 for Capstone Experience credit. **(3); Prerequisite:** HUM 101

HUM 386 *Culture, Customs, and Health of Belize*. Although this course can be taken without leaving Albany, this course prepares students for a 2-week study and medical mission in Belize (during the January following the fall semester). During the fall semester, students learn about Belize and give presentations on tropical diseases, developing-world health care, and health conditions specific to Belize. Students also prepare pamphlets and educational skits and practice the basic health-clinic skills they will use in January. In Belize, students immerse themselves in Belizean culture by living with families in San Ignacio (2 or more students per family), attending lectures and workshops, visiting Maya ruins, hiking, caving, and snorkeling the world’s second longest barrier coral reef. In villages along Belize’s border with Guatemala, students set up and run health clinics, participate in medical home visits, and educate grade-school students about health and hygiene. As determined by a student’s program and in consultation with the course instructor and the student’s program director, a student in an appropriate year of study can earn 3 credits for this course and then additional credit by fulfilling course requirements of CLK 803 for IPPE in Patient Assessment credit, or HHS 401 for Capstone Experience credit. **(3); Prerequisite:** COM 115, HUM 102.

IPS 301 and IPS 302 *Integrated Problem Solving Workshops I and II*. In the Integrated Problem Solving Workshops students will be required to solve problems which incorporate information from the courses offered during that term as well as previously mastered material. The goal of these workshops is to assist students in mastering course material in an active learning environment and in a manner that develops problem solving skills. These workshops are designed to cross disciplinary boundaries so that students will need information from more than one class to solve the problem and to foster deeper understanding of the material by the student. Students will be expected to use critical thinking skills, effectively communicate through speaking and function effectively in small group sessions. The workshops will be led by near-peers under the direction of appropriate faculty members. **(1 each); (Doctor of Pharmacy students only.)**

IPS 311 *Workshop Leader Seminar*. IPS311 is designed to provide workshop leaders with the tools necessary to effectively lead students groups through prepared workshop problems in diverse subject areas. Topics of multiple intelligences and learning styles, learning theories, biases (race, gender, political and religious among others) and how they alter leaning will be discusses in addition to workshop specific content. **(1); Prerequisite:** Permission of the instructor

IPS 401 *Integrated Problem Solving Workshops III.* The Integrated Problem Solving Workshops will integrate information from the courses offered during that term (and build on previously mastered material) in a way that assists students to understand and apply course material through an active learning environment that supports the development of problem solving skills. In addition, these workshops are designed to cross disciplinary boundaries to foster deeper understanding of the material by the student. Students will be expected to employ critical thinking skills, effectively communicate and function efficiently in small group sessions. The workshops will be led by near-peers under the direction of a faculty course coordinator. IPS3 will build on the skills that were developed in IPS 1 – 2. The integrated problem solving workshops will integrate information from previously mastered courses with the courses offered during the Fall P2 semester in a way that assists students in mastering course material in an active learning environment and in a manner that helps to develop problem solving skills.. IPS III will begin to incorporate pharmacology and therapeutic topic areas into a clinically oriented discussion, evidence-based decision making and SOAP note preparation. IPS3 will introduce students to a more therapeutically focused case-based approach to learning. Faculty teaching in the concurrently taught courses will author clinical cases that will be used in IPS3. **(1); Prerequisite:** IPS 301, IPS 302

IPS 402 *Integrated Problem Solving Workshops IV.* The Integrated Problem Solving Workshops will integrate information from the courses offered during that term (as well as previously mastered material) in a way that assists students in mastering course material in an active learning environment and in a manner that helps to develop problem solving skills. In addition, these workshops are designed to cross disciplinary boundaries to foster deeper understanding of the material by the student. Students will be expected to employ critical thinking skills, effectively communicate through speaking and function effectively in small group sessions. The workshops will be led by near-peers under the direction of a faculty course coordinator. IPS4 will build upon the skills and tactics taught in IPS workshops 1 through 3. More specifically, this workshop will start to build more clinically oriented decision making and SOAP note documentation. For IPS4, students will take a more clinically oriented case-based approach to learning. Faculty teaching in the concurrently taught courses will author clinical cases that will be used in IPS4. Students will continue to advance the skills learned in IPS 1-3 with respect to evidence-based approaches to clinical cases, writing more complete and sophisticated SOAP notes, and engaging in critical thinking and problem-solving with respect to clinical scenarios which are developed using material taught in the previous and concurrent semester of Spring P2. **(1); Prerequisite:** IPS 301, IPS 302, IPS 401

IPS 501 *Integrated Problem-Solving Workshop V.* The Integrated Problem Solving Workshops will integrate information from the courses offered during that term (as well as previously mastered material) in a way that assists students in mastering course material in an active learning environment and in a manner that helps to develop problem solving skills. In addition, these workshops are designed to cross disciplinary boundaries to foster deeper understanding of the material by the student. Students will be expected to employ critical thinking skills, effectively communicate with peers and facilitators and function effectively in small group sessions. The workshops will be led by near-peer leaders or faculty members. IPS V will build upon the problem solving and patient-centered care skills introduced and reinforced in IPS workshops 1 through 4. IPS V assists students in mastering course material in an active learning environment and in a manner that helps to further develop and refine problem-solving skills. Building upon the problem-solving abilities and patient-centered care skills introduced and reinforced in previous IPS workshops, IPS V engages students in discussion of patient-oriented care that requires integration of course material and practice foundations from the previous semesters of the professional curriculum. IPS V is distinguished from previous IPS workshops by offering increasing complex patient case examples for students to be able to practice written and verbal professional communication that utilizes sound therapeutic thought processes and drug information retrieval skills for identifying and resolving medication-related problems in various patient care settings. Emphasis will be placed on the student ability to employ and articulate rational clinical decisions or recommendations that are evidence-based, including a formal written patient assessment and care plan in a formal Subjective, Objective, Assessment, and Plan written “SOAP” note. **(1); Prerequisites:** IPS 301, IPS 302, IPS 401, IPS 402

IPS 502 *Integrated Problem-Solving Workshop VI.* The Integrated Problem Solving Workshops will integrate information from the courses offered during that term as well as previously mastered material in a way that assists students in mastering course material in an active learning environment and in a manner that helps to develop problem solving skills. In addition, these workshops are designed to cross disciplinary boundaries to foster deeper understanding of the material by the student. Students will be expected to employ critical thinking skills, effectively communicate with peers and facilitators and function effectively in small group sessions. The workshops will be led by faculty members. IPS-6 will build upon the problem solving and patient-centered care skills introduced and reinforced in IPS workshops 1 through 5. IP-6 is the sixth and final workshop of the Integrated Problem Solving series. IPS-6 is a continuation of previous workshops in that it will be a small-group, facilitator-led discussion centered around patient care that integrates materials taught previously or concurrently in the required PharmD curriculum. IPS-6, however, is distinguished from previous workshops in that the complexity of patient cases will be enhanced and will require students to present at least one evidence-based professional presentation (seminar component). Cases for IPS-6 will be authored by Pharmacy Practice faculty and include challenging multidisciplinary patient scenarios, therapeutic controversies and actual and potential drug-related problems for students to evaluate. Students will be required to critically evaluate literature to synthesize appropriate evidence-based recommendations that will be presented in small group discussions as well as in individual formal seminar case presentations. The practice of Medication Therapy Management will be reinforced in IPS-6. **(3); Prerequisites:** IPS 301, IPS 302, IPS 401, IPS 402, IPS 501

LIT 130 *Creative Writing (formerly LAS 133).* In this course, students read and write fiction, non-fiction and poetry. In a writing workshop setting, students also read and respond to each other's work. **(3)**

LIT 135 *The Short Story (formerly LAS 212).* In this course, students read, discuss and interpret the short story as it occurs in one or more periods or places. **(3)**

LIT 140 *Utopian Literature (formerly LAS 216).* Humans "dream of things that never were and say, 'Why not?'" From descriptions of the Golden Age and Eden to the latest feminist science fiction, students analyze our changing ideas of the possibility of achieving and sustaining a perfect human society. **(3)**

LIT 145 *Crime and Punishment (formerly LAS 236).* In this class, students read fiction, non-fiction and poetry and view films that deal with the issues of crime and punishment in society. Students write essays and journals responding to the texts and films, and investigate these issues in order to come to an understanding of the complexity of the issues and an awareness of their own stances on these questions. **(3)**

LIT 150 *Shakespeare (formerly LAS 237).* This course focuses on six or seven of Shakespeare's plays. Lectures provide biographical and historical background and class discussions concentrate on the texts themselves, considering structure, character development, imagery and theme. The class also considers the essential differences between comedies, tragedies, histories and romances and traces developing themes from one play to another as we move chronologically through selections of Shakespeare's work. Assignments include journal responses, formal analytical essays and a final panel discussion of a motif traced from play to play throughout the semester. **(3)**

LIT 155 *The Novel (formerly LAS 321).* In this course students read, discuss, and write about world novels. Selections may come from North America, South America, Europe, Africa, and/or Asia. Discussion topics will include themes that illuminate our understanding of the human condition, structural and symbolic devices used by the writers, and historical and biographical contexts. Some attention will be given to defining the novel as a genre and tracing its development over time. Assignments include reading 4 – 6 novels, writing analyses of the novels, and presenting on a comparative thematic topic. **(3)**

LIT 160 *The Drama (formerly LAS 323).* In this course, students study a selection of dramatic works ranging from Classical Greece to the present. Students engage with recurring issues central to the human experience as part of considering how the communal experience of "the theater" can help us to understand ourselves, others, and the world. **(3)**

LIT 165 *American Women Writers (formerly LAS 336)*. How many 19th and 20th century women writers can you name? This course will explore the works and contributions to American literature of some well-known and lesser-known women writers. We will consider several questions. Is there a tradition of American women writers? Do these writers have issues, concerns and themes in common? What are some of the historical and cultural forces that have shaped these writers? Do they speak to our own lives – as men and women – at the start of the 21st century? Students will respond to texts in a variety of writing experiences (journals, essays, fiction and poetry), develop confidence and competence as readers and writers and gain an appreciation for, and enjoyment of, the texts and the writers. **(3)**

LIT 170 *Chaucer (formerly LAS 331)*. This course introduces students primarily to Geoffrey Chaucer's "Canterbury Tales" and peripherally to the author's life and times. Through a close reading of selected tales, reactionary and analytical writing and individual and group oral presentations, students immerse themselves in Chaucer's stories of a group of pilgrims setting off from London on a pilgrimage to the shrine of St. Thomas Becket, buried in Canterbury. The tales at once reveal the social structure and historical milieu of medieval England, thus broadening student understanding of the medieval world view and, by implication, our own, and prompt discussion about life choices, philosophies and attitudes. Simultaneously, students gain further experience in critical reading, thinking, writing and speaking. **(3)**

LIT 180 *Native American Mythology (formerly LAS 246)*. In this course, students study various elements of mythology from diverse Native American cultures of northern and central America. Particular themes relevant to native cultures are examined and then placed in the context of what they mean to native world views and world mythologies. Some of the major themes include creation myths, concepts of illness and death and cyclical time. Some of the major figures examined include Grandmother Spider, Changing Woman, Sedna and Coyote. **(3)**

LIT 210 *English Novel (formerly LAS 117)*. This course will provide a close critical reading of selected English novels, including the works of E.M. Forster, Aldous Huxley and Thomas Hardy. **(3); Prerequisite:** HUM 102

LIT 215 *American Literature Since 1900 (formerly LAS 147)*. This course considers the contributions of 20th and 21st century American literature, with an emphasis on character, structural and thematic analysis against archetypal patterns of lost innocence, the journey home and resurrection. The class will search for a tentative definition of the contemporary American hero from a diverse selection of authors: male and female, black and white, Northern and Southern. In written and oral assignments designed to develop the student's own response to the literature, they will search for touchstones for their own lives and the lives they read about. **(3); Prerequisite:** HUM 102

LIT 220 *Suicide and/as Literature: East-West (formerly LAS 161)*. The phenomenon of suicide, familiar as an object of sociological inquiry and clinical therapeutic concern, also has been a prevalent narrative component of literary traditions throughout the world. This course will investigate suicide as a comparative conceptual device in a range of literary traditions extending from Europe to Africa, the United States, Japan and India. **(3); Prerequisite:** HUM 102

LIT 225 *World Masterpieces I (formerly LAS 253)*. This is the first of two courses offered to enhance the understanding of narratives that cover milestones in literature and culture from around the world. The canonical texts from various countries/regions will focus on the multiple origins and histories of the cultures and politics being considered. Selections range from the ancient (World Masterpieces I) to the modern (World Masterpieces II). **(3); Prerequisite:** HUM 101

LIT 310 *Middle Eastern Literature and Film*. In this course, students study Middle Eastern literature and film to understand Middle Eastern, and especially Muslim, experiences and culture in historical, national, and global contexts. We consider how Middle Eastern literature and film can help us to understand ourselves, others and the world. **(3); Prerequisite:** HUM 201

LIT 315 *Irish Literature Since 1900 (formerly LAS 413)*. This course considers the literature that emerged from 20th - century Ireland, literature formed both by the search for a national identity and by universal forces that transcend both time and place. Through reading and discussion of a selection of Irish fiction, drama and/or poetry, we gauge the power of the word to entertain, to communicate, to self-preserve and even to wage war. Assignments include journal responses, analytic essays and a final panel discussion of a motif traced throughout the readings during the semester. **(3); Prerequisite:** HUM 201

LIT 320 *The Epic (formerly LAS 311)*. The Epic is a course that focuses on defining and understanding the most ancient written genre of western culture. Students will examine epics from the ancient world to the present and come to an understanding of why the poem being studied is an epic, how this particular epic defines, and in some cases redefines, the genre, and what the universal themes of the piece say about the human condition. Possible epics for analysis include *The Iliad* and *The Odyssey* by Homer, *The Aeneid* by Virgil, *The Divine Comedy* by Dante, and *Paradise Lost* and *Paradise Regained* by Milton. Texts will change each time the course is offered. Some semesters will include the study of an epic and later re-workings of the story in literary history to see how different eras translate old forms and stories for their own times. Assignments will include formal and informal writing, and group and individual oral presentations. The small class size will allow for regular informal discussion. **(3); Prerequisites:** COM 115, HUM 201

LIT 350 *Special Topic in Shakespeare*. In this upper division course, students will read a selection of plays by William Shakespeare, the list for which will vary from semester to semester. What will be constant is an examination of structural theories of comedies and/or tragedies, drama as a genre, and thorough literary analyses of the works of Shakespeare through close readings of selected plays and class discussions. The historical and biographical contexts of Shakespeare will be given some consideration. Students should expect to write formal essays and informal responses, and deliver oral presentations about the readings and actively participate in class discussions. **(3); Prerequisite:** HUM 101, HUM 102, HUM 201, and COM 115.

LIT 390 *Independent Study in Literature*. This course provides an opportunity for students to participate in a specialized study of a particular facet of literature. Examples may include a genre of literature, time period, or an author's body of work. The student under faculty advisement must submit a proposal to the Department Chair for approval. **(1-3); Prerequisite:** Permission of the instructor

MAT 111 *Calculus*. This course is a study of algebraic and transcendental relations, with emphasis on applications in the physical sciences. Limits, differentiation, applications of derivatives, related rates, implicit differentiation, integration by substitution and applications of integration will be the main topics covered. **(4)**

MAT 115 *Introduction to Laboratory Data*. This course introduces the mathematics needed to collect and describe data from laboratory sciences. The course covers assessment and evaluation of measurement and experimental error and descriptive statistics. It also covers evaluating, solving and graphing relationships that are linear, exponential and logarithmic. Linear regression is used to fit data for zero (linear) and first (exponential) order processes. **(2); Lecture and Laboratory**

MAT 121 *Calculus I*. This is the first course in a two-semester sequence of calculus involving the study of algebraic and transcendental relations, with emphasis on applications in the physical sciences. Limits, differentiation, applications of derivatives, related rates, implicit differentiation, integration by substitution and application of integration will be the main topics covered. **(4)**

MAT 145 *Elementary Statistics*. This course covers general statistical methods used in the collection, presentation, analysis and interpretation of statistical data. It includes measures of tendency, dispersion, probability theory, probability distributions, central limit theorems, hypothesis testing on proportions and means, ANOVA, regression analysis and correlation. This course will require statistical applications using computer software. Applications in biology, chemistry, health care and pharmaceutical science will be explored. **(3)**

MAT 155 *Statistics*. This course covers general statistical methods used in the collection, presentation, analysis and interpretation of statistical data. It includes measures of tendency, dispersion, probability theory, probability distributions, central limit theorems, hypothesis testing on proportions and means, ANOVA, regression analysis and correlation. This course will require statistical applications using computer software. Applications in biology, chemistry, health care and pharmaceutical science will be explored. *This course is open only to students in the College's BS programs.* **(3)**

MAT 211 *Calculus II*. This course is a continuation of MAT 121 and is a study of algebraic and transcendental relations, with emphasis on applications in the physical sciences. Transcendental functions, applications of integration, integration techniques, infinite series and sequences, plane curves, parametric equations and polar coordinates will be the main topics covered. **(4); Prerequisite:** MAT 121

MAT 235 *Differential Equations*. Topics covered include but are not limited to: Linear differential equations, systems of differential equations, boundary value problems, existence theorems, applications to the sciences. **(3); Prerequisite:** MAT 211

MAT 290 *Independent Study/Research*. This course provides an opportunity for students to participate in (1) a hands-on research experience or (2) a specialized study project under the guidance of a faculty member. The number of credit hours and scope of the project undertaken are at the discretion of the faculty member involved. MAT 290 is generally reserved for introductory level experiences and/or smaller scale projects. Students are expected to perform three hours of research or project related work per credit hour earned. **(1-3); Prerequisite:** permission of the instructor

MAT 411 *Randomized Controlled Trial Methods via CONSORT*. The Consolidated Standards of Reporting Trials (CONSORT) encompasses various initiatives developed to alleviate the problems arising from inadequate reporting of randomized controlled trials (RCTs). The main product of CONSORT is an evidence-based, minimum set of recommendations for reporting RCTs. The course, which will outline and detail many of the CONSORT guidelines regarding methods and results, will benefit those wishing to develop a better understanding of the statistical methods commonly found in the RCT literature as well as discerning important analytical components of pharmaceutical research. Topics will include discussions of sample size, power, outcomes, summary of results and statistical methods. **(1); Prerequisites:** PHD 410, MAT 145 or permission of the instructor.

MAT 490 *Independent Study/Research*. This course provides an opportunity for students to participate in (1) a hands-on research experience or (2) a specialized study project under the guidance of a faculty member. The number of credit hours and scope of the project undertaken are at the discretion of the faculty member involved. MAT 490 is generally reserved for more advanced research projects of students with prior research experience. Students are expected to perform three hours of research related work per credit hour earned. Faculty members may expect students to present their research in venues either internal or external to the college. Students are expected to perform three hours of research or project related work per credit hour earned. **(1-3); Prerequisite:** permission of the instructor

MAT 610 G *Statistical Inference and Modeling*. This course provides students with a basic knowledge of biostatistics. It includes methods of experimental design and data analysis used to make inference. Topics covered will include confidence intervals, hypothesis testing, multivariable regression, generalized linear models, survival models and analysis of variance. The course will also include a component which introduces the students to statistical programming. Students are required to have a laptop that runs Windows for proper installation of the course software. This is a 3 credit course and will be offered jointly with PSC672G, Experimental Design and Data Analysis. Students registering for PSC672G will not cover all topics and receive only 2 credits upon completion. **(3)**

MUS 110 *The World's Music (formerly LAS 247)*. This course explores world cultures through their music. The course begins with an overview of some different ways of listening to music and exploring sound as a cultural phenomenon. A primary goal of this course is to help students move beyond some preconceived notions of music in order to open minds and ears to a wide variety of music through a selection of case studies, including, but not limited to, Africa, Asia, Latin America and ethnic immigrant cultural communities in North America. The music of these cultures is explored both as a product and reflection of culture and as a form of artistic expression. **(3)**

MUS 120 *American Roots Music*. This course explores the musical forms, genres and instruments that uniquely evolved on American soil and serve as the basis of American popular music today. More than just a reflection of the diversity of the American experience, students will make connections to important social, political, historical and literary movements of the 19th and 20th centuries. **(3)**

PAD 316 *Pharmacy Management*. This course gives the future pharmacy practitioner a basic understanding of sound management principles and skills for the operation of any pharmacy. **(3)**

PAD 317 *Principles of Management*. Analysis and description of management principles and processes from the classical and behavioral points of view. Suggested topics include job satisfaction, turnover, productivity, motivation, job design, staffing, performance appraisal, leadership and communication. **(3)**

PAD 318 *Organizational Management Theory*. This course is about organizations – large and small, simple and complex, profit and nonprofit – from the position that organizational theory can explain the structure and functioning of a great variety of different establishments. The course aims to systematize a rapidly growing body of knowledge about organizations and to show how this knowledge can be applied to the practical work of designing effectively performing organizations. Focus will take place on the individual or groups of individuals, to the extent that their behavior affects the organization they are operating in or are themselves affected by the way the organization is functioning. **(3)**

PAD 322 *TQM in Health Care*. This course provides students with an overview of total quality management (TQM) theory and techniques. This study of TQM focuses on the health care services sector. The concept of quality is examined from two perspectives: medical error reduction and optimal health care outcomes. Special consideration is given to the application of TQM to the delivery of pharmaceutical care. The TQM movement has revolutionized industry during the past 20 years. The manufacturing sector of the U.S. economy was first to adopt TQM processes. The services sector, however, has not embraced TQM to the same extent. The health care services industry has much to gain from the adoption of TQM. With increased scrutiny from government and a demand for greater accountability from payers and patients alike, the health care services industry has begun to accelerate the adoption of quality improvement initiatives. **(3); Prerequisite:** PAD415

PAD 325. *Issues in Health-System Administration*. Successful administration of pharmacy practice in a health system requires attention to many issues. Finance and cost-containment, quality improvement, government regulations, industry trends and human relations are all significant factors that impact upon the administration of a pharmacy department. This course examines the various skill sets required for administration of a health-system pharmacy. Examples of topics discussed in the course include procurement, formulary management, automation and information technology, reimbursement and human relations. **(3); Prerequisite:** PAD415

PAD 333 *Social Aspects of Health Care*. This course educates students about the relationship between human health and society, economics, politics, ideology and biology through examination of the history of human health policy and contemporary issues. **(3); Prerequisite:** PAD415

PAD 351 *Introduction to Sales and Marketing in the Pharmaceutical Industry*. This course will provide students with a basic understanding of the pharmaceutical industry, with an emphasis on pharmaceutical sales and marketing. Attention also will be given to areas such as manufacturing, government regulations and research, and their relevance to pharmaceutical sales and marketing. The student will have an understanding of how these areas relate to pharmaceutical industry customers such as hospitals, practitioners, managed care organizations, employers, insurance companies, long-term care and consumers/patients. Emphasis will be placed on the student's ability to understand the pharmaceutical industry and its customers, and to apply this knowledge in sales and marketing situations. **(3); Prerequisites:** ECN 217 and PSY 201.

PAD 365 *Excel Applications for Decision Making*. Excel Applications for Decision Making is a 3-credit elective course intended to train students to organize, analyze, and present data using MS Excel in order to facilitate decision making. As health care data becomes more available, students will increasingly be asked to arrange, manage, and analyze data in order to better inform decision makers. In this course, students will utilize some of the advanced features of MS Excel software to organize, analyze, and summarize data. Students will then format spreadsheets and create charts to prepare business quality reports. Students will also utilize Excel add-in software to conduct decision modeling with simulations and present results of these analyses. Decision analysis is an analytical technique which allows users to diagram, design, and estimate results of a quantitative decision while testing a variety of assumptions using simulations. **(3)**

PAD 368 *Qualitative Research Methods*. The goal of this course is to give students an opportunity to learn how to design, implement and interpret results from qualitative research. Applications of qualitative research will be discussed, providing students with firsthand knowledge of practices in market research and community needs assessment. The methods learned in this course also will be applied to a student-selected group research project, culminating in a presentation. **(3)**

PAD 372 Health Insurance for Pharmacists. This course will cover the fundamentals of public and private health insurance law, regulations, and operations in the United States. The overall focus will be on policy challenges relevant to pharmacists, health care managers, policy makers, providers and consumers. It will address policy issues affecting structure, performance, and change in the health care system including: roles and responsibilities of Federal and State agencies and associations; roles of Federal and State legislatures and courts; and roles of providers and advocates. The course will also provide students with a detailed introduction of the following: typical questions that a pharmacist may be asked by customers; health insurance operations and how to help customers with their insurance options at the pharmacy counter; how multiple public and private insurances coordinate payment and basics related to insurance billing; as well as issues related to point-of-sale claims processing for pharmacy services. The course will be comprised of class room instruction and discussion, individual research study projects, and a group research project concerning recent changes to health insurance law, regulations, and operations in Vermont and nationally. **(3)**

PAD 391 Topics in Public Health. This course will provide students with a basic understanding of the public health component of the U.S. health care system. Students will be introduced to the historical development of public health (e.g., food and water safety, sanitation and disease monitoring). The current U.S. public health system – both at the state and federal levels – will then be discussed. Key measures of public health will be covered, with an emphasis on disease prevention and in areas where pharmacists contribute to public health goals (e.g., immunization programs). Open to students in years three, four and five only. **(3)**

PAD 393 Introduction to Epidemiology. This is an introductory course in the methods of epidemiology in health care. Epidemiology is the study of the distribution of diseases and the discovery of factors that determine the causes, spread and prevention of disease. This course will provide an introduction to the major analytical methods, calculations and research methods commonly used in epidemiology. The course also will provide many current applied examples of how epidemiology is being used to evaluate contemporary health issues, with special emphasis on the role of prescription drugs and pharmacy services in selected diseases. **(3); Prerequisite:** COM 115 or equivalent.

PAD 433 Profiles in Leadership. This elective is designed to introduce students to models of leadership theory through the exploration of case studies in leadership. Various models of leadership will be presented, along with case studies of leadership. Students will analyze case studies to determine how leadership principles are applied. Students will build a personal code of leadership which they will be able to use in their personal and professional lives. Students will also distinguish the unique differences between leaders and managers. **(1); Prerequisite:** Current PharmD Program Student.

PAD 451 US and Global Healthcare Systems. This course presents a systematic comparative analysis of the evolution, administrative structure, finance, and provision of medical care in selected countries throughout the world. Equity/inequity and the current and looming effects of globalization will be explored. Health and illness are familiar concepts to all of us, but we are used to thinking of them as biological phenomena. This course will expand your understanding of health and illness by looking at them as socio-cultural and socio-economic phenomena. Important differences rooted in culture, ethnicity, social, economic and political factors will be examined to encourage innovative "framing" of U.S. health public policies. This course presents and facilitates the development of an analysis of major health service delivery and management issues from an international perspective. Each country in the world possesses and implements a unique health service delivery system. While there may be many factors, components and issues in common, there are nonetheless many differences. It is important to learn about and analyze other country's healthcare systems, to learn how they treat similar issues and to discover innovations. Improvement often comes through change and innovations, and this study will not neglect the opportunity to learn from others, especially those middle and lower income countries implementing interesting and innovative reforms. By utilizing a comparable model of exploration, we will gain an understanding of the similarities and differences of industrial countries, third world countries and tribal programs in the US. **(3)**

PAD 505 *Quality Improvement in Health Care*. The purpose of this course is to familiarize the student with the concept and the process of Quality Improvement across the Health Care System. Topics to be discussed in this course include the history of quality, leaders and trends in quality and patient safety, measurement and analysis of variation in different environments, and the guidelines for implementing quality management and the continuous quality improvement processes. Additionally, the students will apply knowledge gained by examining the changes that some US Health Care Systems have made and the impact that those changes have had on improving the quality of Health Care to Americans. **(3)**

PAD 510 *Pharmacy Jurisprudence – Vermont*. Examines State of Vermont and Federal legal requirements associated with pharmacy practice and operations including regulation of pharmacy personnel, pharmacies, pharmacy departments, controlled substances, dispensing functions, and prospective drug review and counseling. This course will prepare students for the Multistate Pharmacy Jurisprudence examination (commonly abbreviated as the MPJE). MPJE is a standard examination created by the [National Association of Boards of Pharmacy](#) (NABP) to help individual state boards of pharmacy assess an individual's competency and knowledge so that he or she may be given a license to practice [pharmacy](#). The MPJE tests knowledge of pharmacy law both state and federal. It is required as a prerequisite for a pharmacy licensure. **(3)**

PAD 511 *Jurisprudence – New York*. This course provides an overview of the history of drug law in the United States with an emphasis on New York state law. The current federal and New York state laws are reviewed in depth with a focus on preparing students to pass the MPJE exam[®] and to practice pharmacy in the state of New York. **(3)**

PAD 515 *Pharmacoeconomics and Health Policy*. This is the second course in the sequence of Administration-Management-Economics component of the PharmD curriculum. This course will provide students with an introduction to the principles and techniques of pharmacoeconomics and health outcomes evaluation, and to the methodologies used by decisionmakers and stakeholders to draft and implement health policy. It builds on the economic principles presented in health economics (US and Global Health Care Systems) to describe the major components of the current U.S. healthcare system. Building on that foundation, the course introduces the techniques used for evaluation of health care interventions. These methods provide the basis for measuring and assessing the economic and non-economic consequences of healthcare interventions, emphasizing drug therapy, and pharmaceutical services. Examples of some of the economic methods introduced include: cost of illness analysis, cost-minimization, cost-effectiveness analysis, cost-benefit analysis, and decision analysis. Non-economic measures discussed include general and disease specific quality-of-life (QOL) assessments and health status measurement. Students will demonstrate the ability to critique published studies which use pharmacoeconomic or health outcomes techniques, assessing the quality of the research and drawing relevant conclusions. **(3)**

Prerequisite: PAD 415

PAD 521 *Pharmacy Administration*. Effective administration in pharmacy is contingent upon an appreciation for and understanding of the pharmacy and all of its stakeholders. This course has been designed to focus on the administrative aspects of the practice of pharmacy. Some of the topics covered include strategic and business planning, operations management including the topics of technology selection and quality management, financial topics include third party contract evaluation, inventory management, and financial analysis, and human resources management. The overall purpose of the course is to prepare students to be knowledgeable about and sensitive to the issues concerning pharmacy from the perspectives of all stakeholders (e.g., providers, manufacturers, employees) and to develop the leadership skills necessary for success in practice. **(3);**

Prerequisites: PAD 415, PSC 441

PAD 610 G *Health Economics*. This course is designed to introduce students to the economics of health care, with an emphasis on individual (i.e. demand side) decisions. We will examine how to apply microeconomic tools to analyze health care issues. Topics to be covered include demand for health and health care, individual responses to incentives inherent in health insurance markets, labor market effects, and health capital and health behavior decisions. Additionally, methodological issues for policy evaluation including cost-effectiveness and cost benefit analysis and estimating policy effects will be examined. Discussions will cover theoretical foundations as well as empirical methods and findings. **(3)**

PAD 615 G *Pharmacoeconomics and Health Policy.* This course will provide students with an introduction to the principles and techniques of pharmacoeconomics and health outcomes evaluation, and to the methodologies used by decisionmakers and stakeholders to draft and implement health policy. It builds on the economic principles presented in health economics (US and Global Health Care Systems) to describe the major components of the current U.S. healthcare system. Building on that foundation, the course introduces the techniques used for evaluation of health care interventions. These methods provide the basis for measuring and assessing the economic and non-economic consequences of healthcare interventions, emphasizing drug therapy, and pharmaceutical services. Examples of some of the economic methods introduced include: cost of illness analysis, cost-minimization, cost-effectiveness analysis, cost-benefit analysis, and decision analysis. Non-economic measures discussed include general and disease specific quality-of-life (QOL) assessments and health status measurement. Students will demonstrate the ability to critique published studies which use pharmacoeconomic or health outcomes techniques, assessing the quality of the research and drawing relevant conclusions. **(3); Prerequisite:** PAD 415.

PAD 635 G *Economic Quantitative Analysis I.* Economic quantitative analysis is a broad subject area, with topics ranging from basic statistics to advanced regression techniques. This course takes a mathematical modeling approach. The format is designed to provide a foundation in linear programming and probabilistic techniques. A wide range of decision making tools will be developed and used. This is the first in a two-course sequence. **(3)**

PAD 636 G *Statistical Programming:* This course teaches how to use SAS, or other appropriate statistical software (i.e. R, Stata, etc.), for statistical programming. Since SAS is used extensively at universities, at Fortune 500 type businesses, in government, at research centers, and just about any other place where data are managed and analyzed, knowing how to use SAS is a useful skill for the job market. The class focuses on aspects of statistical programming with SAS. Students will learn the techniques of database management and data manipulation. Other SAS capabilities including the graphics package and the interactive data visualization package, PROC INSIGHT, will be discussed in addition to the basic techniques for one and two sample problems, analysis of variance, linear regression, and categorical data. **(3)**

PAD 675 G *Introduction to Health Systems.* This course presents a systematic comparative analysis of the evolution, administrative structure, finance, and provision of medical care in selected countries throughout the world. Equity/inequity and the current and looming effects of globalization will be explored. This course will expand your understanding of health and illness by looking at them as socio-cultural and socio-economic phenomena. Important differences rooted in culture, ethnicity, social, economic and political factors will be examined to encourage innovative "framing" of U.S. health public policies. This course presents and facilitates the development of an analysis of major health service delivery and management issues from an international perspective. Each country in the world possesses and implements a unique health service delivery system. While there may be many factors, components and issues in common, there are nonetheless many differences. It is important to learn about and analyze other country's healthcare systems, to learn how they treat similar issues and to discover innovations. Improvement often comes through change and innovations, and this study will not neglect the opportunity to learn from others, especially those middle and lower income countries implementing interesting and innovative reforms. By utilizing a comparable model of exploration, we will gain an understanding of the similarities and differences of industrial countries, third world countries and tribal programs in the US. **(3)**

PAD 693 G *Epidemiology.* This course covers the principles and methods of epidemiologic investigation including describing the patterns of illness in populations and research designs for investigating the etiology of disease. Introduces quantitative measures to determine risk, association and procedures for standardization of rates. It also reviews application of basic principles and methods in the design and conduct of epidemiologic studies. Topics include the development of research questions; overview of epidemiologic study designs; sampling, sample size, and selection bias; techniques for data collection, sources of secondary data, and the evaluation of measurement and information bias; confounding and effect modification; techniques for simple and stratified analyses; and an introduction to mathematical modeling in epidemiology. **(3)**

PAD 701 G *Masters Thesis.* This course focuses on an independent, original research project designed by the student, in collaboration with the thesis advisor. The student, working with the thesis advisor develops a hypothesis, specific aims and research strategy to accomplish the aims of the project. The student then develops a thesis proposal which is approved by the thesis committee and work on the project is initiated. The thesis research culminates in a written thesis and thesis defense. **(3)**

PAD 725 G *Econometrics*. This course introduces students to multiple regression methods for analyzing data in economics and related disciplines. Extensions include regression with discrete random variables, instrumental variables regression, analysis of random experiments and quasi-experiments, and regression with time series data. Accordingly, the emphasis of the course is on empirical applications. **(3)**

PAD 741 G *Health Informatics*. Health Informatics will introduce students to an interrelated set of theories, issues, technologies and methods related to the desire to improve healthcare through information technology. Different perspectives on the topic will be presented, with a particular emphasis on human factors and organizational learning. Students will gain practical experience in developing small health-related web applications. This will assist them in understanding the practical difficulties involved in improving systems through technology. In addition to a set of core health informatics topics, students will be given a set of optional topics from which they will choose one to research in depth. **(3)**

PHD 410 *Drug Information and Biostatistics*. This course addresses drug information retrieval, analysis and application. It will instruct students how to obtain and evaluate primary and secondary literature as it relates to the provision of pharmacy/pharmaceutical care. Through the lecture series, students will acquire knowledge of library resources, study design, biostatistics using relevant examples and a method of drug literature evaluation. Two written assignments will provide students an opportunity to apply knowledge learned during lecture and develop literature retrieval and evaluation skills using examples from primary and secondary literature. Students will also be introduced to general drug information topics including; the approach to answering drug information questions, adverse drug event reporting, medication use evaluation and evidence based medicine. Knowledge and skills developed in this course will prepare students for subsequent IPS workshops, seminar and pharmacotherapy course offerings. **(2); Prerequisite:** MAT 145, MAT 227

PHD 451 *Pharmacist-Assisted Tobacco Cessation*. This clinical elective provides students with the necessary knowledge and skills to provide comprehensive tobacco cessation counseling to patients who are current or former tobacco users. The course approaches the concept of nicotine addiction from a pharmacologic, physiologic and psychological perspective. Communication and problem-solving skills are developed in the classroom and enhanced via participation in a tobacco cessation clinic. Upon completion of the course, students will demonstrate competency in tobacco cessation encounters, including assessing a person's readiness to quit, applying tailored strategies to assist patients with quitting and selecting appropriate tobacco cessation aids. **(1)**

PHD 541 *Pharmacists as Immunizers*. Pharmacy-Based Immunization Delivery is a hybrid course that integrates self-learning, live lecture, and vaccine administration skills assessment that was developed by the American Pharmacists Association in conjunction with the National Immunization Program, Centers for Disease Control and Prevention. The course provides students with the skills necessary to become a source for vaccine advocacy, education, and administration. The core curriculum of the course includes a review of the basics of immunology as it pertains to vaccines, provides immunization education and training, as well as provide the necessary skills to develop a successful immunization service for a wide variety of patients in many different settings. The completion of this course will result in a certificate that satisfies the legal requirement for training needed for pharmacists to immunize in 49 out of 50 states. **(1); Prerequisite:** PSL 432

PHD 556 *New Drug Therapies*. In preparation for APPE, board exams, and practice, this course aims to provide P3 students with opportunities to assess the role of newer drugs therapies in the management of various disease states already taught in the PTPM curriculum. Students will participate in weekly learning activities after attending pharmacist-led lectures and case-based discussions that evaluate newer vs. established drugs therapies. Students will practice identifying and evaluating literature/drug information resources to make evidence-based recommendations. The course will be taught by ACPHS Faculty along with pharmacists who are currently participating in a Teaching/Learning Program with ACPHS while completing post-graduate training. **(3); Prerequisites:** P1, P2 and P3 Fall Semester.

PHI 115 *Religions of Asia*. This course provides a survey of the major religious traditions of Asia, including Hinduism, Buddhism, Taoism, Confucianism, and Islam. The course emphasizes how each tradition shapes the aims, views, and experiences of the people who participate in them. With each religion we will investigate the following: What are the central texts and practices of each tradition? What are the most important questions that these traditions ask? How have these faiths evolved to the present day? How has each tradition been changed by its encounter with modernity and how has each religion in turn influenced modernity? The course will conclude with a consideration of some of the ways the traditions of Asia have influenced contemporary spirituality and new religions, especially in the West. **(3)**

PHI 140 *Spiritual Healing (formerly LAS 250)*. This course will look at several different examples of contemporary spiritual healing practices drawn from many of the religions and spiritual movements from around the world. The primary objectives of the course are: a knowledge and appreciation for various examples of spiritual healing practices and the development of an analytical and tolerant assessment of the theoretical and practical differences and similarities between contemporary spiritual and scientific healing practices. **(3)**

PHI 145 *Critical Thinking (formerly LAS 861)*. The purpose of this course is to engage students in the process of thinking more critically. Critical thinking requires knowledge of one's predispositions; hence, the course begins with a focus on self-awareness and moves to writing and critiquing samples of inductive and deductive reasoning. Special themes in this course will include the logic behind the scientific methods, the pervasive nature of cultural assumptions and political hype. Collaborative work is encouraged throughout the course. **(3)**

PHI 210 *Comparative Religion (formerly LAS 215)*. This course will provide a survey of and an engagement with the contemplative or wisdom dimension of four traditions in world religions: Christianity, Buddhism, Native American Religion, and Islam (Sufism). Rather than look at these traditions only from the outside, in a descriptive manner, we will read texts from authors within these traditions who attempt to explain and describe their understanding of the contemplative/meditative dimension of each tradition. From this perspective, fundamental questions will be examined and discussed such as: What is the spiritual psychology of a human being? What is the human heart and what role does it play in human knowing? How does one cultivate a spiritual presence? What is the relationship between the human and the divine? **(3); Prerequisite:** HUM 102

PHI 240 *Islam and Sufism (formerly LAS 238)*. This course will provide an introduction to Islam and Sufism. The first section will serve as a basic introduction to the Islamic worldview, the Koran and the life of the Prophet Muhammad. The aim will be to arrive at an understanding of the experience of Islam, paying close attention to how Muslims have defined themselves using their own language. Next, we will look more closely at the Islamic sapiential tradition, Sufism and, in particular, the major authors who have defined and informed this important dimension of Islam in terms of both theology and ritual. **(3); Prerequisite:** HUM 101

PHI 245 *Introduction to Buddhism and Meditation (formerly LAS 249)*. This course will provide an introduction to the world view and practice of Buddhism. This will include the study of key teachings of Buddhism, including the Four Noble Truths; the life of the Buddha; and example texts and teachings from a variety of Buddhist authors. We will also examine different schools/approaches to Buddhism, including Zen Buddhism and Tibetan Buddhism. Additionally, the course will include regular instruction in the practice of meditation and mindfulness techniques. **(3); Prerequisite:** HUM 101

PHI 247 *Mindfulness Based Stress Reduction*. Mindfulness Based Stress Reduction (MBSR) is a practice-focused course in meditation and mindfulness techniques that will allow students to manage and mitigate stress. Through an introduction to contemplative practices, as well as reading, discussion, and written reflection, the students will gain a sense of control over their health and well-being through a method proven to have physical and mental health benefits. **(1).**

PHI 250 *Religion as the Search for Meaning (formerly LAS 271)*. Students examine the major religious traditions within the framework of an analysis of humankind's fundamental need to find meaning in the world by explaining and maintaining proper relationships among the self, society and nature. **(3); Prerequisite:** HUM 102

PHI 255 Religion, Philosophy, and Film (formerly LAS 272). This course will explore examples of contemporary cinema from a wide variety of genres and regions that reflect various dimensions of world religious and philosophical traditions. We will examine and discuss the images, metaphors, and ideas expressed in film as a means to explore and contemplate some of the following questions: What is the sense and purpose of human life? What are the ways that film presents and dramatizes religious or philosophical concepts? What role does religion play in human life or what meaning does it provide? Can film evoke or illuminate religious or spiritual experiences and philosophical insights? Can film be morally, philosophically, spiritually, or religiously educational? Everyone is asked to bring their own questions to bear upon the films and class discussions. Each week we will watch a film in class and students will also be required to participate in ongoing conversations on a discussion board. **(3);**

Prerequisite: HUM 101

PHI 280 The Philosophy and Practice of Yoga. It is believed that yoga (Sanskrit, “to yoke” or “to harness”) goes back to the earliest roots of Indian history. This course will provide an introduction to the history, philosophy, and practice of yoga. We will study key texts in the tradition of yoga, such as Patanjali’s Yoga Sutras, the Bhagavad-gita, contemporary writings on yoga, as well as research on the health effects of yoga. The course will include weekly practice of yoga, including work with physical postures (asanas), breathwork (pranayama), and meditation techniques. **(3); Prerequisite:** HUM 101

PHI 370 Contemplative Studies. This course will provide a survey of and an engagement with the contemplative, meditative, and ritual dimensions of world religious, spiritual, and philosophical traditions. Topics will vary, but may include contemplative practices from both Western and Eastern traditions, including Christianity, Islam, Buddhism, Taoism, and Native traditions. We will read texts from authors within these traditions who explain and describe their understanding of contemplative practices – practices that have been historically at the center of these traditions. Through critical reading, discussion, and written reflection, students will be asked to consider the ethical and moral implications and outcomes of contemplative practices. This course will also include an experiential component through which students will be introduced to meditation, ritual, or other contemplative practices and may also include visits to local monasteries, groups, or gathering places of the traditions that we investigate. **(3); Prerequisites:** HUM 102, HUM 201, COM 115

PHI 380/PSC 380 Brain, Mind and Meditation. The Science and Practice of Mindfulness and Meditation: Meditation and other contemplative practices are increasingly used to reduce stress, improve health, and treat disease. This interdisciplinary course will discuss the neurobiological and psychological basis of these effects and explore the relationship between the brain and the mind as revealed through the theory and practice of meditation. The course will consist of three integrated components. The first component will consider the scientific evidence demonstrating that meditation produces lasting changes in brain anatomy and function and review accumulating research data showing that meditation produces therapeutic effects in chronic pain, depression, drug addiction, and other psychiatric and physiologic disorders. The second component will explore the theory and philosophy behind meditative practices and contemplative techniques drawing from Buddhist and other traditions, used, traditionally, by religious practitioners and, in contemporary society, to reduce stress and improve health and well-being. In the third component of the course, students will be introduced to meditation and other contemplative methods so they can explore, personally, the effects of meditation on the mind. The course will be taught by specialists in neuroscience, religious studies, and mindfulness-based meditation. **(3)**

PHM 318 Foundations of Pharmacy. This course provides dynamic introduction to the profession of pharmacy. Coursework is a hybrid combination of online activities and live coursework that is designed to expose students to a comprehensive introduction to pharmacy practice. This course formally introduces the concept of professionalism and serves to initiate the professionalization of all students enrolled in the Doctor of Pharmacy degree program. Students will be required to write summaries and reflections of topics covered over the course of the semester. This course is a prerequisite for the Introductory Pharmacy Practice Experiences (IPPE’s). **(1)**

PHM 322 Pharmacy Marketing. This course examines and identifies characteristics of the pharmaceutical marketing process. After exploring market behavior, motivation factors affecting the market and analytical techniques of market investigation, the class covers marketing institutions in the pharmaceutical industry, competitive practices and a comparison of external and internal controls. **(3);** Lecture and Laboratory

PHM 324 *Pharmaceutical Industry and the Pharmacist's Role.* This course will provide an overview of the pharmaceutical industry covering topics of: research, development, medical, regulatory, marketing, sales, distribution, legal, ethics and compliance. Headquarters and field based perspectives will be shared. The course will provide the student with an overview of the various types of pharmacy careers available within the pharmaceutical industry in each of the listed topics. The course will be team taught by pharmaceutical industry experts. **(3); Prerequisite:** Current PharmD Program Student in P1, P2 or P3 Year.

PHM 329 *Self Care/OTC.* This course will guide the student through an interactive approach to self-care. An appreciation of the pharmacist's role in self-care will be taught with an emphasis on a patient case problem-solving model to aid in the triaging of patients and self-care therapy selection. Treatment options that will be discussed will range from non-drug therapy to non-prescription medications and devices to herbal products and dietary supplements. **(3); Prerequisite:** Current PharmD Program Student

PHM 334 *Environmental Health.* This course is designed to provide students with an introduction to and overview of the key areas of environmental health. Using the perspective of the population and community, the course will cover factors associated with the development of environmental health problems. Students will gain an understanding of the interaction of individuals, communities, and economic activity with the environment, the potential impact on health of environmental agents, and specific applications of concepts of environmental health. The course will cover principles derived from core environmental health. The sequence of major topics begins with background material and the tools of the trade (environmental epidemiology, environmental toxicology, environmental policy and regulation). The course then covers specific agents of environmental diseases (e.g., microbial agents, ionizing and non-ionizing radiation). Finally, applications and domains of environmental health are addressed (e.g., water and air quality, food safety, waste disposal, occupational health, and injuries). **(3)**

PHM 350, 450, 550 *Applied Methods in Epidemiologic Research.* Students will develop problem-solving skills and enhance their knowledge of contemporary methods in clinical epidemiologic research through application. Students will participate in a number of activities that are both instructional and applied. Activities include introduction to basic topics in clinical epidemiologic research (measures of disease frequency/association, study design and handling bias), data collection, database management, data analysis, scientific writing and preparing abstracts/posters for presentation at conferences and manuscripts for publication in peer-reviewed medical journals. P1 and P2 students will participate in developing a research question/hypothesis, identifying appropriate study designs to test a hypothesis, protocol development and data collection. P2 students will continue the activities from the preceding year. P2 students will also create/manage an electronic database, compute basic measures of disease frequency, and perform quality checks on variables that could confound or bias the measure of association. P3 students will serve as project managers and assist in mentoring P1 and P2 students with data collection and database management. P3 students will also participate in data analysis and preparing an abstract/poster for presentation at a national meeting. The course does not have any underlying prerequisite coursework. However, interested students must contact the course coordinator expressing their intentions and undergo a brief interview. Selected students will be invited by faculty to participate in this course which can range from **1 to 6 credits.**

PHM 354 *Pharmacy Leadership and Advocacy.* Pharmacy as a profession is at a turning point. We are moving towards an emphasis on direct patient care activities and reimbursement for our cognitive services. For the profession to continue to move forward effective leaders are needed to provide mentorship to the newly emerging members of the profession and to advocate for the profession. This elective course is designed to familiarize students with effective leadership skills, the legislative process, and converging this knowledge to make the transition from leadership to advocacy. Students will be involved in interactive discussions, listen to guest lecturers such as key legislators and pharmacy leaders/advocates, and hold debates on current pharmacy practice issues. Becoming a successful advocate can open doors for pharmacists to use their extensive knowledge to ensure effective care is being provided to their patients.**(3); Prerequisites:** current P1, P2 or P3 student.

PHM 373 *Foundations of Diabetes Care.* The Foundations of Diabetes Management elective course provides an effective, efficient, and flexible mechanism to assure that entry level students have a strong foundation in the principles of effective therapy and management of diabetes. The course consists of 45 hours of content (equivalent to 3 credit course) divided into 15 topic modules with each module consisting of 3 to 6 hours of content. Each module of content in the is supported by a power point presentation with speaker notes; an internet based video presentation of the content; 1-2 quizzes of 10 test questions each; and, at least one active learning exercise. All content will be delivered online through the University of Pittsburgh's DM Educate website. The course will meet 6 times throughout the semester for various discussions and hands-on practice. **(3)**

PHM 429 *Advanced OTC.* The Advanced OTC course will guide the student pharmacist through an interactive approach to over the counter medications. Students will have the opportunity to take a more in depth look into specific topics while addressing topics not currently covered in the required course: The Pharmacist Role in Self Care. The design of this course is geared towards student pharmacists looking to pursue a career in community pharmacy. **(3); Prerequisites:** PHM 329.

PHM 435 *Nephrology Patient Care.* This course introduces the delivery of patient-oriented pharmaceutical care in nephrology. Students gain an understanding of the chronic kidney disease (CKD) public health epidemic and will be able to identify key roles for pharmacists in managing CKD. Students will develop skills in identifying medication-related problems via patient case discussions that simulate real patient-care issues in nephrology. Complications of CKD, healthcare issues, and healthcare dilemmas will be introduced via group discussion and journal club. **(3); Prerequisite:** PharmD Program P1 Year.

PHM 436 *Drug Interactions.* This course will introduces students to the mechanisms of drug interactions, the tools required to interpret the drug interaction literature and will provide a series of lectures that stress the more common drug interactions observed when treating specific disease states. The literature interpretation skills and drug interaction knowledge base acquired from this course will help students identify drug interactions, develop a patient specific recommendation to manage a drug interaction and answer drug information questions: important clinical skills for progressing through experiential education and into practice. **(3); Prerequisite:** PharmD Program P1 Year.

PHM 441 *Community Medicine Management.* Student pharmacists will learn the necessary steps to implement medication therapy management (MTM) patient care programs in the ambulatory setting. Course activities include discussions, literature evaluation, and MTM scenarios to prepare students to develop, implement and assess patient care programs. Students will be eligible to earn the national APhA MTM certification following completion of this course and their APPE rotations. **(3); Prerequisites:** PHM 225, PHM 329, NY State Intern Permit.

PHM 459 *Drug Discovery and Development.* This course is a multi-disciplinary course that will deal with all components of drug discovery and development, from the bench to the bedside. This will include pharmacology, medicinal chemistry, molecular biology, biochemistry, immunology, formulation, delivery, pharmacodynamic, pharmacokinetic, regulatory affairs, clinical research, marketing, business development, sales, medical affairs and patent filing. The course will be presented by the instructor and experts and executives from various pharmaceutical and biotechnology companies (moderated by the instructor). **(3); Prerequisites:** BIO 325, CHE 113 and concurrent BIO 411, 412, 421 or 422

PHM 472 *Women's Health Seminar.* Women's Health Seminar will cover a broad range of topics relevant through the lifespan of women. This class will also foster interprofessional relationships by featuring guest lecturers with expertise in these topics. The focus in this class is to increase awareness and understanding of issues that women face and developing sensitivity to these issues. Participants in this class will also examine ways to further the profession in this field. Students will be expected to actively engage speakers through questions and discussion. Students will also be expected to do one presentation and several reflective and informative papers throughout the semester. **(2)**

PHM 490 Early Patient Care. Students must be invited by faculty to participate in this course which can range from 1 to 3 credits. Student pharmacists will enhance their patient centered care knowledge and skills by engaging in medication management with faculty mentors. Activities include orientation to patient centered care and medication management, review of therapeutic topics and preparing for patient encounters. P3 students will mentor P1 and P2 student during completion of patient comprehensive medication reviews followed by patient care documentation including SOAP notes, physician correspondence and patient medication lists/action plans. Students will lead case presentations and discussions with faculty and students. Students may engage in scholarly activity related to patient care and teaching.

PHM 517 Psychopharmacology & Psychopathology in the Media. Psychopharmacology & Psychopathology in Film & Media is a 3-credit elective course available to 3rd year students (P3) enrolled in the Doctor of Pharmacy program. This course focuses on the portrayal of psychiatric illness and their corresponding treatments in films and media. Students enrolled in the course will receive an overview of major psychiatric/neurologic illness and their portrayal within film and media. Representations of psychopathological states in media will be examined within the context of contemporary social issues such as stigma and discrimination with additional emphasis placed on the pharmacotherapeutic treatment of the various disorders. The films accuracy in portraying the disease state, significance and social influence of the film, public perception of mental illness, and advanced concepts in treating psychiatric disorders will also be discussed in the course. **(3); Prerequisite:** PTP 549

PHM 525 Advanced Nephrology. This course introduces topics that will enable students to have an in-depth understanding of contemporary issues in nephrology. It will enable them to participate in a nephrology APPE in an advanced and effective manner and will engender interest in a nephrology residency or fellowship. Students will participate in small group discussions on topical aspects of clinical nephrology, lead and participate in journal clubs with faculty, and be responsible as near-peer instructors for components of the Nephrology Patient Care elective. The Advanced Nephrology elective will be run for one 2-hour session each week to coincide with the Nephrology Patient Care elective. **(2); Prerequisites:** PSL 302, PHM 329, PTP 525 and B or better OR completion of clinical and translational research elective OR independent research elective in nephrology.

PHM 535 Cancer Screening, Prevention and Early Detection. The clinical practice guidelines from the National Comprehensive Cancer Network for the screening, prevention and early detection of breast, cervical, prostate and colorectal cancers will be discussed in detail, with emphasis on the role of the health care professional. Cancer epidemiology, cost-effectiveness of cancer screening, complementary alternative medicine and lifestyle modifications, including smoking cessation and skin cancer prevention, also will be reviewed. Students will be expected to participate in clinical controversy discussions as assigned from the primary literature in a structured debate format. Seminar is not a prerequisite for the course, and primary literature evaluation activities will be tailored to the needs and background of students enrolled in the course (both PharmD and B.S. students are eligible to enroll). Each student debate team will choose a cancer screening/prevention/early detection topic of their interest to lead one of the assigned debates (approximately 50 percent of the course is interactive). One volunteer activity required as part of the course to increase public health awareness of cancer screening, prevention and early detection and encourage service learning. **(3); Prerequisite:** current P2 or P3 pharmacy or 4th year BS student status.

PHM 540 Pediatric Pharmacotherapy. Students enrolled in Pediatric Pharmacotherapy will receive an overview of common issues related to drug therapy in the infant and child patient and develop a level of understanding appropriate for that of a general pharmacist practitioner. The infant and child patient is often one that poses unique challenges to the pharmacist owing to rapid and substantive changes in physiology, behavior, communication, and understanding. These changes often necessitate flexibility and resourcefulness on the part of the pharmacist to assess his or her patient and arrive at sound drug therapy decisions that are specific for the infant or child. Aside from the uniqueness of the infant or child patient, these decisions are often complicated by a lack of adequate evidence-based medicine, difficulty in communications with the parent or caregiver, and societal misunderstandings and beliefs regarding the healthcare of children. The course objectives will be met by way of a student-centered approach utilizing a mixture of problem- and team-based learning. By way of a longitudinal, virtual patient management model, the Instructor will introduce topics related to the health care of infants and children. Students will be responsible to a large extent for the new knowledge acquired during the course. **(3); Prerequisite:** current P3 pharmacy student status.

PHM 545 *Interprofessional Health Care Issues.* This course is offered to the students of ACPHS and other local professional schools, such as Albany Medical College, Sage College Department of Nursing, Albany Law School, or others. The AACP Council of Faculties Interprofessional Education [IPE] Task Force defines interprofessional education as follows: "Interprofessional education involves educators and learners from 2 or more health professions and their foundational disciplines who jointly create and foster a collaborative learning environment. The goal of these efforts is to develop knowledge, skills, and attitudes that result in interprofessional team behaviors and competence (1)." This course is designed to facilitate interactive group discussion about health care issues, using nonfiction literary works or themes collections of lay media and medical literature as a background for understanding the role of various professions, opportunities for collaboration, lessons from history that may be relevant to contemporary practice. The health care issue of focus may change each semester. Examples of health care issues may include historical issues of public health importance such as infection (Spanish influenza; H1N1; HIV, etc); immunization; natural disasters and emergency preparedness (Hurricane Katrina; 911 Attacks and sequelae; etc). A history of the evolution of the professions is included in the series to provide context for the public health issue at hand. This course is offered to P1 - P3 students by invitation of the course coordinators. (1) Buring SM, Bhushan A, Broeseker A, et al. Interprofessional education: definitions, student competencies, and guidelines for implementation. *Amer J Pharm Ed* 2009; 73 (4) Article 59. **(1); Prerequisite:** Doctor of Pharmacy Candidate

PHM 546 *Advanced Topics in Infectious Disease.* A course focused on evaluation of contemporary and controversial issues in the pharmacotherapy of clinical infectious diseases. This elective offers material that builds on the foundations of infectious diseases pharmacotherapy offered through the PTP&M-ID course. The course exposes students to the tools necessary to evaluate antimicrobial agents from the late preclinical pharmacokinetic stages through Phase 1, 2a, 2b, 3, and 4 of clinical research (i.e. bench to bedside) as defined and regulated by the U.S. Food and Drug Administration. Advanced topics in infectious diseases examines: 1) evaluation of key antimicrobial pathogens 2) emergence and mechanisms of antimicrobial resistance among; 3) antimicrobial pharmacokinetics/ pharmacodynamics; 4) antimicrobial treatment considerations in special populations; and 5) Drug-drug interactions. Illustrative examples of key clinical treatment guidelines from the Infectious Diseases Society of America are utilized to improve understanding of the opportunities and barriers to delivery of optimal healthcare. Students will develop their critical-thinking, primary literature evaluation, and public speaking skills through the participation in pro and con debates on a controversial issue in the pharmacotherapy of clinical infectious diseases. A list of controversial topics in infectious diseases pharmacotherapy will be provided to the students during the first week of the course. **(3); Prerequisites: PSC 321, PSC 322, PTP 401, PTP 446.**

PHM 547 *Critical Care Medicine.* Critical Care Medicine will cover topics ranging from those occurring in an Emergency Department that will result in a patient transfer to an Intensive Care Unit as well as health care issues that require a direct transfer and management in an intensive care unit. We will focus on gaining an understanding of life threatening issues and exploring the Pharmacists role as part of a healthcare team in gaining control over life threatening situations that occur daily in healthcare. Pharmacotherapeutic interventions in critically ill patients care will be emphasized. We will be using case based assessments for evaluation throughout the course. Students will be expected to participate in an active teaching and learning environment along with participation in an individual or group research exercise where they will develop a treatment protocol for use in a critical care situation. The use of patient cases and SOAP notes will be subject to both oral and written presentation as communication as a whole is a key component to practice in this fast paced environment. **(3)**

PHM 551 Pain Management Pharmacotherapy. This is an advanced therapeutics course focusing on acute, chronic, and palliative care pain management strategies in the ambulatory care and critical care settings including cancer and non-cancer pain. Included in this introductory course are evidence-based approaches to pain management programs; optimizing chronic pain management; palliative care for the terminally ill drug addict; interface between pain and drug abuse and the evolution of strategies to optimize pain management while minimizing drug abuse; pharmacokinetic opioid monitoring fibromyalgia therapy; chronic nonmalignant pain in primary care; pain management in the hospitalized patient and peripheral neuropathy. Limited time will be spent on Rheumatoid Disease and DMARDs. Class activities will include lecture format, discussion groups, and clinical case deliberations in the medical settings and in legal disputes. Students will be required to review and discuss pain management strategies and will understanding pain types, syndromes, the bio-psychosocial model of pain, and make a distinction between chronic and acute pain, the pathophysiology of pain (nociceptive, neuropathic), general overview of diagnostic tools, utilization of imaging reports, recognition of the disconnect between imaging and symptomatology, general overview of treatment options to be considered (noninvasive, interventional, medication management), therapeutics of opioid; geriatric considerations and neurology. **(3); Prerequisites:** P1 and P2 PTPM courses; PSC 341; and PSC 342.

PHM 572 Topics in Family Medicine. Topics in Family Medicine is a 3 credit hour elective course offered to students in their P3 year that covers a wide range of both inpatient and outpatient family medicine topics including anticoagulation, contraception, hyperlipidemia, hypertension, diabetes, polypharmacy, medication therapy management, and more. The content will be delivered with both didactic lectures and active learning activities. The course is intended to serve as a "bridge" between students' therapeutic modules and experiential rotations. Course activities and assignments will mimic those that students will encounter on rotation, and will include patient case work-ups, formal case presentations, "morning report" presentations, and written drug information responses. Course activities and assignments will allow students to develop their critical thinking, writing, literature evaluation, and public speaking skills. **(3)**

PHM 576 Concepts in Community Oncology. Concepts in Community Oncology is a 3-credit hybrid (online/live) elective course designed to develop oral and written communication skills in the student pharmacist that are necessary to deliver effective patient-centered pharmaceutical care to the ambulatory oncology patient. Communicating through writing and public speaking and patient education are skills necessary to interact with both patients and other healthcare providers in direct patient care. Recent trends and newer oral therapies in oncology are geared toward managing patients in an ambulatory setting, enhancing patient convenience. In this ambulatory setting where chemotherapeutic patient self-administration, complicated self-care of managing adverse drug events, and interpretation of cancer literature by the media prevail, the pharmacist plays a key role as an informational resource and educator. Classroom activities will consist of case discussion, and patient counseling exercises based on example real-life patient examples, critique of cancer literature reported in the media, and brief student presentations on new oncology agents and written responses to example patient drug information questions. The online, self-paced portion of the course will consist of weekly pre-recorded lectures and readings to provide the adequate evidence-based information or guidelines on the therapies, cancers, adverse effects, and interview/counseling skills needed for students to successfully participate in the active learning in-class exercises. Students will be exposed to career opportunities in the community and ambulatory oncology by area oncology pharmacists participating in the course, and exposed to the cancer community by a minimum of one field trip to a cancer symptom night support group. Achievement of course objectives will be assessed by completion of the listed activities, active student participation and professional behaviors. The course instructor is located on the Vermont campus and distance technology will be used to transmit to the NY campus. **(3)**

PHM 580 APhA MTM Certificate. The American Pharmacists Association national certificate program entitled Delivering Medication Therapy Management Services is an active learning seminar in which participants practice a variety of communication techniques to elicit a patient's medication experience and identify medication-related problems, using cases based on the real-life experiences of MTM providers. Participants will gain experience interviewing patients, identifying and prioritizing medication-related problems, developing and implementing interventions, and documenting activities. Participants explore various business models and billing strategies and discuss plans for implementation. Pre-seminar self-study modules, a case study and hands-on patient interview prepare participants for the live session. After completion of 5 APPE cases, students receive their APhA Certificate. There is a separate fee associated with this course that will be added to the tuition bill. **(1); Prerequisites:** Doctor of Pharmacy Program P1 and P2 year and Fall of P3 year.

PHM 590 Principles of Pharmacogenomics. This course will provide a wide array of topics in the field pharmacogenomics and explore the growing importance of pharmacogenomics in the delivery and diagnosis pertinent to personalized medicine and therapeutic management. Students will be introduced to genomic concepts in genetic testing, future drug design, study interpretation and clinical therapeutics decision making. The course will be divided into two sections. The first part of the course will examine the application of pharmacogenomics in medicine and drug design. The second part of the course, the student will have the opportunity to apply pharmacogenomics concepts and/or decision making. This will be implemented via a patient case study developed by the student or a written paper illustrating pharmacogenomics influence in medicine. **(3)**
Prerequisite: BIO 313, BIO 314, PTP 401.

PHM 641 G Clinical and Translational Research. This course will introduce the clinical and translational research paradigm. Translational research includes two areas of translation. One is the process of applying discoveries made in the laboratory (e.g., in test tubes or in animals) to the development of clinical studies using human subjects. The second area of translation refers to research intended to discover how to best apply the clinical findings to the community. This class will introduce research techniques to investigate a hypothesis within the entire continuum of clinical and translational research from "bench to bedside to community". Students will engage in active discussions regarding research methodology, will participate in hands on work in the laboratory and will be required to prepare a scientific abstract. **(3)**

PHM 911 Orientation to Advanced Pharmacy Practice Experiences. This course provides students with preparation to select and satisfactorily complete their advanced pharmacy practice experiences. Students will meet experiential education personnel and will prepare a personal biosketch, resume, and placement profile. Students will review the APPE Rotation Manual, which includes the calendar; required and elective module requirements; rotation assignment procedure; goals and objectives for advanced pharmacy practice experiences; procedures for assignment to extramural and special arrangement rotations; student guidelines; midpoint and final evaluation procedures; academic regulations; electronic resources on the Web site and portfolios. Students will learn about different practice environments, including community; institutional; specialty practices in ambulatory care or inpatient settings, managed care and administration, that they may consider as potential APPE options. **(0)**

PHY 145 Physics of Sound/Music. This course is a one-semester introductory level course that discusses fundamental scientific principles of waves, sound, and music. The concepts of energy, harmonic oscillation, resonance, harmonic analysis, interference, diffraction, traveling waves and standing waves are treated quantitatively. Relationship of physical characteristics of sound waves to loudness, pitch, and timbre is discussed. The course requires proficiency in algebra (intermediate level) and trigonometry (elementary level) and credit for a physics course at a high school level or above. **(3)**

PHY 201/212 College Physics I. This course is the first part of a two-semester physics sequence. Basic principles underlying physical phenomena will be studied. These principles form a foundation of our understanding of chemistry, biology and pharmaceutical sciences. Emphasis will be on solving qualitative and quantitative problems using a variety of mathematical methods. The topics will include one- and two-dimensional kinematics; Newtonian dynamics; work and energy; linear momentum; physics of fluids and solids; oscillations and waves; and applied nuclear physics. The laboratory portion of the course complements its theoretical component and will in particular familiarize students with modern experimental techniques and skills including computerized data collection. PharmD students register for PHY 212, BS students register for PHY 201. **(4); Prerequisites: MAT 115, MAT 121;** Lecture and Laboratory

PHY 202/222 College Physics II. This course is the second part of a two-semester physics sequence and a continuation of Physics I. Basic principles underlying physical phenomena will be studied. These principles form a foundation of our understanding of chemistry, biology and pharmaceutical sciences. Emphasis will be on solving qualitative and quantitative problems using a variety of mathematical methods. The topics will include foundations of thermodynamics and kinetic theory; electricity and magnetism; electromagnetic waves and elements of physical and geometrical optics. The laboratory portion of the course complements its theoretical component and will, in particular, familiarize students with modern experimental techniques and skills including computerized data collection. PharmD students register for PHY 222, BS students register for PHY 202. **(4) Prerequisite: PHY 201/212;** Lecture and Laboratory

PHY 245 *Physics for Life Sciences.* This course is a one-semester algebra-trigonometry-based introductory physics course. Fundamental principles underlying physical phenomena will be studied. These principles form a foundation of our understanding of chemistry, biology and pharmaceutical sciences. Emphasis will be on solving qualitative and quantitative problems using a variety of basic mathematical methods. The topics will include kinematic description of motion; Newtonian dynamics; the concepts of work and energy; energy conservation law; mechanics of fluids; introduction to nuclear physics; heat and temperature, charges and Coulomb's Law; introduction to electric circuits; and geometrical and physical optics. The laboratory portion of the course complements its theoretical component and, in particular, will familiarize students with modern experimental techniques and skills including computerized data collection. **(4); Prerequisite:** MAT 111; Lecture and Laboratory

PHY 316 *Physics in Nuclear Medicine and Pharmacy.* Nuclear medicine uses the nuclear properties of matter for medical purposes. As a part of the diagnostic procedure, radionuclides (radiopharmaceuticals) are administered and the radiation emitted is used to form images. These images reflect biological processes that take place at the cellular and subcellular level. Nuclear pharmacy is a specialty area of pharmacy practice dedicated to the compounding and dispensing of radionuclides for use in nuclear medicine procedures. This course is a one-semester introductory level course that discusses fundamental principles underlying physical phenomena related to the fields of nuclear medicine and nuclear pharmacy. The topics will include basic atomic and nuclear physics, radioactivity and its decay, methodology of radiopharmaceutical production and instrumentation used for production of radionuclides, radiation detectors, basic ideas of positron emission tomography (PET), radiation dosimetry, radiation protection and safety and fundamentals of health physics. We will discuss examples of clinical applications of nuclear medicine/pharmacy for different systems and diseases. The course emphasizes critical thinking and problem solving skills, and students are expected to become proficient at manipulating the quantities and units used in the radiation sciences. The course will include field trips to local nuclear pharmacy facilities and guest lectures given by local nuclear pharmacists. **(3); Prerequisite:** PHY202/222.

PSC 102 *Seminar in Health Professions.* This seminar course will provide an overview of health and basic sciences based professions. Students will be required to attend seminar presentations given during class time and outside of class to enhance their knowledge of various career pathways. Presentation topics typically include academic research, medical education (MD, DO), physician assistant studies, public health, cytotechnology/clinical laboratory sciences and industrial/pharmaceutical research. As part of this course, students will prepare a resume' including a detailed outline of their plans to enhance their resume' over their time at ACPHS. Students will also prepare a brief oral presentation comparing the advantages and disadvantages of two career options of interest to the student. **(1)**

PSC 110 *Scientific Reasoning and Analysis I - The Educated Scientist.* The courses (PSC110, PSC111 and PSC112) that make up the SRA sequence focus on historical and contemporary topics in science. These courses will focus on the development of communication and critical thinking skills in addition to their scientific content. SRA1 is focused on the use of data to support hypotheses by evaluating both historical and appropriate and inappropriate uses of data. **(2)**

PSC 111 *Scientific Reasoning and Analysis II - The Ethical Scientist.* The courses (PSC110, PSC111 and PSC112) that make up the SRA sequence focus on historical and contemporary topics in science. These courses will focus on the development of communication and critical thinking skills in addition to their scientific content. SRA 2 is focused on clinical implications of science and medicine with an underlying theme of exploring historical and contemporary medical breakthroughs as well as contemporary issues in the US healthcare system. **(2)**

PSC 112 *Scientific Reasoning and Analysis III - The Scientist in Society.* The courses (PSC110, PSC111 and PSC112) that make up the SRA sequence focus on historical and contemporary topics in science. These courses will focus on the development of communication and critical thinking skills in addition to their scientific content. SRA 3 is focused on using previously collected data to produce a testable hypothesis. Presentation of scientific data and building support for hypothesis and career related uses for scientific degrees. **(2)**

PSC 210 *Pharmaceutical Sciences Research Experience.* This elective course will allow students to pursue a laboratory-based research. The student and research mentor will work together to define a series of experiments that will achieve the student's individual goals. This course may serve as an initial experience for a student to determine their level of aptitude and interest in pursuing research or, for more senior students, it will support a more detailed investigation of a defined hypothesis. The student will learn the necessary techniques, conduct experiments and analyze data under the guidance of the research mentor. Work on the project may or not be continued in subsequent offerings of Pharmaceutical Sciences Research Experience or, for BSPS students, through enrollment in the Thesis Option of the BSPS program. Students are expected to be actively involved in research or other laboratory work for a minimum of 125 hours for three credit hours of the course (42 hours/credit) and not more than 150 hours over the semester (50 hours/credit). Final grades will be assigned by the course coordinator. **(1-6); Prerequisites:** Permission of the instructor and course coordinator.

PSC 231 *Real World Health Care.* This course will discuss the role of healthcare systems in improving human health and compare the US healthcare system to that of various other healthcare systems of the world. Topics will include disease prevention vs. treatment, comparison of the US healthcare system to those of other developed countries and the current status of health care in developing countries. Discussions will also focus on the availability of healthcare for people of varying economic and social classes, ethnicity, and with different diseases/ailments. Class time will be divided between online discussions, student based presentations and seminar style discussions. The course is designed to be relevant to students who are considering a career in medicine. **(3).**

PSC 251 *Pharmaceutical Sciences Journal Club.* This course will enhance the ability of students to critically evaluate scientific articles published in juried scientific journals. Articles will be selected from current scientific literature in a variety of disciplines in the pharmaceutical sciences, including drug delivery, drug development, medicinal chemistry, molecular biology, pharmacogenomics, pharmacology, physiology, biochemistry and pharmaceuticals. Each student will present at least two articles per semester. All participants are expected to read and critique the articles. **(1); Prerequisite:** Permission of the instructor

PSC 252 *Pharmaceutical Sciences Seminar.* This course has a rather simple format; students will attend a minimum of ten Department of Pharmaceutical Sciences seminars and meet with course faculty for one hour per week to discuss each seminar. Before each seminar the class will review one or more papers written by the seminar speaker, to enhance understanding of the seminar. After each seminar, each student will write a one page critique evaluating the scientific quality and presentation clarity of the seminar. Weekly classes with course faculty will discuss the students' critiques of the previous seminar and review papers written by the speaker for the forthcoming seminar. Students may also attend relevant seminars offered by other Departments at ACPHS or Colleges in the Albany area with Permission of the instructor. BS in Pharmaceutical Sciences students may list this course as a Directed Elective or, for students in the Pharmacology concentration, as a substitute for one semester of Scientific Literature Evaluation. **(2); Prerequisite:** Permission of the instructor

PSC 253 *Scientific Communication.* This course emphasizes writing, revision, and the delivery of scientific presentations. Designed to prepare students for the thesis research track, a wide variety of communication formats are explored including standard media outlets, scientific journals, seminars, and grant proposals. The essential elements of successful oral presentation and writing in targeted formats are developed through group discussion, critique, and practice. Emphasis is placed on developing a research proposal and an outline for a research seminar. With regard to writing, classic papers are contrasted and discussed in the context of format, style, and technique inherent to effective scientific writing. Grant writing and peer evaluation are additionally explored through real-life examples. Students apply these learned skills by crafting a research proposal, which ideally will serve as a foundation for the research performed in PSC 463/464. Concurrently, oral communication skills are developed through generation of a seminar presentation based on the student's research proposal. At the conclusion of the course students will present their work through either a poster or seminar session. **(3)**

PSC 261 *Topics in Pathophysiology and Medicine.* Students will build on their knowledge of various topics in pathophysiology and medicine by reading, discussing, analyzing and interpreting data from the scientific literature. Students are expected to be active participants in presenting, discussing, critiquing and interpreting the data throughout the semester. This course will begin with discussions and reading focused on background information and build to student led evaluation of primary journal articles. **(3); Prerequisites:** BIO 111 and 121

PSC 281 Neuroscience I. Neuroscience I will provide an introduction to the cellular structure, anatomical organization, physiological function and pathophysiology of the central nervous system. It will cover brain anatomy, discuss sensory systems and sensory perception, review motor function and its control and show how the structure and neuronal 'wiring diagram' of the brain mediate specific brain functions. The course will also discuss neurophysiology and electrochemical information processing in the brain. Lastly, the course will focus on pathophysiologic mechanisms underlying neurologic diseases, including brain imaging analyses and case studies, and discuss treatment modalities. Neuroscience I is a basic neuroscience course focused primarily on students with a strong interest in neuroscience and in pursuing research and/or more advanced courses in neuroscience. **(3); Prerequisite:** BIO 102/ 121

PSC 282 Neuroscience I Laboratory. Neuroscience I Laboratory will provide a hands-on opportunity to study the brain. Students will investigate the cellular and anatomical substrates of brain function and dysfunction through microscopy, brain dissection and by using interactive models. The laboratory syllabus will be correlated with the lecture sequence for Neuroscience I. **(1); Prerequisite:** BIO 102/ 121

PSC 283 Neuroscience II:Applications. Neuroscience II explores the diversity of research and clinical applications in the field of Neuroscience. From pharmacotherapy, to the underlying mechanisms associated with nervous system vulnerability and pathogenesis. This diversity is highlighted by focused modules in neurodevelopment, learning and memory, the nature of neuroimmune interactions as effectors of neurological disorders and disease outcomes, genetic determinants of behavior and the deleterious consequences of environmental chemical exposures. The modules are designed to appeal to both the novice and those with prior exposure to Neuroscience. The different approaches used in diagnosis and understanding physical impairment are stressed as essential components of devising effective therapy and future research directions. **(3); Prerequisites:** BIO 102 or BIO 121 and CHE 102 or CHE 121

PSC 311 Biochemistry. Biochemistry provides an introduction to important biomolecules and the complex structures and cellular pathways in which these molecules are involved. The first section of the course focuses on proteins with emphasis on enzyme structure and function, kinetics, and reaction mechanisms. Following an examination of simple and complex carbohydrates and lipids, the remainder of the course focuses on metabolic pathways that are responsible for cellular ATP production (glycolysis, citric acid cycle, and electron transport), fatty acid synthesis and breakdown, cholesterol biosynthesis, and pentose phosphate metabolism. The metabolic intermediates and signal transduction pathways involved in the regulation of key rate limiting enzymes for each pathway provide a focus for understanding how this regulation facilitates functional integration of these metabolic pathways in a number of different cell types. **(3); Prerequisite:** CHE 221

PSC 312 Molecular Biology. An analysis of the regulatory pathways controlling cell replication, gene expression, and protein synthesis with a central focus of understanding how such knowledge is foundational to therapeutic application and development. Cancer cells, retroviruses, and bacteria serve as thematic models to demonstrate how the principles embodied in these studies translate into functional applications. Problem solving and data analysis play a central role in reinforcing didactic material and fostering student intellectual development. In addition to canonical topics, specialized subjects such as dideoxynucleotide therapeutics, RNAi, viral vectors in gene therapy, stem cells, and cloning are discussed to illustrate both the practical—and potential—applications of this ever-evolving field. **(3); Prerequisite:** PSC 311

PSC 315 Immunology. This course is devoted to the study of host defense and the immune system. It examines the cells and organs of the system. It also explores the complex mechanism of cell-cell cooperation necessary to produce immune responses. The role of antibodies, T cells and macrophages in host defense and diseases are thoroughly explored. The role of the immune system in hypersensitivity, autoimmunity and transplantation is carefully examines. In addition, methods for modifying immune responses through drugs and vaccines are discussed. **(3); Prerequisites:** BIO 111, BIO 121 and PSC 311 or concurrent enrollment in PSC 311.

PSC 316 Advanced Immunology. This course will further explore concepts introduced in Immunology that did not receive extensive discussion in the basic course. Topics of specific interest to the students in the class will be covered and may include: the molecular biology of generation of diversity of antibodies, immunogenetics of disease states and transplantation, modification of immune responses including tolerance induction and immunosuppressive drugs and psychoneuroimmunology with a discussion of the endocrine-neuro-immune axis. **(3); Prerequisite:** PSC 315 or permission of the instructor

PSC 317 *Advanced Genetics*. With an emphasis on human populations, this course serves to introduce students to the many specialized branches of the science of genetics. Although classic subjects including Mendelian genetics, pedigree analyses, and population genetics are covered, diverse topics—ranging from chromosome evolution to developmental programs to eugenics—serve to highlight the diversity inherent in the field. Although based on core lecture series, supplemental readings from authors such as Stephen Jay Gould, problem sets, and integrated recitations facilitate academic growth in several essential areas. A centerpiece of the genetics course involves the completion of a semester-long project that challenges students to identify a gene based on a DNA sequence fragment, the role this gene plays in inherited disorders, and the current state of research into this genetic disease. This project culminates in a review-style paper, which, in addition to facilitating writing skills, affords students the opportunity to develop a level of expertise and understanding for the impact that congenital disorders have on individuals—and the drive towards developing treatments. **(3); Prerequisite:** BIO 121.

PSC 321 *Physiology/Pathophysiology I*. This course sequence will focus on normal physiological principles of homeostatic regulation of the human body. Important anatomical structures, pathologies and disease states will be presented to support underlying physiological regulation. Physiology/Pathophysiology I will include in-depth discussions of the physiology and pathophysiology of cell structure, electrophysiology, the nervous systems and the cardiovascular system. **(4); Prerequisites:** BIO 102/ 121

PSC 322 *Physiology/Pathophysiology II*. This course sequence will focus on normal physiological principles of homeostatic regulation of the human body. Important anatomical structures, pathologies and disease states will be presented to support underlying physiological regulation. Physiology/Pathophysiology II will include in-depth discussions covering physiology and pathophysiology of the respiratory system, renal system, endocrine systems and gastrointestinal/hepatic systems. **(4); Prerequisites:** BIO 102/ 121

PSC 330 *Ethnopharmacology*. Ethnopharmacology can be defined as the interdisciplinary investigation of biologically active substances found in nature and used by humans. As such, ethnopharmacology is at the interface between medicine and culture, between pharmacology and anthropology. The field incorporates elements of classical botany, natural products chemistry, pharmacology, anthropology and even psychology and comparative religion. Although, technically, the term could apply to the study of drugs by modern, Western society, most work in the field concerns the use of natural products by indigenous, pre-modern cultures or in traditional medical practices. Ethnopharmacology has been the source of many new drugs used in Western medicine and continues to be an important target for drug development. This course will provide an overview of the broad field of ethnopharmacology, including drug development from natural products, and will focus on the use of psychoactive plants by diverse cultures. The course will be largely discussion based and class discussions will rely on student knowledge from assigned readings. Lectures will be kept to a minimum. The class will review papers, analyze data and discuss controversial elements of ethnopharmacology, drug development, intellectual property and cross-cultural differences in the use of natural products. Assessment will be based on two relatively brief research reports, class presentations, participation in class discussions and two essay type examinations. Students will be encouraged to pursue topics of their own interest. **(3)**

PSC 331 *Pharmaceutical Sciences Problem Solving Workshop I*. The Pharmaceutical Sciences Problem Solving Workshops will integrate information from the courses offered during that term (as well as previously mastered material) in a way that assists students in mastering course material in an active learning environment and in a manner that helps to develop problem solving skills. In addition, these workshops are designed to cross disciplinary boundaries to foster deeper understanding of the material by the student. Students will be expected to use critical thinking skills, effectively communicate through speaking and function effectively in small group sessions. The workshops will be led by near-peers under the direction of appropriate faculty members. **(1)**

PSC 332 *Pharmaceutical Sciences Problem Solving Workshop II*. The Pharmaceutical Sciences Problem Solving Workshops will integrate information from the courses offered during that term (as well as previously mastered material) in a way that assists students in mastering course material in an active learning environment and in a manner that helps to develop problem solving skills. In addition, these workshops are designed to cross disciplinary boundaries to foster deeper understanding of the material by the student. Students will be expected to use critical thinking skills, effectively communicate through speaking and function effectively in small group sessions. The workshops will be led by near-peers under the direction of appropriate faculty members. **(1)**

PSC 334 *Methodologies for Research and Evaluation of Medicinal Plants.* The use of medicinal plants (herbals, botanicals) to treat human diseases comes from ancient times and, with the development of new technologies, a number of new drugs have been discovered. According to the World Health Organization, 80% of the population of developing countries rely on medicinal plants and other traditional medicines and, in the US, approximately 55% of patients use medicinal plants or other complementary medicines to alleviate health care problems. This course will provide a broad perspective on the current state of knowledge of medicinal plants, discuss the use of medicinal plants by indigenous cultures and review the medicinal use of specific plants in the US and developing countries. A major focus of the course will be on the discovery of new medicinal plants through bioprospecting and on the methods used to investigate the active constituents of medicinal plants, to analyze specific plant chemicals and to validate their biological and/or biomedical properties. The course will focus predominantly on medicinal plants used in the upper and lower Amazon regions of Peru. Students may also have the opportunity to conduct field work in the Amazon rainforest and to participate in research on medicinal plants at the Universidad Nacional Agraria de la Selva in Tingo Maria, Peru, and/or in ACPHS research laboratories as a separate course offered during the summer semesters. **(3); Prerequisites:** BIO 102/ 121

PSC 335 *Drugs of Abuse:* This course provides a basic introduction to the neuropharmacology of licit and illicit psychoactive drugs. It will review the major classes of licit and illicit drugs, including alcohol, opiates (morphine, oxycodone), psychostimulants (caffeine, cocaine, amphetamine, khat), marijuana, hallucinogens (psilocybin, mescaline), MDMA, dissociative anesthetics (ketamine, PCP) and hypnotics (benzodiazepines). The course will focus on the acute and long-term pharmacological, psychological, behavioral and adverse effects produced by these drugs and explore the cultural, historical and religious context for their use. The neural mechanisms responsible for drug addiction will also be reviewed and both pharmacological and non-pharmacological treatments for addiction will be discussed. **(3); Prerequisite:** PSC 321.

PSC 341 *Pharmaceutics I.* This course sequence focuses on the physicochemical principles of drug delivery and pharmaceutical dosage forms. The first part introduces the physical, chemical and mathematical principles, theories, terminology, calculations and methodologies of physical pharmacy, dosage forms and drug delivery systems. The topics include properties of solutions, solution dosage forms, equilibrium and kinetics in solutions, properties of dispersions, dispersion dosage forms, preformulation, quality standards, new drug development and the drug approval process. **(3); Prerequisites:** BIO 111, BIO 121, CHE 121, CHE 221, PSC 311, MAT 111, PHY 222 or permission of the instructor

PSC 342 *Pharmaceutics II.* This course sequence focuses on the physicochemical principles of drug delivery and pharmaceutical dosage forms. In the second part, the foundations of physical pharmacy and biopharmaceutics are covered; physical, chemical, mathematical and biological principles are applied to the design of dosage forms and drug delivery systems; and commonly used pharmaceutical ingredients and manufacture methods are introduced. Topics include principles of biopharmaceutics, topical and transdermal drug delivery, solid dosage forms and oral drug delivery systems, sterile products, nasal and pulmonary drug delivery, specialty products, advanced drug delivery systems and novel drug delivery strategies. **(3); Prerequisite:** PSC 341 or permission of the instructor

PSC 351 *Alternative and Complementary Medicine.* This course will examine complementary and integrative medicine practiced in the United States. The course will examine the underlying cultural assumptions and world views of allopathic and complementary medical systems and introduce students to both mechanistic and holistic belief frameworks. Systems such as homeopathy, chiropractic, osteopathy and Western herbalism will be discussed, as well as techniques or approaches including touch therapies, aromatherapy and light therapy. Systems that stress integration of mechanistic with personalistic beliefs will also be discussed, including naturopathic, traditional Chinese medicine and ayurvedic practices. The role of the mind in wellness and the concept of mind/body medicine will be integrated throughout the course. In presentations, students will be required to investigate systems or techniques within the integrative medical spectrum which interest them. **(3); Prerequisites:** BIO 111 and 121

PSC 361 *Pharmaceutical Analytical Techniques I.* This course serves as an introduction to some of the major techniques used for development, characterization, and evaluation of delivery systems and drug products, as well as qualitative and quantitative analysis of the active compounds. The analytical techniques studied include spectrophotometry, chromatography, nuclear magnetic resonance and mass spectrometry. Other techniques used for assessment of particle size, drug *in vitro* release, and determination of formulation characteristics and stability are also studied. The laboratory portion focuses on the application of such methodologies and operation of related instruments to answer specific aims of a new research project proposed each semester. **(3); Prerequisite:** CHE 221

PSC 362 *Pharmaceutical Analytical Techniques II.* The course has been designed to be a practical introduction to essential techniques in cell and molecular biology. The semester is broken up into several modules whose experimental series are designed to achieve a specific goal related to the study of tumor suppressor protein function and regulation. The experiments are novel with no *a priori* knowledge of the results, providing a framework for the development of practical research skills including troubleshooting, experimental design, and data analysis. The core techniques to be learned include: electrophoresis of DNA and proteins, protein quantitation, Western blotting, cell transfection methods, restriction enzyme digest, plasmid DNA isolation, PCR mutagenesis, gene expression assays, and immunofluorescent cell staining. Laboratory notebooks, quizzes, homework assignments, and manuscript-style results presentations factor into grading, although class participation/ performance over the course of the semester are substantially weighed. **(3); Prerequisite:** CHE 221

PSC 410 *BSPS Thesis I.* This course is required for all BSPS students registered for the Thesis Option. Participation in Thesis I requires completing an accepted application to the BSPS Thesis Option including the approval of the Director of the BSPS Program and the Pharmaceutical Sciences Department Chair. Students will work with an identified faculty mentor to develop a thesis proposal which will provide appropriate background, hypothesis, specific aims and methods for the thesis work to be conducted as part of BSPS Thesis Research I. The written thesis proposal will be in the format of an NIH grant application. The thesis proposal must be approved by the faculty mentor. Student will prepare and present a seminar of their thesis proposal. This course can be taken prior to or concurrently with BSPS Thesis Research I. The faculty mentor will assign the BSPS Thesis I grade. **(3)**

PSC 411 *BSPS Thesis II.* This course is required for all BSPS students registered for the Thesis Option. This course must be taken concurrently with BSPS Thesis Research II and students must have completed BSPS Thesis I and BSPS Thesis Research I. Students will be responsible for writing a senior thesis based on the research data generated in Thesis Research I and II as outlined in the thesis proposal produced in Thesis I. In addition, students will prepare a seminar that describes the research project, results obtained and the conclusions that can be drawn from the research. The seminar will be presented to the ACPHS community. The written thesis will be submitted to the thesis mentor prior to the seminar presentation and revised according to the thesis mentor's critique. If the seminar and the revised thesis are found to be acceptable by the thesis mentor, the thesis mentor will approve the thesis. The mentor will assign the BSPS Thesis II grade. **(3); Prerequisites:** PSC 410 and PSC 412

PSC 412 *BSPS Thesis Research I.* BSPS Thesis Research I is the foundational course for students pursuing the Thesis Option within the BSPS program. Under guidance of the faculty mentor and as outlined in the thesis proposal produced in BSPS Thesis I, students will develop a novel research hypothesis, design and execute experiments to test the hypothesis, and accumulate and analyze data. The foundational work of BSPS Thesis Research I is expanded upon, refined, and brought to conclusion in BSPS Thesis Research II. **(3)**

PSC 413 *BSPS Thesis Research II.* This course is a continuation of work begun in BSPS Thesis Research I. Students will continue to refine their laboratory skills, address problems identified in previous studies, and pursue new avenues of research opened up by their experiments. At the conclusion of BSPS Thesis Research II, students will present their findings in seminar and detail their findings in writing as part of the course BSPS Thesis II. **(3); Prerequisite:** PSC 412

PSC 421 *BSPS Thesis Seminar.* Students pursuing the thesis option will register for BSPS Thesis Seminar concurrently with BSPS Thesis 2. Once the thesis research is completed, the research results will be summarized in written form in the style of a manuscript that can be submitted for publication. The student will also prepare and present a seminar that describes the complete thesis research project, from the background research that led to the formation of the research hypothesis, to the discussion of the results of the studies. The seminar will be presented in a public forum and should represent the culmination of the thesis project. **(1)**

PSC 431 *Foundations of Pharmaceutical Sciences*. This introductory course is required for BS Pharmaceutical Sciences students. The course reviews the foundational topics in Pharmacology/Medicinal Chemistry, setting the stage for subsequent courses in Pharmacology/Medicinal Chemistry. Topics covered include principles of receptor and ligand interactions, dose response curves, pharmacokinetics (absorption, distribution, and elimination of drugs), pharmacodynamics (drug concentration and effect), biotransformation of drugs, enzyme polymorphisms, and factors affecting drug action. **(2); Prerequisites:** PSC 311, PSC 312, PSC 321 and PSC 322

PSC 432 *Infectious Disease Pharmacology*. This course is required for all BS Pharmaceutical Sciences students enrolled in the Pharmacology concentration. The course covers major anti-infective drug classes including antibiotic, antimycobacterial and antiviral drugs. The mechanism of action, adverse effects, structure activity relationships, and pharmacokinetics of model compounds from each drug class will be considered **(2); Prerequisite:** PSC 431

PSC 433 *Neuropharmacology*. This course is required for all BS Pharmaceutical Sciences students enrolled in the Pharmacology concentration. The course focuses on drugs that affect the central and peripheral nervous systems including autonomic drugs, antipsychotics, antidepressants, and analgesics. The mechanism of action, adverse effects, structure activity relationships, and pharmacokinetics of each drug class will be considered. **(3); Prerequisite:** PSC 431

PSC 434 *Cardiovascular Pharmacology*. This course is required for all BS Pharmaceutical Sciences students enrolled in the Pharmacology concentration. The course covers cardiovascular and anti-inflammatory drugs. Specific topics to be covered include antihypertensive, diuretic, anti-dyslipidemic and anti-arrhythmic drugs, NSAIDs and other anti-inflammatories. The mechanism of action, adverse effects, structure activity relationships, and pharmacokinetics of each drug class will be considered. **(3); Prerequisite:** PSC 431

PSC 441 *Pharmacokinetics*. This course presents concepts and mathematical techniques used to describe the time course of drug disposition in biological systems using compartmental and non-compartmental analysis. Biopharmaceutical and pharmacokinetic principles used in the selection, dosing, monitoring and evaluation of drug therapy are introduced. These principles are applied to evaluation of drug literature and development of drug dosage regimens of selected classes of drugs for individual patients. **(3); Prerequisites:** PSC 341 and PSC 342

PSC 445 *Drug Discovery and Development*. This course multi-disciplinary course will cover all components of drug discovery and development, from the bench to the bedside, including pharmacology, medicinal chemistry, molecular biology, biochemistry, immunology, formulation, delivery, pharmacokinetics, regulatory affairs, clinical research, marketing, business development, sales, medical affairs and patent filing. The course will be presented by the instructor and by experts from various pharmaceutical and biotechnology companies (moderated by the instructor). **(3); Prerequisites:** PSC 311, PSC 312, and PSC 431 or PTP 401 or concurrent enrollment in PSC 431 or PTP 401.

PSC 446 *Regulatory Science*. Regulatory science is the science of developing new tools, standards and approaches to assess the safety, efficacy, quality and performance of drugs, biologics, medical devices, cosmetics and other products. This course introduces and examines the current US federal regulatory system on the regulated products, and discussed the functions and operations of the FDA. The current trend of the Harmonization of worldwide pharmaceutical regulations is also discussed. The course also introduces the practice of regulatory affairs, and teaches the principles, ethics and strategies of this profession. **(3); Prerequisites:** PSC 341.

PSC 447 *Fundamentals of Drug Metabolism and Pharmacokinetics in Drug Development and Clinical Trials*. This is a multidisciplinary course that focuses on the in vitro and in vivo pharmacokinetics, pharmacodynamics and drug metabolism (PPDM) evaluations of lead compounds, as recommended by the FDA and ICH guidelines. The course is designed to increase understanding of the important roles and applications of the three disciplines in pre-formulation, pre-clinical and clinical investigations of future therapeutic entities; including small molecules and biologic drugs. The course consists of lectures, take-home assignments, in class participation and discussion, and data analysis. The complementary topics of the course include toxicokinetics, safety pharmacology, biopharmaceutics, drug delivery systems and experimental design. The emphasis is on the role of PPDM in drug development from target selection through clinical trials. **(3); Prerequisite:** 3rd year curriculum of BSPS, or PharmD programs, or permission of the course coordinator

PSC 451 *Scientific Literature Evaluation (SLE)*. This course will teach students how to evaluate scientific literature and prepare a seminar. The course will be divided into sections of approximately 24 students and each section will focus on a specific topic or body of knowledge. Students will have multiple opportunities to give short presentations that focus on data analysis and literature evaluation. Students will develop evaluation and presentation skills throughout the course, initially by presenting sections of scientific articles selected by faculty and, subsequently, by choosing articles, themselves, for presentation. Throughout the course, student's continual and active engagement in discussions focused on critical analysis of the scientific literature will build confidence and comfort in thinking critically about the scientific literature and promote evidence based decision making. Discussions will include appropriateness of sample populations selected, comparison groups used, medical ethics, statistical significance, clinical significance and evidenced based recommendations. This course will thus provide students with multiple opportunities to present and discuss data and to present a scientific seminar. **(1); Prerequisite:** PHD 410

PSC 452 *Pharmaceutical Sciences Journal Club*. This course is designed to enhance the ability of students to critically evaluate scientific articles published in juried scientific journals. Articles will be selected from current scientific literature in a variety of disciplines in the pharmaceutical sciences, including drug delivery, drug development, medicinal chemistry, molecular biology, pharmacogenomics, pharmacology, physiology, biochemistry and pharmaceuticals. All participants will read and critique the articles. Each student will present at least two articles per semester. **(1); Prerequisites:** PSC 311, PSC 312, PSC 321, PSC 322 and PSC 431 or PTP 401 or concurrent enrollment in PSC 431 or PTP 401 or permission of the instructor

PSC 454 *Research Seminar*. The course represents the culmination of thesis-track research within the BSPS curriculum. In conjunction with their faculty mentor, students prepare a seminar talk based on their research accomplishments, which is presented during a seminar session open to the ACPHS community at the conclusion of the semester. This is a pass/fail course. **(1); Prerequisites:** PSC 361, PSC 362, PSC 463 and concurrent enrollment in PSC 464

PSC 463 *Independent Research I*. Students will pursue research with a faculty mentor in an area consistent with their career goals and the faculty member's research interests. In conjunction with Scientific Communication, students will perform an in-depth literature search and develop a testable hypothesis. The student and mentor will then work together to develop a research plan that will test the hypothesis. The student will learn the necessary techniques, conduct experiments and analyze data appropriate to the research goals under the guidance of the faculty mentor. Work on the research project will continue in Independent Research II. **(3); Prerequisites:** PSC 361, PSC 362 and concurrent enrollment in PSC 253

PSC 464 *Independent Research II*. Students will continue working under the supervision of their faculty mentor on the research project developed as part of Independent Research I. This will likely include continued learning of necessary techniques, conducting experiments and analyzing data to further test the hypothesis. Results of the research conducted in Independent Research I and II will be presented in Research Seminar. **(3); Prerequisites:** PSC 463 and concurrent enrollment in PSC 454

PSC 631 G *Foundations of Pharmaceutical Sciences*. The course reviews the foundational topics in pharmacology and medicinal chemistry, setting the stage for subsequent courses in the Pharmacology and Pharmaceuticals concentrations. Topics covered include principles of receptor and ligand interactions, dose response curves, pharmacokinetics (absorption, distribution, and elimination of drugs), pharmacodynamics (drug concentration and effect), biotransformation of drugs and factors affecting drug action. **(2); Prerequisite:** Permission of the Instructor

PSC 632 G *Pharmacology I*. The course covers major drug classes, including antibiotics, anti-virals, and anti-neoplastics. The mechanism of action, adverse effects, structure activity relationships, and pharmacokinetics of model compounds from each drug class will be considered. **(2); Prerequisite:** PSC 631 or permission of the instructor.

PSC 633 G Pharmacology II. The course covers autonomic drugs, CNS drugs, including anesthetics, sedative hypnotics, antidepressants, antipsychotics, anti-seizure drugs, analgesics, and anti-Parkinson agents, and drugs used to treat endocrine disorders, including calcium disorders, hypothalamus, pituitary, and thyroid problems, anti-androgens, anti-estrogens and progestins, and drugs used to treat diabetes and hypoglycemia. The mechanism of action, adverse effects, structure activity relationships, and pharmacokinetics of each drug class will be considered. **(3); Prerequisite:** PSC 631 or permission of the instructor.

PSC 634 G Pharmacology III. The course covers cardiovascular drugs, including antihypertensives, diuretics, anti-dyslipidemics and anti-arrhythmics and anti-inflammatory drugs, such as NSAIDs, antihistamines, and anti-asthmatic drugs. The mechanism of action, adverse effects, structure activity relationships, and pharmacokinetics of each drug class will be considered. **(3); Prerequisite:** PSC 631 or permission of the instructor.

PSC 641 G Advanced Pharmaceutics I (Physical Pharmacy & Biopharmaceutics). This course examines physical pharmacy and biopharmaceutics, focusing on the physicochemical and biological factors that impact drug delivery and formulation design. These principles and theories are the foundations for drug candidate selection, pre-formulation, formulation design, drug absorption and transport, drug delivery system design and targeted drug delivery. **(3); Prerequisite:** PSC 631 or permission of the instructor.

PSC 642 G Advanced Pharmaceutics II (Formulation Design and Drug Delivery). This course applies physical, chemical and biopharmaceutical principles to the study of formulation design strategies and drug delivery methods for drug product development. The topics of drug products are organized by solid, semi solid and liquid dosage forms. Drug delivery systems utilizing special routes of administrations, including transdermal delivery, pulmonary and nasal drug delivery, novel drug delivery systems, and targeted delivery are also discussed. **(3); Prerequisites:** PSC 631 and PSC 641 or permission of the instructor.

PSC 646 G Regulatory Science. This course will examine the process for bringing new drugs, medical devices and other medical products to the market from a regulatory point of view. It will explore new directions in the science of developing methods and standards for assessing the safety, efficacy and quality of drugs, biologics, medical devices, cosmetics and other products, review the US federal regulatory system and discuss standards and operations of the Food and Drug Administration (FDA) including quality assurance, good laboratory practice, investigational new drug applications (NDA) and review process initiatives designed to speed drug review. Regulatory legislation, including the Food, Drug and Cosmetic Act will also be discussed and global initiatives for international harmonization of worldwide pharmaceutical regulations will be covered. **(3); Prerequisites:** PSC 341 or PSC641.

PSC 651 G Pharmaceutical Sciences Journal Club. This course is designed to enhance the ability of graduate students to critically evaluate scientific articles published in juried scientific journals. Articles will be selected from current scientific literature in a variety of disciplines in the pharmaceutical sciences, including drug delivery, drug development, medicinal chemistry, molecular biology, pharmacogenomics, pharmacology, physiology, biochemistry and pharmaceuticals. All participants will read, present, and critique the articles. Each student will present at least two articles per semester. **(1)**

PSC 661 G Research Rotation. Students will complete a one semester laboratory experience in order to facilitate the selection of a thesis research advisor. Students will select a potential mentor based on interests and availability of openings in any given lab. Students are expected to spend a minimum of 10 hours per week on laboratory research during the rotation. They are to meet with the faculty advisor at least one hour per week for basic introduction to laboratory principles and practices, and to discuss their research. Students are required to complete reading assignments as directed by the faculty advisor and write a report of the research data and present a ten minute talk summarizing their research at the end of the rotation. **(2)**

PSC 671 G Ethics in Research. This course includes a discussion format based on ethical issues involved in the research process. Students will have focused reading on the ethical issues involved in research and then will apply the readings to case studies during discussion. Topics covered will include, but are not limited to: Morality and research ethics, ethical issues before research committees, ethical issues involving human and animal subjects, reporting of research and conflict of interest. **(1)**

PSC 672 G *Experimental Design and Data Analysis*. This course provides students with a basic knowledge of experimental design and biostatistics. Students will learn how to design experiments and analyze and interpret the results. Topics include confidence intervals, hypothesis testing, power, nonparametric methods, and one- and two-way analysis of variance. Students will learn how to use computer software for many of the applications. **(2)**

PSC 731 G *Immune Brain Communication*. This course deals with the mechanisms by which the peripheral immune system and the brain exchange information to mount effective strategies to cope with systemic inflammation and sepsis. The course will closely examine the mechanisms by which immune signals generated in the periphery act upon the brain to produce host-defense responses such as fever, behavioral depression (sleep and anorexia), and hyperalgesia. The course will also examine how the brain, in turn, acts upon the immune system to modulate the intensity of the underlying inflammatory response. The interdisciplinary nature of this course will provide students with a critical understanding of the multifaceted connections between the immune system and the brain. **(3)**

PSC 732 G *Cardiovascular Pharmacology*. This course provides an in depth review of cardiovascular pathophysiology and pharmacology. The course reviews current concepts on the molecular mechanisms of cardiovascular function and the mechanism of action of drugs used to treat cardiovascular diseases. **(2)**;

Prerequisite: PSC 634 or permission of the instructor

PSC 733 G *Pharmacology and Molecular Genetics of Cancer*. This course includes a study of the molecular-genetic mechanisms underlying tumorigenesis, including the role of oncogenes, tumor suppressors, and pathogens (viruses and bacteria). Genomic approaches to the study of both hereditary cancers and somatic mutations will be explored. The pharmacology of current cancer therapeutics and the rational design of novel anti-cancer drugs will be discussed throughout the course. **(3)**; **Prerequisite:** PSC 631 or Permission of the instructor.

PSC 735 G *Cell Signal Transduction*. This course consists of lectures and discussion of articles that underscore well-established intracellular signal pathways relevant to topics in pharmacology. The primary goal of this course is to establish understanding of; (1) critical well-established mechanisms of intracellular signaling, (2) critical manuscripts that formed the foundation of cell signaling, and (3) rationale for drug targeting of the cell-signaling components. Each topic will be first addressed with lecture which is followed by student presentation of break-through papers in the topic. The topics, manuscripts and order of student presentation will be chosen by the faculty member. **(2)** **Prerequisite:** PSC631 or Permission of the instructor.

PSC 736 G *Immunopharmacology*. Immunopharmacology will explore the immune system from a pharmacological viewpoint. After a short review of the basic concepts of immunity, the course will closely examine the role of antibodies in immunodiagnosis, and immunotherapeutics. The immunotherapeutics portion of the course will examine the roles of vaccines and antibodies in modifying immune responses as well as drugs which modify immune responses in allergy and asthma, cancer therapies, immunosuppressives, biologics, immunotoxicology and dietary and plant immunomodulators. **(3)**; **Prerequisite:** PSC 634 or permission of the instructor.

PSC 737 G *Immune-Brain Communication*. This course deals with the mechanisms by which the peripheral immune system and the brain exchange information to mount effective strategies to cope with systemic inflammation and sepsis. The course will closely examine the mechanisms by which immune signals generated in the periphery act upon the brain to produce host-defense responses such as fever, behavioral depression (sleep and anorexia), and hyperalgesia. The course will also examine how the brain, in turn, acts upon the immune system to modulate the intensity of the underlying inflammatory response. The interdisciplinary nature of this course will provide students with a critical understanding of the multifaceted connections between the immune system and the brain. **(3)**;

Prerequisites: PSC 631, PSC 632, PSC 633, PSC 634 and PSC 674 or permission of the instructor.

PSC 738 G *Environmental Health: Toxicology, Regulation and Economics*. This course is designed to provide students with an introduction to and overview of the key areas of environmental health. Using the perspective of the population and community, the course will cover factors associated with the development of environmental health problems. Students will gain an understanding of the interaction of individuals, communities, and economic activity with the environment, the potential impact on health of environmental agents, and specific applications of concepts of environmental health. The course will cover principles derived from core environmental health. The sequence of major topics begins with background material and the tools of the trade (environmental epidemiology, environmental toxicology, environmental policy and regulation). The course then covers specific agents of environmental diseases (e.g., microbial agents, ionizing and non-ionizing radiation). Finally, applications and domains of environmental health are addressed (e.g., water and air quality, food safety, waste disposal, occupational health, and injuries). **(3)**

PSC 739 G *Introduction to Psychoneuroimmunology*. This course examines the interaction between psychological processes and the nervous and immune systems. It integrates a substantial number of disciplines, including genetics, immunology, medicine, endocrinology, neuroscience, psychology and sociology. It is an integrative approach to both research and health care. The course will also cover the physiological functioning of the neuroimmune system in health and disease, disorders of the immune system, such as autoimmune diseases, hypersensitivities, and how psychological states, such as anxiety and depression, impact the neurological and immune systems and lead to the development or exacerbation of infections, heart disease, diabetes, and multiple sclerosis. **(3); Prerequisites:** PSC 634 and PSC 672.

PSC 741 G *Pharmacokinetic Modeling*. This pharmacokinetics course is an elective course for Pharmaceutical Sciences graduate students (Pharmaceutics Track). The course presents concepts and mathematical techniques for description of the time course of drug disposition in biological systems. The course also presents biopharmaceutical and pharmacokinetic principles used in the selection, dosing, monitoring and evaluation of drug therapy. At the end of the course the student should be able to find, obtain, understand, analyze, evaluate, and synthesize pharmacokinetic information and make informed, rational, and responsible evaluation of drug dosage regimens. **(3); Prerequisites:** PSC 641 and PSC 642 or Permission of the instructor.

PSC 742 G *Drug Discovery and Drug Development*. This is a translational and multi-disciplinary course that deals with all components of drug discovery and development from the bench to bedside and from concepts to molecules to medicines. This will include pharmacology, medicinal chemistry, molecular biology, biochemistry, immunology, formulation, delivery, pharmacodynamics, pharmacokinetics, pharmacogenomic, regulatory affairs, clinical research, clinical trials and evidence based medicine, marketing, business development, sales, medical affairs and patent filing. This course will be presented by the course coordinator who will be supported by experts from various pharmaceutical and biotechnology companies, and will include a number of case studies to illustrate the development of several blockbuster drugs. **(3); Prerequisite:** PSC 631

PSC 743 G *Pharmaceutical Stability*. This course studies the factors that influence drug stability, the mechanism of degradations, the methods to predict the stability, and strategies of stabilization. It also combines fundamentals and applied perspectives on the pharmaceutical stability assessment, which introduce the methods to analyze stability and determine shelf-life. An overview of the current industrial practices for stability testing is also provided. **(3) Prerequisite:** Permission of the instructor.

PSC 744 G *Special Topics in Pharmaceutics*. This course is designed to allow students to study diversified subjects of current interest which are not available in other courses. The subjects are related to physical pharmacy, biopharmaceutics, drug delivery, drug development and/or formulation design. The course is conducted through lectures, tutorial studies, library assignments and/or research projects in the selected areas of advanced study. The student, under faculty advisement, must propose a course plan to the department Graduate Curriculum Committee Chair for approval before registration. **(1-3); Prerequisites:** PSC 641 and PSC 642 or permission of the instructor.

PSC 756 G *Chemical Biology.* Chemical biology is a diverse and evolving field involving chemical approaches to studying and manipulating biological processes. In this course, students will develop an understanding of chemical reactions utilized in the synthesis of small molecules and macromolecules, and of the chemical principles underlying enzyme functions and receptor pharmacology. The topics incorporated in this course are essential to understanding how drugs are currently developed in the pharmaceutical industry. At the end of the course, students give an oral presentation on a current topic in chemical biology of their choice. **(3); Prerequisite:** Permission of the instructor.

PSC 757 G *Quantitative Drug Design.* The principles of subcellular pharmacokinetics are combined with the methods for estimation of drug-receptor binding energies for known and unknown receptors to provide a comprehensive quantitative approach to the construction of structure-activity relationships. The emphasis is placed on understanding the principles of quantitative descriptions of absorption, distribution, metabolism and excretion and drug-receptor binding in terms of drug structure and properties. The methods for prediction of the physicochemical properties of drugs, which are important in drug development, are analyzed in detail. **(3); Prerequisite:** Permission of the instructor.

PSC 758 G *Molecular Modeling.* In this course, students will gain hands-on experience with the molecular modeling software that is used in pharmaceutical industry. The following operations with protein structures will be learned: adding missing hydrogens to X-ray structures, assigning proper charges to amino acid residues, neutralizing the charges and preparing the structures for drug docking. The gained skills will include sketching molecular structures, docking them into macromolecular targets and performing simple binding energy predictions. **(3); Prerequisite:** Permission of the instructor.

PSC 759 G *Drug Property Prediction.* In this course, the students will gain hands-on experience with the property prediction software that is used in pharmaceutical industry. The gained skills will include sketching molecular structures, with the emphasis on the charged substructures, and prediction of their ionization constants (pK_a values) and tautomer equilibrium constants. Computational estimates will be practiced for properties such as solubility and partitioning between two immiscible phases. **(3); Prerequisite:** Permission of the instructor.

PSC 760 G *Macromolecular Structure.* This course will cover the fundamentals of macromolecular structure from the biochemistry of amino acids to protein motifs and folds, quaternary structure, post-translational modifications and protein-protein interactions. We will cover techniques available to gather information on protein structure (NMR, circular dichroism and X-ray crystallography) and methods used to investigate the interaction of proteins with other molecules (tryptophan fluorescence, isothermal titration calorimetry, NMR). This course will familiarize students with available proteomics tools including BLAST, Pymol, PDB and Expasy and will provide students with the tools necessary to make connections between the structure and function, and deduce information about uncharacterized proteins. **(3); Prerequisite:** Permission of the instructor.

PSC 761 G *Thesis Research.* This course consists of an independent research project which has been designed by the student, in consultation with the thesis advisor. The thesis advisor and thesis committee will be selected. The student will then develop a thesis proposal which will be approved by the thesis committee. Once the work described in the thesis proposal has been completed, the student will write and defend the thesis. It is anticipated that the thesis research will be completed over 2-3 semesters. **(1-8)**

PSC 771 G *Industrial Internship.* Students will learn practical aspects of one or multiple fields of the pharmaceutical sciences in an industry setting. They will have opportunity to further develop technical skills while applying theoretical and course-learned background. Drug synthesis, study of mechanisms of action of drugs, formulation and pre-formulation, pharmacokinetics, quality control and regulatory affairs are examples of specific fields in which students may gain experience through this internship. **(3-6); Prerequisites:** PSC 631 and permission of the advisor

PSC 851 G Pharmacology Seminar. This course consists of discussions of original research articles and review articles that focus on current relevant topics in the field of pharmacology. The primary goal of this course is to stimulate the critical analysis of the experimental design and the quality of the data, as it contributed to the development of the specific area of research. Each topic will be addressed through examination of articles that describe key developments, controversial findings or a historical progression of the development of a particular topic. Topics for discussion will be chosen by each faculty member participating in the course, according to his/her area of specialization/expertise. **(2); Prerequisites:** PSC 631, PSC 632, PSC 633, PSC 634 or permission of the instructor

PSC 852 G Pharmaceutics Seminar. This course consists of focused group discussions of original research papers and review literature in drug delivery systems and formulation design. The course will be divided in four major administration routes (transdermal, oral, pulmonary and mucosal - vaginal and buccal - delivery). Papers illustrating the development and evaluation of lipid-based systems, bioadhesive systems and polymeric particulate systems, will be discussed in the context of their relevance to each route. **(2); Prerequisites:** PSC 631, PSC 641, PSC 642 or permission of the instructor

PSC 861 G Capstone Library Research Project. Non-Thesis M.S. students are required to complete this capstone writing project which is run as an independent study course. Students will select a topic in conjunction with the faculty instructor and prepare a written review of the existing scientific literature that is relevant to the chosen topic. The review should focus on a particular scientific problem that is actively being investigated and should define and discuss the scope of the problem, the alternative approaches that are being taken to address the problem, the substantive findings that have resulted from these approaches, and how these findings have shaped the current state of knowledge of the problem. **(3); Prerequisite:** Permission of the Instructor

PSL 331 Pharmacy Skills Lab I. The Pharmacy Skills Laboratory Courses prepare Doctor of Pharmacy students to provide pharmaceutical care by encouraging students to practice skills used in the process of medication preparation, delivery and patient monitoring. This series of six required courses is designed to instill values, attitudes and skills that enable lifelong intellectual, personal and professional growth. Students will exercise critical thinking, communication, self-learning abilities, responsible use of ethics, and social interaction. The courses are designed as a progressive sequence as students continue to build on concepts throughout the series. In Skills Lab I the focus of the course is on pharmaceutical calculations and extemporaneous compounding of common dosage forms. Students will become familiar with USP Chapter 795 requirements and will learn to accurately prepare compounded preparations. The laboratory component allows practice of these principals and skills. Skills Lab I concentrates on preparing the student to practice as a community intern. This series of courses is offered by the Department of Pharmacy Practice, and faculty who facilitate discussions and demonstrations are licensed pharmacists that have practiced in a variety of health-care settings. **(1); (Doctor of Pharmacy Students only.)**

PSL 332 Pharmacy Skills Lab II. In Skills Lab II previous concepts are reinforced and the focus of this course is on non-sterile compounding with commercially available products, professional communication, medication dispensing and patient education. Students will learn about legal and ethical issues related to community pharmacy. The laboratory component allows practice of these principals and skills. Skills Lab II completes the students' preparation to practice as a community pharmacy intern. This series of courses is offered by the Department of Pharmacy Practice, and faculty who facilitate discussions and demonstrations are licensed pharmacists that have practiced in a variety of health-care settings. **(1); Prerequisite:** PSL 331

PSL 431 Pharmacy Skills Lab III. In Skills Lab III previous concepts are reinforced and the focus of this course is the compounding of sterile preparations. Students will become familiar with IV preparation and administration, calculations, IV equipment and USP Chapter 797 requirements. The laboratory component allows practice of these principals and skills. Skills Lab III concentrates on preparing the student to practice as an institutional pharmacy intern. This series of courses is offered by the Department of Pharmacy Practice, and faculty who facilitate discussions and demonstrations are licensed pharmacists that have practiced in a variety of health-care settings. **(1); Prerequisites:** PSL 301, PSL 302

PSL 432 Pharmacy Skills Lab IV. In Skills Lab IV previous concepts are reinforced and the focus of this course is on inter-professional and patient communication, practical calculations, and discharge counseling. Students will become familiar with medication preparation and distribution, formulary management, documentation, error prevention techniques and technology commonly seen in institutional settings. The laboratory component allows practice of these principals and skills. Skills Lab IV completes the students' preparation to practice as an institutional pharmacy intern. This series of courses is offered by the Department of Pharmacy Practice, and faculty who facilitate discussions and demonstrations are licensed pharmacists that have practiced in a variety of health-care settings. **(1); Prerequisites:** PSL 301, PSL 302, PSL 431

PSL 531 Pharmacy Skills Lab V. In Skills Lab V previous concepts are reinforced and the focus of this course is performing aspects of physical examination (history taking, review of systems, vitals and focused physical exam skills), performing triage of common self-treatable diseases and identifying patients in need of a higher level of patient care. Students will become familiar with interviewing and physical assessment techniques as well as home diagnostic and monitoring devices. The laboratory component allows internalization and practice of these principals and skills. Skills Lab V concentrates on preparing the student for APPE rotations. This series of courses is offered by the Department of Pharmacy Practice, and faculty who facilitate discussions and demonstrations are licensed pharmacists that have practiced in a variety of health-care settings. **(1); Prerequisites:** PSL 301, PSL 302, PSL 431, PSL 432

PSL 532 Pharmacy Skills Lab VI. Skills Lab VI is the capstone course that brings together all of the previous knowledge and skills from the Pharmacy Skills Labs. The focus of this course is on patient monitoring in inpatient, community and clinic settings. Students will meet weekly with the entire class for 2 hours. Exercises utilize a patient case that is developed over the course of the semester. Group and individual active learning, discussions, mini-lectures and Q&A will revolve around the changing/evolving patient. PSL VI also provides a comprehensive compounding review component. In addition to a compounding and calculation review, throughout the semester students will compound sterile and non-sterile preparations, dispense medications and provide patient education. The 2 other components of the NYS part III Board Exam (errors & omissions, and look-alike sound-alike drugs) will be reviewed through the use of weekly homework assignments. PSL VI completes the students' preparation for APPE rotations. This series of courses is offered by the Department of Pharmacy Practice, and faculty who facilitate discussions and demonstrations are licensed pharmacists that have practiced in a variety of health-care settings. **(1); Prerequisites:** PSL 301, PSL 302, PSL 431, PSL 432, PSL 531

PSY 101 General Psychology (formerly LAS 221). This survey of basic concepts in psychology acquaints students with the principles of behavior underlying motivation, learning, personality development and normal and abnormal adaptive processes, as well as with experimental and applied approaches to the understanding and modification of behavior. The course emphasizes current concepts regarding factors that influence overall human adjustment. **(3)**

PSY 140 Mind and Morality (formerly LAS 142). This course explores how psychology helps us to understand what moral reasoning and behavior are all about. Can psychology explain significant aspects of human life? To answer this question, the course will examine "morality" as an expression of human social existence, "moral philosophy" as a justification for moral beliefs and principles, and "the mind" as the primary context of moral reflection and argument. In the end, psychology and ethics will be brought together. **(3)**

PSY 181 Human Development (formerly BIO 181). This course traces human development chronologically from conception to late life. At each major life stage, the changes a person experiences on the biological, psychological (cognitive and emotional), and social levels will be explored, as well as the unique problems and issues that affect people in that stage of life. End of life issues and bereavement will also be covered at the end of the course. **(3)**

PSY 210 Abnormal Psychology (formerly LAS 226). This course explores psychopathology from several different theoretical perspectives, including behavioral, cognitive, psychodynamic and biological. Diagnostic classification, etiological theories and treatment approaches to psychopathology will be reviewed. Special emphasis will be given to a multi-cultural analysis and to incorporation of the current DSM diagnostic system. **(3); Prerequisite:** PSY 101

PSY 215 Becoming Human (formerly LAS 324). This course explores central aspects of being human. Students examine masculine and feminine identity and their roles in the world as worker, doer, healer and quester. The purpose of the course is to deepen awareness of what it means to become fully human. Readings are drawn from philosophy, psychology and literature. **(3); Prerequisite:** PSY 101

PSY 321 Health Psychology. Building upon basic psychological principles learned in General Psychology, this course introduces the field of health psychology by examining the mental, emotional, social, and behavioral factors that affect the onset, recovery, and prevention of physical illnesses. The role of health services and patient-provider relations in health promotion and disease will also be examined. **(3); Prerequisite:** PSY 101

PTP 401 Principles of Pharmacology and Medicinal Chemistry (formerly BIO 411). This introductory course is required for all PharmD and an elective for BS Pharmaceutical Sciences students. The course reviews the basic core principles of pharmacology/medicinal chemistry, setting the stage for subsequent integrated Pharmacology/Therapeutics modules which cover specific diseases along with relevant drug classes. Receptors and receptor binding, dose response curves, pharmacokinetics (absorption, distribution, and elimination of drugs), pharmacodynamics (drug concentration and effect), biotransformation of drugs, pharmacogenomics and factors affecting drug action will be discussed. **(2); Prerequisites:** PSC 311, PSC 312, PSC 321 and PSC 322

PTP 410 PTPM Respiratory - PTPM2 is a 1-credit course focused on respiratory disorders. This is one in a series of 11 courses that examine therapeutic management of clinical disease states within an interdisciplinary sequence consisting of pathophysiology, pharmacology, medicinal chemistry, and pharmacotherapy. Building on concepts learned in Physiology/Pathophysiology I & II and Principles of Pharmacology and Medicinal Chemistry, courses in this series are organized by therapeutic area (e.g. respiratory disorders conditions are the focus of this course). Taught by both basic-science and clinical faculty, course content is integrated to promote an analytical understanding of fundamental drug and disease concepts as well as practice-based therapeutics of respiratory disorders. Emphasis is placed on evidence-based selection of rational therapeutic goals, recommendations, and outcome monitoring while using an integrated knowledge of drug properties and clinical diseases. General knowledge and skills development in this course will prepare students for problem-solving workshops, other courses in the PTPM series, experiential education, and pharmacy practice. **(1); Prerequisites:** PTP 401, PHM 329

PTP 425 PTPM Endocrine – PTPM3 is a 2-credit course focused on the endocrinology system. This is the fifth in a series of ten courses that examine therapeutic management of clinical disease states within an interdisciplinary sequence consisting of pathophysiology, pharmacology, medicinal chemistry, and pharmacotherapy. Building on concepts learned in Physiology/Pathophysiology I & II and Principles of Pharmacology and Medicinal Chemistry, courses in this series are organized by therapeutic area (e.g. endocrinology conditions are the focus of this course). Taught by both basic-science and clinical faculty, course content is integrated to promote an analytical understanding of fundamental drug and disease concepts as well as practice-based therapeutics of endocrinology disorders. Emphasis is placed on evidence-based selection of rational therapeutic goals, recommendations, and outcome monitoring while using an integrated knowledge of drug properties and clinical diseases. General knowledge and skills development in this course will prepare students for problem-solving workshops, other courses in the PTPM series, experiential education, and pharmacy practice. **(2) Prerequisite:** PTP 401

PTP 431 PTPM GI/Nutrition – PTPM 4 is a 2-credit course focused on the gastrointestinal (GI) system. This one in a series of 11 courses that examine therapeutic management of clinical disease states within an interdisciplinary sequence consisting of pathophysiology, pharmacology, medicinal chemistry, and pharmacotherapy. Building on concepts learned in Physiology/Pathophysiology I & II and Principles of Pharmacology and Medicinal Chemistry, courses in this series are organized by therapeutic area (e.g. GI conditions are the focus of this course). Taught by both basic-science and clinical faculty, course content is integrated to promote an analytical understanding of fundamental drug, nutritional and disease concepts as well as practice-based therapeutics of GI disorders. Emphasis is placed on evidence-based selection of rational therapeutic goals, recommendations, and outcome monitoring while using an integrated knowledge of drug properties and clinical diseases. General knowledge and skills development in this course will prepare students for problem-solving workshops, other courses in the PTPM series, experiential education, and pharmacy practice. **(2); Prerequisites:** PTP 401; PHM 329

PTP 440 PTPM Cardiovascular – PTPM1 is a 4-credit course focused on the cardiovascular system. This is the first in a series of 11 courses that examine therapeutic management of clinical disease states within an interdisciplinary sequence consisting of pathophysiology, pharmacology, medicinal chemistry, and pharmacotherapy. Building on concepts learned in Physiology/ Patho-physiology I & II and Principles of Pharmacology and Medicinal Chemistry, courses in this series are organized by therapeutic area (e.g. cardiovascular conditions are the focus of this course). Taught by both basic-science and clinical faculty, course content is integrated to promote an analytical understanding of fundamental drug and disease concepts as well as practice-based therapeutics of cardiovascular disorders. Emphasis is placed on evidence-based selection of rational therapeutic goals, recommendations, and outcome monitoring while using an integrated knowledge of drug properties and clinical diseases. General knowledge and skills development in this course will prepare students for problem-solving workshops, other courses in the PTPM series, experiential education, and pharmacy practice. **(4); Prerequisites:** PTP 401, PHM 329, BIO 313, BIO 314

PTP 446 PTPM Infectious Disease – PTPM5 is a 4-credit course focused on the treatment of infectious diseases. This is part of a series of courses that examine therapeutic management of clinical disease states within an interdisciplinary sequence consisting of pathophysiology, pharmacology, medicinal chemistry, and pharmacotherapy. Building on concepts learned in Physiology/ Pathophysiology I & II and Principles of Pharmacology and Medicinal Chemistry, courses in this series are organized by therapeutic area (e.g. Infectious diseases are the focus of this course). Taught by both basic-science and clinical faculty, course content is integrated to promote an analytical understanding of fundamental drug effects and disease concepts as well as practice-based therapeutics of infectious diseases. Emphasis is placed on evidence-based selection of rational therapeutic goals, recommendations, and outcome monitoring while using an integrated knowledge of drug properties and clinical diseases. General knowledge and skills development in this course will prepare students for problem-solving workshops, other courses in the PTPM series, experiential education, and pharmacy practice. **(4); Prerequisites:** PTP 401; PHM 329

PTP 515 PTPM RheumatologyOncology. PTPM Rheum/Onc is focused on the therapeutic approach to rheumatic, hematologic and oncologic disease states. This is one in a series of modules that examine therapeutic management of clinical disease states in an interdisciplinary approach taught by both pharmaceutical science and pharmacy practice faculty, while building upon previous courses such as Immunology, Physiology/Pathophysiology I&II, Introduction to Pharmacology and Medicinal Chemistry. Course content is integrated to promote an analytical understanding of fundamental drug and disease concepts as well as practice-based therapeutics of rheumatic, hematologic and oncologic disorders. Using both a lecture and patient case-based format, this module will emphasize evidence based selection of therapeutic and supportive care management, patient-centered pharmaceutical care based recommendations, and managing complex disease states and patients. In addition, this module will expand on students' patient assessment skills, patient outcome monitoring, documentation of patient centered care plans and patient counseling. Skill development in this course will prepare students for integrated problem solving workshops, experiential education, and pharmacy practice. **(3); Prerequisites:** PTP 401, BIO 313, BIO 314

PTP 525 PTPM Nephrology. PTPM Nephrology is a 2-credit course focused on the renal system. This is one of a series of courses that examine therapeutic management of clinical disease states within an interdisciplinary sequence consisting of pathophysiology, pharmacology, medicinal chemistry, and pharmacotherapy. Building on concepts learned in Physiology/Pathophysiology I & II and Introduction to Pharmacology and Medicinal Chemistry, courses in this series are organized by therapeutic area (nephrologic conditions are the focus of this course). Taught by both basic science and clinical faculty, course content is integrated to promote an analytical understanding of fundamental drug and disease concepts as well as practice-based therapeutics of nephrologic disorders. Emphasis is placed on evidence-based selection of rational therapeutic goals, recommendations, and outcome monitoring while using an integrated knowledge of drug properties and clinical diseases. General knowledge and skills development in this course will prepare students for problem-solving workshops, other courses in the PTPM series, experiential education, and pharmacy practice. **(2); Prerequisites:** PTP 401, BIO 313, BIO 314

PTP 526 *PTPM Complementary and Alternative Medicine*. PTPM Complementary and Integrative Medicine is a 1-credit course focused on examples of types of complementary medicine therapies available to patients. This course is intended to expand students' understanding of complementary medicine. Course content will focus on different complementary medicine therapies available to patients and the philosophic underpinnings of these systems. Taught by both pharmaceutical science and pharmacy practice faculty, course content is integrated to promote an analytical understanding of fundamental concepts in treatment and will examine mind-body medicine and traditional systems of therapeutics including: Traditional Chinese Medicine; Ayurvedic Medicine: Bodywork, including Osteopathic Medicine, Chiropractic Medicine and Therapeutic Massage; Homeopathy; Dietary Supplements; and Herbal Products. Emphasis will be placed on evidence-based medicine but also will include discussion on helping patients interested in using Complementary Medicine to make safe, educated decisions. Students will be introduced to the Complementary Medicine Databases such as Cochrane Reports, Natural Standard and other reliable Complementary Modalities. General knowledge and skills development in this course will prepare students for problem-solving workshops, experiential education, and pharmacy practice. **(1)**

PTP 528 *PTPM Genitourinary*. PTPM3 is a 2-credit course focused on the genitourinary system. This is the eighth in a series of ten courses that examine therapeutic management of clinical disease states within an interdisciplinary sequence consisting of pathophysiology, pharmacology, medicinal chemistry, and pharmacotherapy. Building on concepts learned in Physiology/ Pathophysiology I & II and Principles of Pharmacology and Medicinal Chemistry, courses in this series are organized by therapeutic area (e.g. genitourinary conditions are the focus of this course). Taught by clinical faculty (the basic science components of this course will be addressed during the PTPM2 Endo course), course content is integrated to promote an analytical understanding of fundamental drug and disease concepts as well as practice-based therapeutics of the genitourinary system. Emphasis is placed on evidence-based selection of rational therapeutic goals, recommendations, and outcome monitoring while using an integrated knowledge of drug properties and clinical diseases. General knowledge and skills development in this course will prepare students for problem-solving workshops, other courses in the PTPM series, experiential education, and pharmacy practice. **(2); Prerequisites:** PTP 401, BIO 313, BIO 314

PTP 549 *PTPM Neuro-Psychiatric Disorders*. PTPM Neuro/Psych is a 4-credit course focusing on neurologic/psychiatric diseases. This is the ninth in a series of ten courses that examine therapeutic management of clinical disease states within an interdisciplinary sequence consisting of pathophysiology, pharmacology, medicinal chemistry, and pharmacotherapy. Building on concepts learned in Physiology/Pathophysiology I & II and Principles of Pharmacology and Medicinal Chemistry, courses in this series are organized by therapeutic area (e.g. neuro/psych conditions are the focus of this course). Taught by clinical faculty and basic science faculty, course content is integrated to promote an analytical understanding of fundamental drug and disease concepts as well as practice-based therapeutics addressing common neurologic and psychiatric diseases. Emphasis is placed on evidence-based selection of rational therapeutic goals, recommendations, and outcome monitoring while using an integrated knowledge of drug properties and clinical diseases. General knowledge and skills development in this course will prepare students for problem-solving workshops, other courses in the PTPM series, experiential education, and pharmacy practice. **(4); Prerequisites:** PTP 401, BIO 313, BIO 314

SOC 101 *Sociology*. The ultimate goal of the course is to develop an understanding of the complexity of the world around us and gain new insight into how that social world functions to shape our behavior. By examining the methods, theories and areas of interest to sociologists, students will gain a general understanding of how they, as scientists, analyze the social world. The beginning of the course will (1) explore the assumptions, theories and methods that sociologists use for gaining greater insight into the social world, (2) look at the basic processes that shape the interactions we engage in every day, and (3) make critical application of theories and methodologies to everyday events and interactions. The remainder of the course will be devoted to the discussing and incorporation of major topical areas within sociology using the theoretical underpinnings. **(3)**

SOC 110 *Introduction to Culture and Society (formerly LAS 151)*. This course introduces the student to global diversity, theoretical ways of looking at cultural behaviors and understanding one's own ethnocentrism. Through film, ethnographic readings and text books, this course will give the student a broad view of societies of varying levels of complexity, focusing on systems of kinship, gender, economics, politics and religion, among others. **(3)**

SOC 115 *Introduction to Medical Anthropology (formerly LAS 283)*. Introduction to Medical Anthropology introduces students to the cultural foundations of illness and curing. The course focuses on non-Western societies and how these societies perceive and treat states of health and disease. The course presents issues of health and disease within a framework of ecological, evolutionary and cultural systems and provides a background in current theoretical perspectives in anthropology. **(3)**

SOC 120 *Introduction to Public Health*. This course will offer an introduction to public health, history of public health and public health education, and a focus on population health/social determinants of personal and community health. There will be an overview of the health care delivery system, the necessary human resources, and other public health topics will be addressed. **(3)**

SOC 140 *Family Violence (formerly LAS 204)*. This course is designed to provide the student with varied perspectives on family violence including historical, legal, cultural and political views, to familiarize the student with current trends and issues in partner (relationship) abuse, elder abuse, physical child abuse and child sexual abuse, to inform the student about current research on the nature and dynamics of family violence and to increase the student's understanding of the criminal justice, mental health, health care and social service responses to the victims, offenders and family members who are impacted by violence in the family. **(3)**

SOC 145 *Race and Ethnicity in America (formerly LAS 274)*. This course seeks to examine, describe, and explain the conditions and issues that surround a number of racial and minority groups in contemporary America. A variety of theoretical, historical, and topical concerns will be addressed during the course including an introduction to sociological study of racial and ethnic inequality in the United States. Emphasis will be placed on understanding the social, economic, political, historical, and demographic forces that have shaped the experiences of different racial and ethnic groups in the United States. This course will also address the processes that gave rise to race and ethnicity as important forces in the United States and the sociological perspectives that govern the understanding of these forces. **(3)**

SOC 210 *Aging and Society*. This course will provide an introduction to the sociology of aging using the life course perspective. Examining various theoretical frameworks and perspectives will help students to explore a variety of issues related to an aging population. We will explore the demographic, social and health aspects of aging from both a macro-level and the individual experiences of an aging population. In addition we will review organizational, community, and public policy responses to an aging population. **(3); Prerequisite:** HUM 102

SOC 290 *Undergraduate Research*. This course provides an opportunity for students to obtain a hands-on research experience under the guidance of a faculty member. The number of credit hours and scope of the project undertaken are at the discretion of the faculty member involved. SOC 290 is generally reserved for introductory level experiences and/or smaller scale projects. Students are expected to perform three hours of research related work per credit hour earned. **(1-3); Prerequisite:** permission of the instructor

SOC 301 *Research Methods for the Social Sciences*. This course provides students with exposure to a variety of research methods in the behavioral and social sciences. It will focus on the research process from crafting a research question to gathering data and analyzing the results through both quantitative and qualitative techniques. The course will emphasize applied research methods and we will develop skills in understanding and interpreting data. At the end of the course, students will have had exposure to a broad range of data collection methods as applied to a variety of health issues and problems. **(3). Prerequisite:** Third Year BS HHS Students.

SOC 310 *Evolution of Society and Human Health (formerly LAS 912)*. This course is designed to educate students about the relationship between society, culture and human biology through examination of the history of human health as it has been influenced by urbanization. The course begins with the earliest human societies and traces the history of human health in hunting/gathering societies, agricultural societies, medieval cities, industrial cities and cities today. Approximately half the course focuses on health in modern cities and developed nations. **(3); Prerequisite:** HUM 201

SOC 315 *Social Aspects of Health Care (formerly PAD 333)*. This course educates students about the relationship between human health and society, economics, politics, ideology and biology through examination of the history of human health policy and contemporary issues. **(3); Prerequisite:** HUM 201

SOC 320 Social Policy. This course examines the American system of public policy toward social concerns; program development and evaluation; implementation and management specifically in the areas of health, education, welfare reform, aging, etc. Programs developed by governments to ameliorate these problems have typically been public insurance programs or cash transfers such as unemployment insurance, welfare, and Social Security. Collectively these programs are known as "the welfare state". As such this course will examine the origins of the U.S. welfare state, its development over time, and features that make it distinctive as compared to welfare states in other nations. We will review existing policy regarding major social issues in the field of social welfare and understand the differential impact of policy on various populations. **(3); Prerequisite:** HUM 201

SOC 325 Medical Sociology. The purpose of this course is to provide an overview of the general field of medical sociology. Research and analysis of the medical environment from a sociological perspective will be explored. The course will focus on the major concerns of medical sociology: social facets of health and illness, the social functions of health institutions and organizations, the relationship of systems of health care delivery to other social systems, and the social behavior of health personnel and consumers of health care services. By examining the methods, theories, and research studies within the field of medical sociology, students will begin to appreciate and understand the role of social and cultural factors in health, research on the use of health services, the health professions, health-care organizations, and major issues in public policy and health care. **(3)**

SOC 330 Culture of Disability. This course will address psychological, sociological and cultural perspectives on disability. Sociological and cultural perspectives focus on the social construction of disability, the policy, legal and medical aspects of living with a disability, as well as specific populations and how they experience disability. The course focuses on experiences and depictions of disability in the past, present and looks to the future, specifically in terms of the role of technology in the disability community. What does it mean to be "disabled"? What impacts a person's experience of disability? How is the health care experience different or the same for a person with a disability than a non-disabled person (e.g., communication challenges, living arrangements, role of a caregiver/health care proxy)? **(3); Prerequisite:** SOC 101

SOC 335 Global Health. In Global Health students study health in the world's least economically developed countries (LDCs) by examining how narrative, gender, culture, the environment, and economics affect health and health outcomes. This course facilitates a global perspective that helps students both to engage with the complexities of health in the world's LDCs and to improve overall cultural competency. **(3); Prerequisite:** COM 115, HUM 201 or by permission of the instructor.

SOC 480 Undergraduate Field Experience. The undergraduate field experience is designed to enable Health and Human Sciences students to gain valuable skills and experience in a variety of public health settings. Working in a voluntary capacity, you are able to select a site that provides an opportunity to gain insight and knowledge regarding your career interests and goals. Through this course students will gain valuable professional experience. Internships are obtained by the students with consultation from ACPHS faculty and staff. **(1-9); Prerequisite:** permission of the instructor

SOC 490 Undergraduate Research. This course provides an opportunity for students to obtain a hands-on research experience under the guidance of a faculty member. The number of credit hours and scope of the project undertaken are at the discretion of the faculty member involved. SOC 490 is generally reserved for more advanced research projects of students with prior research experience. Students are expected to perform three hours of research related work per credit hour earned. Faculty members may expect students to present their research in venues either internal or external to the college. **(1-3); Prerequisite:** permission of the instructor

UGC MBA 510 Financial Accounting. An introduction to the generally accepted accounting principles of financial accounting as applied to publicly reported financial statements. Emphasis is to be placed on understanding the application of "generally accepted accounting principles" to financial statements. This course is designed for individuals with no prior academic or professional education on the topic of financial accounting. **[Union Graduate College]**

UGC MBA 512 *Managerial Accounting and Finance.* An introduction to the tools and techniques of financial analysis and decision-making. Topics covered include financial statement analysis, cost classification and behavior, cost-volume-profit analysis, incremental cost analysis, time value of money, capital budgeting, and financial planning. Spreadsheet programs are used in this course. Prerequisite: Financial Accounting UGC MBA 510. Students are expected to be proficient in the use of Microsoft Excel®. **[Union Graduate College]**

UGC MBA 635 *Project Management.* A project is a one-time or infrequently occurring operation with a unique goal, a limited lifespan, and limited resources. This course will focus on the basic components of project management, including statements of work, project selection, leadership and team building, communication, budgeting, resource scheduling, metrics and closure. Students will have the opportunity to develop a project plan of their own choosing using MS Project as well as explore current issues in project management through case discussions. **[Union Graduate College]**