University at Buffalo
School of Pharmacy and Pharmaceutical Sciences

Approved PharmD Elective List

The following is a list of approved electives for Pharmacy students including areas of interest (italicized) for assistance in choosing elective options. Not all courses are offered every semester. See Class Schedule (http://registrar.buffalo.edu/schedules). Also, see Elective Policies (http://pharmacy.buffalo.edu/academic-programs/pharmd/requirements/electives.html) for elective requirements and restrictions. Students are charged per credit hour for summer and winter courses. For questions, email pharm-advise@buffalo.edu.

Approved SPPS Elective Courses – Fall

P1	P2	P3	Course #	Class Title	Course Coordinator	Credits
		X	PHC 500	Basic Drug Development	Nguyen, J.	2
Fellowship Introductory graduate course on the fundamental concepts of drug formulation and development, including discussions of the crucial physicochemical and biopharmaceutical characteristics necessary for drug absorption.						
		X	PHC 508	Drug Delivery: Principles and Applications	Straubinger, R.	2
Fellowship A study at the advanced level of the physical and biological principles which apply to the design, development, and evaluation of drug delivery systems. Specific examples of modern systems such as transdermal preparations, liposomes, implants, monoclonal antibodies, and those involving site-targeting will be discussed. Please note: this is a rigorous course that involves 3-5 scientific papers each week, participating in discussions in class, and writing a term paper.						
		X	PHC 509	Pharmacogenomics	Blanco, J.	2
Fellowship, Pharmacogenomics This graduate level course covers the essential fundamentals of pharmacogenomics within the context of the pharmaceutical sciences. Emphasis is devoted to the application of pharmacogenomic principles and techniques to a) contemporary drug development practices, and b) drug treatments for major diseases. INSTRUCTOR PERMISSION ONLY.						
		X	PHC 539	Protein Pharmaceuticals	Balu-Iyer, S.	2
Fellowship, Pharmacokinetics/Pharmacodynamics (Pk/Pd)/Pharmacometrics The objective of the course is to introduce pharmaceutical issues associated with the development of protein drugs, in particular production, formulation, stability, protein characterization and analysis, Pharmacokinetics and dynamics, immunogenicity, protein delivery and next generation protein products.						
X	X	X	PHC 560	LC/MS in Pharm Res	Qu, J.	2
Fellowship The following philosophical points will be conveyed to students: 1. Analytical techniques are the eyes of scientific research; specifically, the quality of analytical work is highly important for quality PK/PD research; 2. The high sensitivity and selectivity of LC/MS makes it the most power tool in pharmaceutical and biological analysis, but that doesn't mean it is simply the solution of all your analytical problems; consider the instruments as tools that are not yet perfect in scientific research and consider analytical projects as researches; 3. Knowledge of separation and chromatography are much more important than the skill of 'operating instruments' in pharmaceutical and biological analysis; and 4. The historic milestones of LC and MS techniques provide an important perspective.						
		X	PHC 607	Intermediate Pharmacokinetics	Balthasar, J.	3
Fellowship, Pharmacokinetics/Pharmacodynamics (Pk/Pd)/Pharmacometics This course covers classical and contemporary methods for the characterization of drug concentration data and for the evaluation of the kinetics of drug absorption, distribution, metabolism, and excretion. Students will learn how to develop conceptual PK models, construct series of differential equations to define PK models, and work with the method of Laplace Transformation to solve differential equations and to develop analytical solutions for PK metrics. The course focuses on basic PK concepts, but also introduces population PK analyses, clinical trial simulation, and pharmacodynamic modeling. Students will learn to utilize PK software including WinNonLin and ADAPT.						
X	X	X	PHC 613	Pharmaceutics Seminar	Varies	1
Fellowship Guidance in research. INSTRUCTOR PERMISSION ONLY.						
X	X	X	PHC 615	Research	Varies	1-6
Any INSTRUCTOR PERMISSION ONLY.						
		X	PHC 630	Drug Metabolism and Transport	Morris, M.	3
Fellowship A study of the metabolism and transport of drugs and drug metabolites. Topics include in-depth discussions of Phase I and II biotransformation pathways, Solute Carrier and ATP-binding cassette membrane transport proteins, intestinal, hepatic, renal and brain metabolism and transport, in vitro/in vivo techniques for evaluating drug metabolism and transport, and scale-up of drug metabolism and membrane transport data.						
	X	X	PHM 525	Positron Emission Tomography	Sajjad, M.	2
Nuclear Science This course will introduce students to the modalities used in molecular imaging. Four imaging modalities will be covered. Those are optical imaging, Magnetic Resonance Imaging (MRI), Single Photon Imaging Technology (SPECT) and Positron Emission Tomography (PET). It is designed to introduce students to the basics of each modality. The students spend time at the radiochemistry laboratory for the production of human use PET radiopharmaceuticals. They are exposed to automated synthesizer, HPLC and other equipment needed to complete the quality control tests required by USP. The students also spend time in MRI camera laboratory and learn the practical aspect of MRI imaging.						
		X	PHM 536	Diabetes Management	Slazak, E.	3
Ambulatory Care *Obesity, Diabetes and Metabolic (Bariatric) Surgery* The purpose of this course is to provide the student with a multidisciplinary foundation in the principles of diabetes management. The student will develop their knowledge and ability to assess, manage, educate and monitor patients with diabetes. The contributing faculty are outstanding educators and practitioners from the fields of pharmacy, nursing, medicine, behavioral psychology, dietetics, and exercise physiology. All of the course faculty have professional practices and help patients manage their diabetes. The course is internet-based and requires the students to be self-directed in learning. Students will be provided with a course outline and dates to which modules should be completed and attend discussion sessions every two weeks. ONLINE COURSE. INSTRUCTOR PERMISSION ONLY.						
		X	PHM 540	Advanced Compounding	Reiman, A.	2
Community/Retail, Hospital Dispensing/Institutional Students are introduced to contemporary compounding methods utilized in many of today's institutional and community pharmacy practice settings. Students gain knowledge and hands-on experience in several prescription preparation exercises where advanced pharmaceutical compounding techniques and use of specialized equipment and instruments are employed. There are a total of ten lab exercises. Each exercise demonstrates an innovative pharmaceutical compound formulation and/or lab technique pursuant to the filling of a particular prescription or medication order. Students work alone or with a designated partner. The compounding lab is configured into 10 distinct workstations, each intended for the preparation of a different product. During a given lab session, each student/group is assigned to one of the stations. Each week, the student rotates to a different workstation until after 10 weeks all students have compounded 10 products. In preparation for weekly lab sessions, students are required to view (at home) a product-specific pre-recorded video lecture. OFFERED IN BOTH SPRING AND FALL.						
		X	PHM 550	Pharmacy Leadership	Prescott, W.	1
Academia, Residency There exists a critical leadership shortage within the profession of pharmacy. PHM550 is a 1 credit course designed for students enrolled at the University at Buffalo School of Pharmacy. The course is scheduled to meet during the fall semester. The primary goal of this course is to provide students identified as the future leaders of our profession with the tools necessary to develop their ability to effectively lead others, inside and outside their profession. Students will be assigned introductory readings in the following areas: identifying one's strengths; people skills, personalities, and networking; relationships and working effectively with						

others; team-building and team-managing; professionalism and ethics; supervising, managing, and leading; developing a professional practice vision, setting goals, and establishing priorities; and, integrating one's personal life and career. Students keep a reflective journal or complete an assignment for each reading, detailing: what they learned from the reading; the statement, passage or quote that was most profound to them; and an example detailing how they incorporated what they learned into their professional life. Classroom discussions will be student led, facilitated by the course coordinator, and will be based on readings, reflective journal exercises, and cases. FOR SCHOLARS STUDENTS ONLY.						
		X	PHM 551	Clinical Research Methods	Ma, Q.	3
Fellowship This course will introduce the student to the concepts and analytical foundation underlying evidence-based pharmacy practice and clinical research. Course content will focus on: concepts of evidence-based practice; fundamentals of research including measurement, reliability, validity, and ethical concerns; an overview of the FDA approval process; clinical research designs; data analysis and presentation; and the structure and evaluation of clinical research proposals and reports. Upon completion of the course, the student will be able to critically evaluate the medical literature for use in clinical and or/administrative decision making.						
		X	PHM 561	Global Health Outreach	Prescott, G.	1
Global Health This course is designed to expose students to issues surrounding global health including what world interdependence means, considerations in treating non-communicable diseases in low-income countries, pharmacists' role/servant leadership, concerns and regulations regarding medication use and acquisition outside the USA, and opportunities that exist for pharmacists in global health. Students will also be exposed to possible opportunities to participate in global health outreach such as medical mission trips, advanced rotation experiences, and short-term trips.						
	X	X	PHM 598 Spec	Specialty Pharmacy	Various	1-6
Any Specialty pharmacies handle drugs which can be of extreme cost or are highly complex from the providers or patients point of view. The pharmacy handles distribution, reimbursement, case management or other issues unique to this set of medications.						
X	X	X	PHM 598	Professional Problems	Various	1-6
Any Independent study or research project. INSTRUCTOR PERMISSION ONLY.						
		X	PHM 607	Clinical Evaluation of New Drugs	Hong, I.	1
Drug Information PHM 607 is a 1-credit hour course offered in the Fall Semester to students in the third professional year of the Doctor of Pharmacy program. The course is intended to build on drug information skills introduced to students in the P2 year and prepare information for presentation to peers and pharmacists on newly approved drugs.						
		X	PHM 639	Advancing Community Topics	Daly, C.	2
Community/Retail The role of a community pharmacist has shifted from product to clinical centric activities. It is now evolving where pharmacists in the community setting are providing more clinical care directly to patients as part of the encompassing patient centered, primary care focus team. Advanced Community Topics provides an overview of fundamental management, entrepreneurial, and clinical topics in today's evolving community pharmacist role. ONLINE COURSE. INSTRUCTOR PERMISSION ONLY.						
	X	X	PHM 798	Supervised Teaching	Various	1-3
Academia, Residency Students must apply and be accepted to become a teaching assistant (TA). There are about 85-90 TA's each year.						

Approved SPPS Elective Courses - Spring

P1	P2	P3	Course #	Class Title	Course Coordinator	Credits
		X	PHC 506	Biometry in Phc Sci	Bies, R.	3
Fellowship This course provides a broad overview of statistical approaches commonly used in the area of pharmaceutical research. In addition to learning the theoretical aspects of these approaches, students will gain hands-on experience applying these approaches to experimental data using a statistical software package used be researches in academia, government, and the pharmaceutical industry.						
		X	PHC 543	Molecular Genetic Methods	Blanco, J.	1
Fellowship This course consists of lectures and laboratories designed to introduce the theory and basic tools used in molecular biology. The course goal is to give students hands-on experience with a number of the techniques used in molecular biology as they are applied in the pharmaceutical sciences. The lectures will provide much of the theory that underlies these techniques. ONE-WEEK COURSE. CONTACT INSTRUCTOR FOR MORE INFORMATION. NOT OFFERED SPRING 2019 – until further notice.						
		X	PHC 608	Advanced Pharmacokinetics	Mager, D.	3
Fellowship, Pharmacokinetics/Pharmacodynamics (Pk/Pd)/Pharmacometrics This graduate elective course presents principles and applications of contemporary empirical and mechanism-based mathematical modeling approaches to characterize the pharmacokinetic properties of small and macromolecule drugs within the context of drug discovery and development. Case studies will be used to demonstrate how to identify, interpret, and in some cases predict drug- and system-specific properties that control the time-course and extent of drug exposure in relevant biological fluids (e.g., plasma) and sites of action.						
		X	PHC 609	Advanced Pharmacodynamics	Jusko, W.	3
Fellowship, Pharmacokinetics/Pharmacodynamics (Pk/Pd)/Pharmacometrics This graduate elective course presents principles and applications of mechanism-based, elemental through systems pharmacodynamic and pharmacometric modeling via lectures on general principles and modeling assignments representing case studies for specific models and drug applications. Students are expected to have taken PHC 607 (Intermediate Pharmacokinetics) (or an equivalent graduate course), be familiar with differential equations, and be able to perform pharmacokinetic modeling using software such as WinNonlin, Adapt, or similar.						
		X	PHC 610	Population Pk-Pd Modeling	Fiedler-Kelly, J. (even years) Bies, R. (odd years)	2
Fellowship, Pharmacokinetics/Pharmacodynamics (Pk/Pd)/Pharmacometrics This course introduces population pharmacokinetic and pharmacodynamic modeling methods, including the use of state-of-the-art software and tools (in particular, NONMEM) to analyze PK and PD data.						
X	X	X	PHC 614	Pharmaceutics Seminar	Varies	1
Fellowship Guidance in research. INSTRUCTOR PERMISSION ONLY.						
X	X	X	PHC 616	Research	Varies	1-6
Any INSTRUCTOR PERMISSION ONLY.						
		X	PHM 608	Selected Topics in ID	Sawyer, J.	2

Ambulatory Care, Community/Retail The unpredictable, though inevitable emergence of new infectious diseases has been recognized since the beginning of society. With advances in transportation, telecommunications and the integration of world business and cultural fields, globalization is ever expanding. With the interchanging of world views, products and ideas, other aspects of culture are also inevitably transported around the world. These include communicable diseases that create new challenges to global health.						
		X	PHM 524	OTC Drugs	Albanese, N.	1
Ambulatory Care, Community/Retail The course builds upon your knowledge of over-the-counter (OTC) medications and self-care techniques that were discussed in PHM516: Self-Care Therapeutics. This course will allow you to apply that information in a practical manner. ONLINE COURSE						
	X	X	PHM 540	Advanced Compounding	Reiman, A.	2
Community/Retail, Hospital Dispensing/Institutional Students are introduced to contemporary compounding methods utilized in many of today's institutional and community pharmacy practice settings. Students gain knowledge and hands-on experience in several prescription preparation exercises where advanced pharmaceutical compounding techniques and use of specialized equipment and instruments are employed. There are a total of ten lab exercises. Each exercise demonstrates an innovative pharmaceutical compound formulation and/or lab technique pursuant to the filling of a particular prescription or medication order. Students work alone or with a designated partner. The compounding lab is configured into 10 distinct workstations, each intended for the preparation of a different product. During a given lab session, each student/group is assigned to one of the stations. Each week, the student rotates to a different workstation until after 10 weeks all students have compounded 10 products. In preparation for weekly lab sessions, students are required to view (at home) a product-specific pre-recorded video lecture. OFFERED IN SPRING AND FALL. INSTRUCTOR PERMISSION ONLY.						
		X	PHM 552	Clinical Research Methods	Tsuji, B.	3
Fellowship PHM552 is a 1 credit hour course to prepare Doctor of Pharmacy students accepted into the Clinical Research Program for participation in clinical research careers. The course includes lectures, recitations and written assignments. The final project for the course is the development of a defendable research protocol, informed consent document, and other supporting documenta-tion as necessary (source documents, case report forms, drug disposition records, etc). The final project includes a written protocol and an oral presentation and defense of the protocol. RESTRICTED TO CLINICAL RESEARCH PROGRAM STUDENTS.						
X	X	X	PHM 587	Radiopharmacy	Bednarczyk, E.	2
Nuclear Science This course is a survey of radiopharmacy. It will cover the basic principles of radiopharmacy and nuclear medicine instrumentation, radiopharmaceutical and radiopharmacy design, selected radiopharmaceuticals, and some of the regulatory and safety issues that are involved with the use of radiopharmaceuticals in diagnosis and therapy. Students will also observe the operation of a centralized nuclear pharmacy and a clinical nuclear medicine department.						
X	X	X	PHM 598	Professional Problems	Various	1-6
Any Independent study or research project. INSTRUCTOR PERMISSION ONLY.						
		X	PHM 599	Teaching and Learning Theory	Woodruff, A.	1-2
Academia, Residency The purpose of this elective is to give students interested in careers in academia the opportunity to learn about the basic theories and practices of teaching and learning. Readings and writing assignments focus on the concepts of pedagogy and andragogy, how learning objectives are created, in-class assessment techniques and Bloom's taxonomy, and best practices for exam question construction.						
	X	X	PHM 638	Pharmacy Management II	Fiebelkorn, K.	2
Community/Retail This course is designed to be a sequence to PHM 637, Pharmacy Management I. PHM 637, Pharmacy Management I, is a general pharmacy management course. This course would concentrate specifically on independent pharmacy and clinic ownership and the unique challenges in presenting patient care, owner's insights to about educational competencies needed and perceived barriers to pursuing pharmacy case studies along with interaction with outside practitioners both inside and outside the classroom. The course will have guest speakers and include outside class assignments, interviews, and tours of different independent pharmacies as well as discussions surrounding financing and practicality.						
		X	PHM 790	Topics in Psychiatry	Demler, T.	1
Psychiatry The course builds upon your knowledge of psychiatric pharmacy practice that was discussed in PHM701. Review of the DSM 5 mental health conditions, medications used to treat, and other challenges of providing care in psychiatry will be included in this elective. The topics and ideas shared in this course will enable you to successfully manage psychiatric patient population in both the community and institutional setting.						
		X	PHM 791	Pediatric Pharmacotherapy	Fusco, N.	1
Pediatrics Pediatric pharmacotherapy is an elective course offered to third year professional pharmacy students. The course will cover the pathophysiology and therapeutics of various disease states encountered in the pediatric population. The course will also address challenges to providing pharmaceutical care to children, with a particular focus on selecting the appropriate drug, dosage, and route of administration. ONLINE COURSE.						
		X	PHM 794	Advanced Ambulatory Pharmacotherapeutics	Gengo, F.	2
Ambulatory Care Advanced Ambulatory Therapeutics is designed to teach and develop advanced problem-solving skills needed to be successful in the management of complex patients typically seen in outpatient settings. The course uses active and team-based learning principles to introduce advanced therapeutics issues. Students work in groups to develop written care plans and present them. The course focus is the development of detailed and evidence-based Medication Therapy Management (MTM) plans for complex patients and includes discussions related to therapeutic recommendations, therapeutic controversies, appropriate monitoring plans and schedules, and relevant literature to support all recommendations.						
		X	PHM 795	Advanced Pharmacotherapeutics	Pasko, M.	2
Hospital Dispensing/Institutional Advanced Pharmacotherapeutics is designed to teach and develop advanced problem-solving skills needed to be successful in the management of complex patients typically seen in the inpatient and long-term care environment. The course uses active and team-based learning principles to introduce advanced therapeutics issues. Students work in groups to develop and present care plans for 6 cases over the course of the semester. The course focus is the development of detailed and evidence-based care plans for complex patients and includes discussions related to therapeutic recommendations, therapeutic controversies, appropriate monitoring plans and schedules, and relevant literature to support all recommendations.						
	X	X	PHM 798	Supervised Teaching	Various	Various
Academia, Residency Students must apply and be accepted to become a teaching assistant (TA). TA credits count as electives and students register for PHM 798 Supervised Teaching. There are about 85-90 TA's each year. Students typically receive 1-2 credit hours.						

Approved Outside Elective Courses – Fall

P1	P2	P3	Course #	Class Title	Course Coordinator	Credits
X	X	X	CHB 501	Study of Health Behavior	Leone, L.	3
Public Health Examination of selected approaches for explaining people's health-related behaviors (i.e., cultural, economic, social structure, social psychological), and a review of intervention strategies designed to modify health-related behaviors.						

X	X	X	CHB 601	Principles of Community Health and Health Behavior	Orom, H.	3
Public Health This course is designed to provide a comprehensive, doctoral-level overview of principles and theoretical perspectives on the determinants of health behavior and community health. Using a biopsychosocial perspective we will examine biological influences, psychological, social, and policy determinants of health behavior and health.						
X	X	X	EEH 501	Epidemiology Principles	Lamonte, M.	4
Public Health Introduction to the basic principles, methods and uses of epidemiology. NOTE: ONLY 3 CREDITS COUNT TOWARDS ELECTIVE REQUIREMENT.						
X	X	X	EEH 507	Intro to Health Care Org	Young, K.	3
Public Health Introduces students to the historical development, structure, operation, and current and future directions of the major components of the American health care delivery system. It examines the ways in which health care services are organized and delivered, the influences that impact health care public policy decisions, factors that determine priorities in financing health care services and the relationship of health care costs to measurable benefits. The course enables students to assess the role of organized efforts to influence health policy formulation, and the contributions of medical technology, research findings, and societal values to the evolving U.S health care delivery system. Class time is also devoted to exploring emerging policy, ethical and legal dilemmas resulting from medical and technological advances.						
X	X	X	EEH 534	Global Health	Ram, P.	3
Global Health						
X	X	X	LAI 648	Graduate Research Ethics	Shook, J.	3
Public Health This course is a comprehensive introduction to the ethics of scientific research and broader moral responsibilities of science to the public. The requirements for the course include the satisfactory completion of online tutorials in human subjects research and the responsible conduct of research. This course will satisfy all Federal requirements for education and exposure of graduate and post-doctoral students. A number of case studies across a range of practical ethical issues will be analyzed and evaluated. Our aims will be to form reasoned responses along established guidelines to the ethical dilemmas typically met during scientific research. Topics to be covered include: theories of ethics, ethical conduct, research involving human subjects, research involving animals, scientific integrity, collaboration and trust, preventing fraud and plagiarism, professional standards for scientific publication, intellectual property, and competing interests. Human subject research is a central topic. This course will cover how to determine when human subject research is conducted, exempt research, obtaining informed consent, preparing research plans for IRBs, the roles of IRBs, the roles of HIPAA, and working with special populations. *This course cannot be used as a substitution for the required PHM 729 Pharmacy Ethics course.						
X	X	X	MHI 501	Intro Health Informatics I	Byrd, G.	3
Pharmacoinformatics This course provides an overview of the history and current core research priorities of the medical/health informatics field. Major course topic areas will center on the challenges surrounding the implementation of electronic health records inpatient care settings and their use to help manage the health of large patient populations. These include the acquisition, storage, use and representation of medical data; data interchange standards; health information retrieval and knowledge management methods; protecting the privacy, confidentiality and security of medical data; patient information portals and personal health records; people and organizational issues; medical reasoning and probabilistic decision support methods; evidence-based medicine and guidelines; terminologies, ontologies, and data abstraction; patient population data management; and regional/national health information exchange systems.						
X	X	X	NGC 518	Health Promotion and Epidemiologic Methods	Sands, J. and Winkelman, T.	3
Epidemiology This course examines the health behaviors and health promotion needs of individuals, families, and populations. Epidemiologic approaches and evidence based strategies to promote positive health behaviors and to reduce health risks are discussed. Theoretical, developmental, sociocultural, and demographic factors for selected health promotion strategies are analyzed for use in formulating appropriate interventions to maximize health. Must have a 3.0 GPA. INSTRUCTOR PERMISSION ONLY. OFTEN CLOSED TO NUR STUDENTS ONLY. EMAIL AFTER AUGUST 15: JHV2@BUFFALO.EDU						
X	X	X	NMD 325	Radiation Safety for NMT	Fast, E.	2
Nuclear Science Covers basic radiation safety for nuclear medicine, including history, license requirements, time/distance shielding, posting, personnel monitoring, required survey records, and misadministration prevention. “Petition for Course Credit Outside Primary Career” form required. Additional requirement for PharmD students is a research paper.						
X	X	X	NMD 421	Basic Radiation Science	Yao, R.	4
Nuclear Science The goal of the course is to teach the theory of basic radiation physics and the principles of radiation detection measurement to primarily nuclear medicine technology students. Students will apply the knowledge acquired from didactic lectures to laboratory radiation instrument operations to gain hands on skills and experiences in radiation applications.						
X	X	X	NTR 500	Energy/Protein Nutrition	Rideout, T.	3
Any Covers sources, absorption, availability, metabolism and functions of major nutrients, i.e. carbohydrates, proteins, and lipids. The regulatory role of enzymes and hormones in absorption and metabolism of these nutrients will be examined. Methods used to estimate the requirements and Recommended Dietary Allowances for protein and energy will be discussed.						
X	X	X	NTR 503	Nutrition and Health	Kuo, S.	3
Any Discusses nutrition as an important element for maintaining optimal health. Emphasizes the importance of each nutrient based on its biochemical and physiological functions. Studies nutritional needs at specific stages in the life cycle, as well as the implication of nutrition in major health problems in the United States, such as obesity, cardiovascular disease, hypertension, and cancer. Students learn to determine nutritional status through dietary analysis and learn to evaluate nutritional information.						
X	X	X	NTR 527/ES 527	Obesity	Temple, J.	3
Obesity, Diabetes and Metabolic (Bariatric) Surgery The purpose of this course is to examine the topic of obesity from multiple perspectives in order to develop a comprehensive, multidisciplinary understanding of this serious public health concern. We will discuss all factors contributing to obesity, including genetics, physiology, neurobiology, psychology, environment, parental influence, peer influence, and public policy. The course will discuss how each of these factors relates to nutrition and physical activity.						
X	X	X	PHM 522/CHB 522	Health for Refugee Populations	Kozlowski, L.	3
Global Health This course provides an introduction to health issues, barriers to care, and services for Western New York’s (WNY) refugee population. Through the course, students will explore major health issues impacting refugee communities, identify and prioritize major health issues and unmet needs for this underserved population, and identify, design or recommend a feasible service or intervention model to address the identified issue or issues. Major health issues that will be explored include physical, mental, sociological and spiritual health. Barriers that will be assessed include cultural, social, physical, and financial challenges. The course objectives will be met through faculty and student engagement with refugee community providers and client representatives.						
X	X	X	PHM 642/MGH 642	Innovators In Health Care	Zielinski, L.	3
Community/Retail						

The class will focus on the major challenges facing the health care industry and innovative solutions being developed across the country. Topics will include access, cost, long-term value analysis, implementing the Accountable Care Act, government and private health plans, accountable care organizations, electronic medical records, health information exchanges, centers of excellence, managing chronic disease, end-of-life issues, primary and preventative care, private practice, and collaboration and teamwork.

X	X	X	PHM 692/MGH 692	Healthcare Fraud and Abuse	Truskiak, R.	3

Community/Retail

This course is intended to cover the health care fraud and abuse laws and issues relating to the prosecution and defense of alleged wrongdoing under federal and state health care systems. This course will provide a basic overview of the laws governing healthcare providers, such as hospitals, physicians and physician practices, medical device and pharmaceutical manufacturers, clinical laboratories and nursing homes. The course also will cover the criminal and civil prosecution and defense of actions against such entities and individuals and the essential features of the major statutes in this area of the law including the federal civil False Claims Act, the Stark Law, the federal Anti-kickback Statute and the remedies and civil and criminal penalties available to governmental entities and civil litigants. This course will address voluntary and mandatory fraud and abuse compliance strategies and the practical compliance issues faced by health care providers.

X	X	X	PHM 867/LAW 867	Law and Genetics	Braverman, I.	3

Pharmacoinformatics

Recent developments in genetics are calling into question existing regulatory regimes and policy approaches dealing with intellectual property, reproduction, disability, criminal law, health care, and privacy. This course will provide a unique opportunity to identify, explore, and debate cutting-edge legal, ethical, and political issues associated with new genetic technologies. Many researchers and administrators argue that it is too soon, and potentially too dangerous, to tinker with the human genome—and with genomes of other organisms—in a way that is passed down to future generations and that permanently alters ecosystems. The course will discuss the dilemmas currently facing scientists, ethicists, and policy-makers regarding the applications and continued development of biotechnologies. In addition to reading primary and secondary sources and watching relevant media excerpts, we will host scientists and social scholars and visit genetic and bioart labs. This is an interdisciplinary course accessible to a wide range of students. There are no science or law prerequisites.
NOT OFFERED EVERY YEAR.

X	X	X	PMR 515	Cancer Chemotherapy Princ	Huss, W.	4

Oncology

This course is designed for the biomedical graduate student or medical professional that is interested in the principles of cancer chemotherapy. Initial lectures are focused on the nature of the cancer cell, describing the genetic, biochemical and pathological changes in cancer. The essentials of pharmacology and toxicology are briefly described as tools used for the assessment of drug action. Following these introductory sessions the majority of the course is dedicated to reviewing the biochemistry, molecular pharmacology and therapeutic properties of the anticancer and chemopreventive agents. These include DNA reactive agents, antimetabolites, hormones, cytoskeletal poisons, chemopreventive agents, molecular targeted agents and biological response modifiers. The clinical uses of these therapeutic agents are given together with the basis for their use in combination (chemo)-therapies. Emphasis is placed on an understanding of the principles of drug action and the molecular mechanisms of each drug discussed. Examples of ongoing research programs are presented.

	X	X	PMY 599	Supervised Teaching – TA for PMY	Berman, H.	2

Academia, Residency

INSTRUCTOR PERMISSION ONLY.

X	X	X	PMY 605	Introduction to Bioethics	Berman, H.	1

Any

The School of Medicine and Biological Sciences announces a new course offering through the Department of Pharmacology and Toxicology, Introduction to Bioethics. This course will employ short didactic lectures coupled with application to current and perennial questions in medical ethics. The reading material will be derived from textbooks and source materials available in medical and philosophy journals.

	X	X	PMY 626	Toxicology Principles and Practices	Olson, J.	2

Any

PMY 626 is designed to introduce students to the basic principles and practice of toxicology. Chemical mutagenesis and carcinogenesis will also be included, with an emphasis on understanding mechanisms for these responses. An Overview of risk assessment will include quantitative aspects of cancer and non-cancer based risk assessments.
Note: 626 is offered during the first half of the semester and 627 is offered in the second half of the semester.

	X	X	PMY 627	Toxicology at Target Organs	Olson, J.	2

Any

PMY 627 is organized based on a systemic approach to toxicology. The adverse effects of several classes of chemicals will be investigated at specific target organs. An emphasis will also be placed on understanding the mechanism(s) for the adverse responses of specific agents at a given target site.
Note: 626 is offered during the first half of the semester and 627 is offered in the second half of the semester.

X	X	X	RPN 530	Oncology for Scientists I	Block, A.	4

Oncology

Defines the cancer cell morphologically, as well as molecularly, covering topics such as the cell cycle, cancer-associated genes, regulation of cancer cell expression, cancer genetics, carcinogenesis, metastasis, apoptosis, and laboratory research techniques.

X	X	X	SPA 534	Spanish for Health Care Professionals		3

Any

Prior basic Spanish required.

X	X	X	STA 527	Intro Medical Statistics	Kuhlmann, D.	4

Any

This course is designed for students concerned with medical data. The material covered includes the design of clinical trials and epidemiological studies, data collection, summarizing and presenting data, probability, standard error, confidence intervals and significance tests, techniques of data analysis including multifactorial methods and the choice of statistical methods, problems of medical measurement and diagnosis, vital statistics and calculation of sample size. The design and analysis of medical research studies will be illustrated. MINITAB is used to perform some data analysis. Descriptive statistics, probability distributions, estimation, tests of hypothesis, categorical data, regression model, analysis of variance, nonparametric methods, and others will be discussed as time permits.

X	X	X	SW 992	Neuropsychology for Healthcare Professionals	Various	3

Neurology

Approved Outside Elective Courses – Spring

P1	P2	P3	Course #	Class Title	Course Coordinator	Credits
X	X	X	EEH 502	Advanced Methodology	Bonner, M.	3

Public Health

X	X	X	EEH 537	Public Health Law: Legal and Ethical Perspectives	Wicher, C.	3

Public Health

Provides an understanding of how ethics and the law can assist in advancing a public health agenda. The class is interdisciplinary, including law students and students from public health related fields. The course will briefly examine the history of public health law, the tension between state and federal governments in the regulation of the public's health, and the conflicts between governmental powers and individual autonomy. The course will focus on practice of public health professionals to prevent disease and promote healthy behaviors in today's changing health care environment, given current public health policy, regulatory enforcement and the wake of emerging public health challenges such as disparities in health care, the Ebola crises, the bed bug crises, the obesity epidemic, immunizations and mandated health care insurance.

X	X	X	MGO 695	Entrepreneurship Lab (eLab)		3

The eLab course gives you the skills to develop and manage a successful new venture and apply those skills to launch your own entrepreneurial idea.

X	X	X	MHI 502	Intro Health Informatics II	Byrd, G.	3

Public Health

This course provides an overview of the most significant areas of applied research and systems development and the challenges facing medical/health informatics professionals working to build and support such applications. Major course topic areas will include electronic health record systems; the distribution and integration of clinical information systems; evaluation methods for health information systems; clinical decision support systems; nursing, public health, dental and pharmacy information systems and issues; telemedicine and telehealth; imaging systems; and bioinformatics systems support. The course is taught using different adjunct faculty with expertise in each area of health informatics and includes field trips to several different healthcare and public health settings to learn about the systems in use in those settings.						
X	**X**	**X**	**PHM 502/CHB 502**	**Health Behavior Change**	**Giovino, G. and Collins, L.**	**3**
Public Health Health Behavior Change is an overview of the health behaviors contributing most dramatically to increased morbidity and mortality in the United States. The course emphasizes public health interventions and strategies to promote healthy behaviors and discourage unhealthy behaviors. The course examines consequences, patterns, risk factors, and change/interventions for each behavior or problem. Behaviors are examined from multiples perspectives (e.g., individual, social, environmental) and with a systems perspective in mind, illuminating the interconnecting influences on behaviors. Health behaviors and behavior change interventions are presented in the context of current research and theory. The course also examines the role of health disparities, public health policy, current debate, health behavior theory and emerging research.						
X	**X**	**X**	**PHM 605/CHB 602**	**Community Health & Health Behavior Interventions**	**Various**	**3**
Public Health This course is a designed to give students an in-depth understanding of the state of the science in health behavior and community health interventions, including individual, family, community, and policy interventions. Students will be prepared to critically assess and apply strategies for individual and community health promotion. Students will be well-prepared to design a variety of health-related interventions and to critically evaluate intervention research.						
X	**X**	**X**	**PHM 641/MGH 641**	**The Business of Healthcare**	**Zielinski, L.**	**3**
Industry, Community/Retail This course is designed to be an overview of the health care industry and a framing of the severe challenges facing leaders in the field. It will take a business approach to the issues presented, but will always juxtapose financial issues with value creation. It begins with a short look at classic economics, and why they do not always apply in health care. It will take an in-depth look at the Patient Protection and Affordable Care Act, and the implications is has on all parts of the industry. It will follow with a review of each component of the industry: government, health plans, employers, providers, and suppliers. Each review will focus on the unique challenges leaders are facing in a dynamic, changing environment.						
X	**X**	**X**	**PHM 650/CHB 650**	**Applied Regression for Public Health**	**Przybyla, S.**	**3**
Public Health						
X	**X**	**X**	**PHM 867/LAW 867**	**Law, Genetics, Society**	**Braverman, I.**	**3**
Recent developments in genetics are calling into question existing regulatory regimes and policy approaches dealing with intellectual property, reproduction, disability, criminal law, health care, and privacy. This course will provide a unique opportunity to identify, explore, and debate cutting-edge legal, ethical, and political issues associated with new genetic technologies. Many researchers and administrators argue that it is too soon, and potentially too dangerous, to tinker with the human genome, and with genomes of other organisms, in a way that is passed down to future generations and that permanently alters ecosystems. The course will discuss the dilemmas currently facing scientists, ethicists, and policy-makers regarding the applications and continued development of biotechnologies. In addition to reading primary and secondary sources and watching relevant media excerpts, we will host scientists and social scholars and visit genetic and bioart labs. This is an interdisciplinary course accessible to a wide range of students. There are no science or law prerequisites. Seminar credit may be available, please contact the instructor. NOT OFFERED EVERY YEAR.						
	X	**X**	**PMY 599**	**Supervised Teaching**	**Berman, H.**	**2**
Academia, Residency TA for PMY. INSTUCTOR PERMISSION ONLY.						
X	**X**	**X**	**RPN 532**	**Oncology for Scientists II**	**Block, A.**	**4**
Oncology Builds upon the theoretical basis of the previous semester, covering the immune system, hormones, chemotherapy and drug development. A large part of the semester deals with the clinical and pathological description of various organ systems presented by Institute medical staff. Ancillary lectures on cancer epidemiology, prevention, statistics, bioinformatics, and clinical treatment (chemotherapy, diagnostic imaging, radiation therapy, photodynamic therapy) are also presented. The human dimensions of the disease are addressed by presentations on pain and the psychological aspects of cancer. The students will also have the opportunity to meet with patients and their treating physicians.						
X	**X**	**X**	**SPA 324**	**Medical and Health-Related Spanish**	**Fredrick, S.**	**3**
Any Teaches the medical vocabulary and reinforces grammar usage so that students will be able to perform a medical check-up or counseling session in Spanish and/or be a first-responder in Spanish. Students will be able to discuss health care issues in Spanish and formulate informed opinions on health care policies in Hispanic contexts in the United States and abroad.						
X	**X**	**X**	**SW 554**	**Motivational Interviewing**	**Sobota, P.**	**3**
Any This course is organized primarily as a seminar that will highlight Motivational Interviewing (MI) approaches to help clients build commitment and reach a decision to change behavior. This course provides a forum for case presentation and discussion with an emphasis on discussing cases from student's field placements and/or practice settings. Theories of behavioral change will be discussed, and the Transtheoretical Model (TTM) of intentional behavior change will be highlighted as an integrative framework for understanding the process of behavior change. MI is an evidence-based practice for addictive behaviors, but applications of motivational interviewing have been extended to behavioral change in general, including social work, mental health, health promotion, general medical care, corrections, and community and organizational settings. In addition, the course will discuss MI's application to practice with "mandated" clients.						

Approved Outside Elective Courses – Summer

P1	P2	P3	Course #	Class Title		Credits
X	**X**	**X**	**PHA 6963**	**Veterinary Pharmacy for Pharmacy Students**	**UFL**	**2**
Community/Retail http://cpe.pharmacy.ufl.edu/veterinary-pharmacy ONLINE COURSE						
X	**X**	**X**	**NGC 518**	**Health Promotion and Epidemiologic Methods**	**NGC**	**3**
Epidemiology This course examines the health behaviors and health promotion needs of individuals, families, and populations. Strategies to promote positive health behaviors and to reduce health risks are discussed. Theoretical, developmental, sociocultural, and demographic factors for selected health promotion strategies are analyzed for use in formulating appropriate interventions to maximize health. Must have a 3.0 GPA. OFTEN CLOSED TO NUR STUDENTS ONLY. EMAIL AFTER MAY 18: JHV2@BUFFALO.EDU						
X	**X**	**X**	**SW 702**	**Motivational Interviewing for Client Behavior Change**	**Babiarz, M.**	**1**
Any This course is an introduction to the principles, strategies, and the spirit of the Motivational Interviewing (MI) approach to help clients build commitment and reach a decision to change problematic behaviors. The theoretical basis of MI lies in the construct of "ambivalence" and the conflict between indulgence and restraint that is so prevalent when clients consider behavior change. The difficulty in changing problematic behaviors is an occurrence that extends well beyond "addictive						

behaviors." The immobilizing effects of ambivalence can be seen in many practice spheres. In addition, the course will discuss MI's application to practice with "mandated" and "resistant" clients. This course will consist of critical discussion and practical application of the material.