

Bill Gatton College of Pharmacy
East Tennessee State University
Course Descriptions

Updated November, 2009

NOTE: All course description and prerequisite/co-requisite information provided is subject to change. Please consult ETSU's Bill Gatton College of Pharmacy Office of Academic Affairs for verification of the most current official information.

Year 1 – Fall Semester

PMPR 3141 IPPE-P1 – Community or Institutional Practice

Students will participate in an Introductory Pharmacy Practice Experience (IPPE) by spending 4 hours per week for 10 weeks in a community or institutional pharmacy. The IPPE promotes an introduction to pharmacy practice in a structured and supervised setting and enhances students' awareness of many aspects of the profession. Students are exposed to the role and responsibilities of the community and institutional pharmacist; the importance of effective communication between pharmacists, patients and other health care providers; and the application of local, state and federal laws governing pharmacy practice. The students will be trained and certified to provide immunizations and will undergo online OSHA training.

PMPR 3142 Pharmacy Practice I – Introduction to Patient Care I

The first of a two-course sequence, this course is designed to introduce the first-professional year pharmacy student to the role of the pharmacist in the community pharmacy and healthcare system. Students will survey the history of the profession, be introduced to the laws and regulations that govern the practice of pharmacy, and will receive an introduction to community practice, issues of professionalism and ethics, interpersonal communication and patient counseling, and the top 200 drugs in community practice.

PMSC 3102 Immunology

A basic immunology course designed to introduce pharmacy students to major concepts in the innate and the acquired immune system.

PMSC 3111 Medical Terminology

Medical terminology is the basis of written and verbal communication between all healthcare professionals. The course will examine the root, prefixes, and suffixes of medical terms, and present the language basis of the major medical terms for the organ systems of the body. This course will provide a foundation for subsequent vocabulary building throughout the educational and post-educational career in the health professions.

PMSC 3114 Biochemistry, Molecular Biology and Genetics

Biochemical understanding of proteins, sugars, lipids, vitamins and nucleic acids is fueling the explosion of knowledge in physiology and medicine. This course will demonstrate how basic principles of biochemical structure govern metabolic pathways in normal human health, malfunction of these pathways in disease, and the chemical basis for drugs that are prescribed to correct these malfunctions.

PMSC 3116 and 3110 Anatomy and Physiology with Lab

This course should provide students with an understanding of the basic principles and concepts of anatomy and cellular and organ system physiology, leading to an appreciation of the sites and mechanisms of action of drugs in producing both therapeutic and adverse effects. This course should also provide an excellent foundation for understanding of the physiological basis of pharmaceutical and patient-centered care. Laboratory activities will include the use of microscopes with prepared slides, physiology demonstration/exploratory labs, physiology tutorials, anatomical models, and a few dissections.

PMSC 3122 Pharmacy Calculations

Course content includes an introduction to the history of pharmacy, prescription terminology, systems of measurement and pharmacy calculations. Students will apply appropriate mathematical concepts found within the practice of pharmacy, including prescription compounding and patient specific determinations. Emphasis will be placed on improving and applying problem-solving skills for the needs of an individual patient within the practice of pharmacy.

Year 1 – Spring Semester

PMPR 3241 IPPE-P1 – Community or Institutional Practice

Students will participate in an Introductory Pharmacy Practice Experience (IPPE) by spending 4 hours per week for 10 weeks in a community or institutional pharmacy. At the end of the semester, students will reflect on their experiences and observations during the first year and make a powerpoint presentation to their peers and faculty. The IPPE promotes an introduction to pharmacy practice in a structured and supervised setting and enhances students' awareness of many aspects of the profession. Students are exposed to the role and responsibilities of the community and institutional pharmacist; the importance of effective communication between pharmacists, patients and other health care providers; and the application of local, state and federal laws governing pharmacy practice. At the end of the semester, classroom time will be assigned to provide reflection on experiences.

PMPR 3242 Pharmacy Practice II – Introduction to Patient Care II

The second of a two-course sequence, this course is designed to introduce the first-professional year pharmacy student to the evolving practice of pharmacy. An introduction to institutional practice will be presented, including order processing, medication administration records, sterile product preparation, and the salient elements of the medical record. Students will learn general elements of patient assessment, including taking medication histories and vital signs. The social aspects of health and illness in the rural Appalachian region will be explored. Students will begin learning medical terminology using an organ system approach.

PMPR 3243 Nonprescription Pharmacotherapy and Self Care

This course will serve as an introduction to nonprescription medications and remedies in the treatment of common community illnesses for which pharmacists are consulted. Students will be given an introduction into the pathophysiology of the illness; the pharmacology of the nonprescription agents used to treat the illness, and will be expected to counsel patients on nonprescription drug use in the community pharmacy setting.

PMSC 3204 Pathophysiology

Provides students with an understanding of the basic principles and concepts of cellular, organ system, and generalized pathophysiology, leading to an appreciation of disease and pharmacotherapy, and the course should provide an excellent foundation for understanding of the basis of patient-centered care. *Prerequisite: PMSC 3116 and 3110 Anatomy and Physiology with Lab*

PMSC 3223 Pharmacology I

Pharmacology I is the first of a three part lecture series designed to provide an understanding of how drugs exert their effects on living systems. Drug mechanisms of action, metabolic fates, indications and adverse effects will be presented, with an emphasis upon the pharmacology of autotoxins, antimicrobial, anti-inflammatory and antineoplastic agents. *Prerequisites: PMSC 3116 and 3110 Anatomy and Physiology with Lab; PMSC 3114 Biochemistry, Molecular Biology and Genetics; PMSC 3102 Immunology*

PMSC 3231 Compounding and Dispensing Lab

This course involves processing a prescription or medication order, the preparation and dispensing of pharmaceutical solution, emulsion, suspension, semi-solid and solid dosage forms and development and practice of the patient counseling skills necessary for proper use of the compounded product. During the laboratory session, emphasis will be placed on the selection of proper excipients, based on physico-chemical principles, for use in the extemporaneous compounding preparation. *Co-requisite: PMSC 3235 Pharmaceutics and Biopharmaceutics; Prerequisite: PMSC 3122 Pharmacy Calculations*

PMSC 3235 Pharmaceutics and Biopharmaceutics

The principals of this course include the preparation, physicochemical evaluation, stability, liberation, absorption, distribution and action of drug from pharmaceutical drug delivery systems. The course includes the study of the pharmaceutical principles for solid, liquid and disperse systems and the mechanisms of drug release with emphasis on solid and semi-solid systems, the formulation and development of a variety of immediate release, modified release and novel drug delivery systems, the study of physicochemical principals and pharmaceutical drug delivery systems and their composition both outside and inside a living organism, principally humans, and the implications and relationship with patient-centered care. In addition, this course will provide an in-depth knowledge of the preparation, drug liberation and absorption of drug from various drug delivery systems. Students also learn about the design and evaluation of dosing regimens and drug delivery systems that overcome barriers and optimize drug action, and minimize adverse effects. Drug absorption processes, bioavailability and bioequivalence determination and interpretation will be included as an introduction to pharmacokinetic principles. *Prerequisite: PMSC 3122 Pharmacy Calculations; Co-requisite: PMSC 3231 Compounding and Dispensing Lab*

Year 2 – Fall Semester

PMPR 4143 Pharmacy Practice III – Evidence-Based Practice I

The course introduces students to the evidence base for pharmacy practice including research design, data analysis, and biostatistics in the interpretation and critical analysis of biomedical literature with the purpose of developing evidence-based care recommendations for patients or patient populations.

PMPR 4163 Introduction to Pharmacotherapy

This course will provide a broad overview of the medication therapy, or pharmacotherapy, of diseases and other medical problems. A particular emphasis will be placed upon interpreting patient's laboratory values and making clinical decisions based on those interpretations. The knowledge and skills learned in this course will be utilized heavily in the upcoming Pharmacotherapy series. The class will consist of 3 hours of lecture per week. *Prerequisites and/or Co-requisites: Must be enrolled in the 2nd professional year of the College of Pharmacy's professional program leading to the Doctor of Pharmacy degree*

PMPR 4182 Communication Skills for Health Professionals

All health professionals, regardless of discipline, are called on to be outstanding communicators with individual clients/patients, as well as with groups and communities. The faculty of all of the ETSU Health Sciences Divisions schools believes that communication is the foundation upon which professionalism develops. The skills that are necessary are well defined and are not the same as social communication skills. These skills can be learned, and if learned, will lead to satisfaction and positive outcomes. When not learned, the opposite frequently occurs. The course is oriented to the development of competencies, and this is how you will be evaluated. This course is a beginning. You will receive continuous follow up, reinforcement, and expansion of these skills throughout your training. The participating faculty are dedicated to helping you to become the best health care communicator that you can possible be. *Prerequisites and/or Co-requisites: Status as a P2 student in the College of Pharmacy*

PMSC 4123 Pharmacology II

Pharmacology II is the second of a three course lecture series designed to provide an understanding of how drugs exert their effects on living systems. Drug mechanisms of action, metabolic fates, clinical use(s) and adverse effect(s) will be presented. The emphasis of this course will be on the pharmacology of the following: the cardiovascular-, renal-, pulmonary-, gastrointestinal systems, drugs affecting glaucoma, drugs affecting the vascular compartment, drugs used to treat dyslipidemia, histaminergic and serotonergic compounds, and antirheumatic drugs. *Prerequisites: Successful completion of all previous PMSC courses*

PMSC 4124 Principles of Medicinal Chemistry

This course will provide students with an understanding of the basic principles and concepts of medicinal chemistry, including an overview of the relationship of drug structure to pharmacological activity and an understanding of the processes involved in the design and development of modern pharmaceuticals.

PMSC 4134 Pharmacokinetics and Pharmacogenomics

This course provides students with an understanding of the concepts of absorption, distribution, metabolism, and elimination of drugs. Students learn how to apply mathematical principles to the study of pharmacokinetics. Also, students understand the physiological factors may change pharmacokinetic parameter. In addition, the pharmacokinetic and pharmacodynamic factors involved in drug response variability are discussed. *Prerequisites: PMSC 3235 Pharmaceutics and Biopharmaceutics and PMSC 3231 Compounding and Dispensing Lab*

Year 2 – Spring Semester

PMPR 4243 Pharmacy Practice IV – Evidence-Based Practice II

This course expands on the literature evaluation and evidence-based medicine concepts presented in the Evidence-Based Practice I course and serves as an introduction to the principles of drug information. Students will learn: processes for answering drug information questions; how to differentiate between and within the different types of literature; how to search for information using a variety of resources; how to develop evidence-based care recommendations; how to communicate responses to drug information questions; and how to effectively provide written drug information. The course series will provide students with the skills to effectively analyze and interpret medical literature and will introduce students to the basic concepts of evidence-based medicine. *Prerequisites and/or Co-requisites: Must be enrolled in the 2nd professional year of the College of Pharmacy's professional program leading to the Doctor of Pharmacy degree and successfully complete PMPR 4143: Pharmacy Practice III – Evidence-Based Practice I*

PMPR 4263 Pharmacotherapy I

This course will teach students to identify and assess the medical problems of their patients and to then recommend appropriate therapy, concentrating on medication therapy or pharmacotherapy, to address those problems. The class will consist of 5 hours of lectures per week and 2 hours of lab time per week. The lab time will consist of activities designed to enhance the learning of the material presented in the lectures. This course lasts for one-half of the semester. *Prerequisites and/or Co-requisites: Must be enrolled in the 2nd professional year of the College of Pharmacy's professional program leading to the Doctor of Pharmacy degree*

PMPR 4273 Pharmacotherapy II

This course will teach students to identify and assess the medical problems of their patients and to then recommend appropriate therapy, concentrating on medication therapy or pharmacotherapy, to address those problems. The class will consist of 5 hours of lectures per week and 2 hours of lab time per week. The lab time will consist of activities designed to enhance the learning of the material presented in the lectures. This course lasts for one-half of the semester. *Prerequisites and/or Co-requisites: Must be enrolled in the 2nd professional year of the College of Pharmacy's professional program leading to the Doctor of Pharmacy degree*

PMPR 4283 Pharmacy Law and Ethics

This course consists of a study of federal and state pharmacy, drug, and related laws. Through self-study, lecture, and case studies, students learn the substance of these laws and their application to pharmacy practice. Discussion of societal and health care system issues, such as abortion and the right to die, demonstrates the broader societal role of the pharmacist. In light of continuing expansion of the pharmacist's role in the delivery of healthcare services, attention is given to ethical and legal issues surrounding direct patient care services, including an examination of professional liability (civil, criminal, and disciplinary). While the importance of the above issues has grown significantly in very recent years, these issues have not displaced the need to study the expansive body of traditional pharmacy and drug law.

PMSC 4223 Pharmacology III

As the final course of the three part lecture series, this course is designed to provide an understanding of the biological basis of drug actions. Topics include drug mechanisms of action, metabolic fates, indications, and adverse effects, with a focus on the pharmacology of drugs that act on the central nervous system and endocrine system. *Prerequisite: PMSC 4123 Pharmacology II*

Summer Between Second and Third Year

PMPR 4322 IPPE-P2 – Community Practice

This is an early pharmacy practice experience in a community pharmacy practice setting involving the application of knowledge and skills acquired by the student during the first two academic years. This will consist of two consecutive weeks at forty hours per week, to be scheduled during the time between semester 4 and semester 5 of the program.

PMPR 4332 IPPE-P2 – Institutional Practice

This is an early pharmacy practice experience in an institutional pharmacy practice setting involving the application of knowledge and skills acquired by the student during the first two academic years. This will consist of two consecutive weeks at forty hours per week, to be scheduled during the time between semester 4 and semester 5 of the program.

Year 3 – Fall Semester

PMPR 5142 Natural Medicines

This course is designed to give the student an overall perspective of Natural Medicine with respect to the history, philosophy, and methodology of this science. The body of literature regarding the safety and efficacy of complementary and alternative medicine is growing, although research for many of these therapies does not exist or is in early phases. This class includes a comprehensive review of selected herbs and supplements, designed for use by the clinicians. The topics covered have been selected based on utilization data, sales trends, frequency of information requests, and safety concerns.

PMPR 5143 Pharmacy Practice V – Institutional

Pharmacy Practice V is intended to expose the student to the complexities of institutional pharmacy in its various forms. The emphasis will be on hospital pharmacy but will also include long term care, nuclear pharmacy, hospice care, and the pharmaceutical industry.

PMPR 5152 Patient Assessment

This course will introduce students to basic physical assessment of patients, including pharmacy-specific aspects (medication histories, drug adverse effects, and point-of care-testing). The student will be trained in the conduct of physical assessment using standardized patients. Elements of the physical exam covered in this class include: vital signs, including measurement of blood pressure, respiratory rate, heart rate, and temperature; inspection, palpation, percussion, and auscultation of the cardiovascular, pulmonary, and gastrointestinal systems; basic eye examinations; neurologic assessment; and inspection and examination of the integument and musculoskeletal systems. The knowledge and skills learned in this course will be utilized heavily on advanced practice experiences and in clinical pharmacy practice. *Prerequisites and/or Co-requisites: Must be enrolled in the 3rd professional year of the College of Pharmacy's professional program leading to the Doctor of Pharmacy degree and concurrent enrollment in Pharmacotherapy III/IV*

PMPR 5163 Pharmacotherapy III

This course will teach students to identify and assess the medical problems of their patients and to then recommend appropriate therapy, concentrating on medication therapy or pharmacotherapy, to address those problems. The class will consist of 5 hours of lectures per week and 2 hours of lab time per week. The lab time will consist of activities designed to enhance the learning of the material presented in the lectures. This course lasts for one-half of the semester. *Prerequisites and/or Co-requisites: Must be enrolled in the 3rd professional year of the College of Pharmacy's professional program leading to the Doctor of Pharmacy degree*

PMPR 5173 Pharmacotherapy IV

This course will teach students to identify and assess the medical problems of their patients and to then recommend appropriate therapy, concentrating on medication therapy or pharmacotherapy, to address those problems. The class will consist of 5 hours of lectures per week and 2 hours of lab time per week. The lab time will consist of activities designed to enhance the learning of the material presented in the lectures. This course lasts for one-half of the semester. *Prerequisites and/or Co-requisites: Must be enrolled in the 3rd professional year of the College of Pharmacy's professional program leading to the Doctor of Pharmacy degree*

PMPR 5182 Principles of Healthcare Delivery

To provide an understanding of the professional, economic, and public policy aspects of pharmacy and the health care system, including anticipated changes in health care and the role of pharmacists.

Year 3 – Fall and Spring Semesters

PMPR 4341 IPPE-P3

In the IPPE-P3, students will complete their required IPPE hours during the year by participating in patient-centered care in various healthcare settings including: inpatient acute care, ambulatory care, long term care facility, Dispensary of Hope, immunization clinics, and health-related service projects.

PMPR 5361 Clinical Seminar I

This course is the first in the Clinical Seminar series, and provides the foundation and formal instruction for the series. In this class, students will receive instruction on the preparation of formal clinically-oriented seminars, observe and evaluate seminars presented by 4th year pharmacy students in the Fall session of the class, and observe and evaluate previously recorded faculty seminars. These activities are designed to prepare students to synthesize and present a 45 minute seminar during the P4 year.

Prerequisites and/or Co-requisites: Must be enrolled in the 3rd professional year of the College of Pharmacy's professional program leading to the Doctor of Pharmacy degree

Year 3 – Spring Semester

PMPR 5233 Clinical Pharmacokinetics

This is an advanced course on pharmacokinetics and pharmacodynamics of the time course of drugs in the body. Pharmacokinetic aspects include absorption, distribution, metabolism and elimination and they apply to patient dosing, initial and maintenance dosing and dosing adjustments. Pharmacodynamic aspects include quantitative relationships between drug concentrations and wanted or

undesired effects and dosing adjustment based upon appropriate monitoring. **Prerequisite: PMSC 4134 Pharmacokinetics and Pharmacogenomics**

PMPR 5243 Pharmacy Practice VI – Community

This course is designed to provide a broad overview of management skills and marketing considerations to pharmacy students. Basic marketing, management, accounting and personnel issues will be covered. Emphasis will be placed on steps and skills necessary in developing a service from a perceived need to fruition. Consideration of personal finance and self-wealth goals will also be addressed.

PMPR 5253 Advanced Clinical Practice Skills

This course will have a large emphasis on active learning. Students will be expected to use knowledge from the basic as well as clinical sciences and apply this information to the direct care of patients. Students should heavily rely on basic skills from the Pharmacotherapy series and build upon their current knowledge base using drug information and literature evaluation skills to develop appropriate evidence based plans for patient cases. Approximate times will be a 2 hour small group session, a 1 hour large group session, and outside of class group time to complete assignments.

PMPR 5263 Pharmacotherapy V

This course will teach students to identify and assess the medical problems of their patients and to then recommend appropriate therapy, concentrating on medication therapy or pharmacotherapy, to address those problems. The class will consist of 5 hours of lectures per week and 2 hours of lab time per week. The lab time will consist of activities designed to enhance the learning of the material presented in the lectures. This course lasts for one-half of the semester. **Prerequisites and/or Co-requisites: Must be enrolled in the 3rd professional year of the College of Pharmacy's professional program leading to the Doctor of Pharmacy degree**

PMPR 5273 Pharmacotherapy VI

This course will teach students to identify and assess the medical problems of their patients and to then recommend appropriate therapy, concentrating on medication therapy or pharmacotherapy, to address those problems. The class will consist of 5 hours of lectures per week and 2 hours of lab time per week. The lab time will consist of activities designed to enhance the learning of the material presented in the lectures. This course lasts for one-half of the semester. **Prerequisites and/or Co-requisites: Must be enrolled in the 3rd professional year of the College of Pharmacy's professional program leading to the Doctor of Pharmacy degree**

Year 4 – Summer – Fall - Spring

PMPR 5461 Clinical Seminar II

This course is the second in the Clinical Seminar series, and provides the final opportunity for students to construct and present a clinical seminar. In this class, students will be mentored by faculty on the development and presentation of a 35-45 minute seminar on a topic of their choosing (may select from a list provided by faculty, or may suggest another topic for approval by the course coordinators). These activities are designed to allow students to practice their presentation skills in front of their peers, and provide experience and feedback on the preparation of a formal, clinically relevant, evidence-based seminar. **Prerequisites and/or Co-requisites: Must be enrolled in the 4th professional year of the College of Pharmacy's professional program leading to the Doctor of Pharmacy degree, i.e. currently**

participating in Advanced Pharmacy Practice Experiences (APPEs); successful completion of PMPR 5361 Clinical Seminar I

APPE 6001 Institutional Practice

This pharmacy practice experience in an inpatient hospital setting exposes the student to the wide variety of daily duties often required of the pharmacist while in an institutional pharmacy. Some of the areas that will be explored include the medication use process, drug distribution, sterile products preparation, automation, operations management, resource management and institutional legal and regulatory standards.

APPE 6002 Community Practice

This pharmacy practice experience in a community pharmacy setting is intended to expose the student to a variety of patient-centered services. These services include but are not limited to medication dispensing, patient counseling, drug therapy monitoring, medication therapy management, and drug information services. Resource management and operations management will also be incorporated into the experience.

APPE 6003 Acute Care Practice

This pharmacy practice experience focuses on providing patient-centered care to hospitalized patients. The student will apply their therapeutic knowledge to assess and develop therapeutic plans for patients in collaboration with other healthcare professionals, especially physicians. The student will also be involved in taking medication histories, monitoring patient progress and providing drug information to health care professionals and patients.

APPE 6004 Ambulatory Care/Primary Care Practice

This pharmacy practice experience is focused on providing patient-centered care of patients who are receiving care in a clinic, physician office or other ambulatory setting. Students will gain experience in communication and assessment skills, physical assessment, chronic disease management and preventative care, and therapy modifications for special patient groups. Other skills developed include drug literature analysis, patient education and counseling, interprofessional communication, and designing and implementing safe, efficacious and cost effective drug therapy to the patient.

APPE Electives

APPE 7001 Institutional Practice

This pharmacy practice experience in an inpatient hospital setting exposes the student to the wide variety of daily duties often required of the pharmacist while in an institutional pharmacy. Some of the areas that will be explored include the medication use process, drug distribution, sterile products preparation, automation, operations management, resource management and institutional legal and regulatory standards.

APPE 7002 Community Practice

This pharmacy practice experience in a community pharmacy setting is intended to expose the student to a variety of patient-centered services. These services include but are not limited to medication dispensing, patient counseling, drug therapy monitoring, medication therapy management, and drug information services. Resource management and operations management will also be incorporated into the experience.

APPE 7003 Acute Care Practice

This pharmacy practice experience focuses on providing patient-centered care to hospitalized patients. The student will apply their therapeutic knowledge to assess and develop therapeutic plans for patients in collaboration with other healthcare professionals, especially physicians. The student will also be involved in taking medication histories, monitoring patient progress and providing drug information to health care professionals and patients.

APPE 7004 Ambulatory Care/Primary Care Practice

This pharmacy practice experience is focused on providing patient-centered care of patients who are receiving care in a clinic, physician office or other ambulatory setting. Students will gain experience in communication and assessment skills, physical assessment, chronic disease management and preventative care, and therapy modifications for special patient groups. Other skills developed include drug literature analysis, patient education and counseling, interprofessional communication, and designing and implementing safe, efficacious and cost effective drug therapy to the patient.

APPE 7006 Retail Management Administrative

This pharmacy practice experience focuses in a community chain pharmacy administrative setting is intended to expose the student to the role and responsibilities of a pharmacy district supervisor and administrator. The student will be exposed to the business aspects of pharmacy operations. This will include not only the financial resource aspects but also the human resource aspects of pharmacy management within a corporate environment.

APPE 7007 Institutional Management Administrative

This elective pharmacy practice experience in a hospital pharmacy administrative setting is intended to expose the student to the role and responsibilities of the Director of Pharmacy and administrator. The student will be exposed to the management of pharmacy operations. This will include financial and human resource management within an institutional environment.

APPE 7008 Institutional Formulary Management

This elective pharmacy practice experience will focus on population-based care and the management of drug formularies. Students will be exposed to techniques to address prescribing habits within an institution, pharmaco-economic analyses in the managed care environment, PBMs, evidence-based medicine, formulary management, and patient outcomes.

APPE 7009 Community Based Infusion Services

This elective pharmacy practice experience will focus on providing infusion services from a community-based pharmacy operation. The student will gain experience in parenteral and enteral nutrition and formulations. Research, preparation and distribution of intravenous products and supplies to home bound or specialty institutionalized patients will be a routine part of the student's experience.

APPE 7010 Clinical Management Services

This is an elective advanced pharmacy practice experience. While working with Clinical Management Services the student will be exposed to a pharmacy benefit and wellness operation. At the conclusion of the rotation, each student should have an understanding of the services a PBM provides to their employer clients, individual employees, third party administrators, contracted pharmacies, and internal employees. Student participation and observation of services include therapeutic substitution recommendations, drug utilization review activity, prior authorizations (PAs), clinical and

pharmacoeconomic steering committees, client quarterly reviews and implementation of benefit policies which reflect current clinical and economic environments.

APPE 7011 Nuclear Pharmacy and Pharmaceuticals

This elective pharmacy practice experience introduces the student to the practice of nuclear pharmacy. The nuclear pharmacy experience will concentrate on pharmaceutical care and radiopharmaceutical compounding, quality assurance, health physics and regulatory compliance. The student will have the opportunity to communicate with the nuclear medicine personnel and participate in the clinical use of diagnostic and therapeutic radiopharmaceuticals.

APPE 7012 Pharmacist State Association

This elective pharmacy practice experience is designed to broaden the student's knowledge and understanding of pharmacy association management. It is structured to provide experiences in national and state practice issues, education, member services, student development, policy and advocacy, and public relations.

APPE 7017 Compounding Specialty Pharmacy

This elective pharmacy practice experience in a community pharmacy setting will provide the student with the experience of compounding specialty medications that are not commercially available in necessary dosage forms for unique patient populations. Regulations, special equipment and space considerations will be addressed. Marketing of this specialized service will also be part of the learning experience.

APPE 7018 Geriatric Care

This elective pharmacy practice experience is designed to provide the student with an in-depth experience in the provision of pharmaceutical care to older patients and those requiring long term care services. Training involves providing for the special needs of elderly patients through knowledge of geriatric disease states, aging organ function and related drug response alterations, including pharmacokinetic and pharmacodynamic alterations. Other issues such as health maintenance, compliance, patient education, and social issues are also emphasized.

APPE 7019 Critical Care

This elective APPE is an inpatient experience designed to enable the student to acquire skills and knowledge regarding basic principles of specific critical care disease states and their treatment. Students will spend time in the intensive care units gaining experience in areas such as hemodynamic monitoring, shock, burns, infectious disease, analgesia, and drug overdose management. Treatment of critical pathology associated with pulmonary, cardiac, renal, neurological, and hepatic organ systems is stressed.

APPE 7020 Advanced Community Pharmacy Services

This elective pharmacy practice experience in a community pharmacy setting is intended to expose the student to a variety of patient-centered value added services. These practices provide services that are not limited to patient counseling, drug therapy monitoring, and drug information services. Other activities such as Medication Therapy Management consultations, specialty compounding and immunizations are routine value added services for these practices. Resource management and operations management will also be part of the educational endeavors the student will experience.

APPE 7021 Alternative and Complementary Medication and Therapies Research

This elective pharmacy practice experience will provide the student with the opportunity to improve and polish drug information investigative and writing skills. Excellent writing and communication skills are required for this experience. Alternative medications and complementary medications are fully explored. Activities for the student include active participation in such things as yoga and reflexology.

APPE 7023 Nutritional Support

This experience is designed to provide the student with the opportunity to gain knowledge, skills, and practical experience in basic nutritional principles, nutritional assessment, and management of the patient requiring enteral and/or total parenteral nutrition. Students will participate in managing patients through assessing and diagnosing nutritional status, and designing and monitoring nutritional and electrolyte treatment plans. Experience is gained working with a broad spectrum of patients, including trauma and surgical patients, patients having endocrine abnormalities, and renal- and hepatic-compromised patients. The student will also learn about various infusion techniques and systems for administering nutritional agents.

APPE 7024 Pediatrics

This elective pharmacy practice experience is designed to enable the student to acquire skills and knowledge regarding basic principles of pharmacotherapy for common childhood diseases. The student will gain experience in applying therapeutic knowledge to develop an assessment and plans for patient care while collaborating with other healthcare professionals. Students will gain experience caring for pediatric patients with acute and chronic conditions in such areas as infectious disease, cardiology, pulmonology, oncology, and rheumatology. Training involves knowledge of pediatric conditions, developmental organ function and related dose-response alterations, and pharmacokinetic and pharmacodynamic predictions.

APPE 7025 Pharmacokinetics

This elective pharmacy practice experience is designed to give the student hands-on experience in clinical pharmacokinetics. The student will assess the utility of population averages in prediction drug concentration of dosage as well as learn to base therapeutic recommendation on measured drug concentrations. This experience is directed toward monitoring drug therapy based on patient response rather than the sheer manipulation of numbers. Expertise in calculations is expected from didactic course work.

APPE 7026 General Medicine

This elective pharmacy practice experience in an in-patient hospital setting is designed to give the student a basic understanding of disease states encountered in internal medicine. While participating in the team based approach to health care, application of therapeutics in patient care and skill development in taking medication histories, monitoring patients, providing drug information as well as patient information will be emphasized.

APPE 7027 Family Practice

This elective pharmacy practice experience is intended to provide the student with a basic understanding of common disease states encountered in family practice medicine. The student will obtain training and experience in the areas of clinical pharmacokinetics, drug therapy evaluation, interpretation of laboratory results, effective communication with other members of the healthcare team, drug interaction screening, drug literature and new product evaluation, formulary research for the P & T Committee, and patient education.

APPE 7028 Infectious Disease

This elective pharmacy practice experience in an institutional setting is intended to expose the student to appropriate utilization of antimicrobial agents in the hospital setting. Antimicrobial resistance and its effect on antibiotic utilization will be discussed and reviewed. The student will receive training and experience in the areas of clinical pharmacokinetics, drug therapy evaluation, interpretation of laboratory results, effective communication with other members of the healthcare team, drug interaction screening, drug literature and new produce evaluation, formulary research for the P & T Committee, and patient education.

APPE 7029 Internal Medicine

This elective pharmacy practice experience is designed to develop an understanding of pharmacotherapy for the patients followed by the medical team. An ancillary goal is to allow the student to develop the ability to effectively gather and disseminate information, and communicate with patients, nurses, the physician, the pharmacist and other health care practitioners specific information necessary in the care of patients.

APPE 7031 Surgery

This elective pharmacy practice experience is designed to provide students with experience in the fundamentals of surgery pharmacy. After completing this clerkship, the student will have a better understanding of the drugs used in surgery, surgical procedures and general patient care.

APPE 7032 Academic Pharmacy Practice

Students will participate in all parts of the academic process including literature review of teaching methods, facilitating small groups, preparing lectures, syllabi, and examination questions, preparing equipment for laboratory sessions, grading selected assignments, evaluating the current curriculum, and being an active participant in committee meetings and decision-making at the college level. Students will work with the primary preceptor(s) in discussions, as well as independently to accomplish assigned tasks to expose the student to what it means to be an academician in all three pillars of academic – teaching, scholarship, and service. *NOTE: This APPE can only be taken in addition to the required 36 weeks of APPEs and requires permission of the instructor.*

Approved Electives within the Bill Gatton College of Pharmacy

PMPR 7101 Folk Medicine and Remedies of Southern Appalachia (2 credit hours)

An introduction to Appalachian folk medicine will be presented, including the examination of health, illness, and the treatment of disease from a pharmacist's perspective. This includes discussion of various theories of illness, types of healers, nostrums, and the empirical basis for the remedies and alternative forms of therapy. Some of the medicinal properties of the treatments prescribed in the rural Appalachian region will be discussed.

PMPR 7102 Professional Development for Healthcare Professionals (2 credit hours)

This course will help facilitate successful careers of young healthcare professionals. The course will consist primarily of topic discussions in lieu of lectures. Topics will include a variety of issues related to professional development centering around leadership, organizational, and relational skills. This course will be valuable to those with interests in administrative or high level clinical positions,

including students who plan to pursue post-graduate residency training. Enrollment limited to 20 students.

PMPR 7103 Evidence-Based Diabetes Management (3 credit hours)

This elective would provide an evidence-based foundation in the principles of diabetes therapy and management. The student will develop their knowledge and ability to assess, manage, educate, monitor, and recommend pharmacotherapy for patients with diabetes. Students successfully completing the elective will have the knowledge and basic skill set to begin practicing diabetes management. Diabetes within the rural Appalachian region will be emphasized with students interviewing and observing pharmacists practicing advanced management skills. *Prerequisite: Successful completion of the P2 year in the pharmacy curriculum*

PMPR 7104 Relationship of Pharmacy and Health Disparities in the Appalachian Region (2 credit hours)

The U.S. health care system is often criticized for its high national costs and outcomes that are less than favorable when compared to other nations. Many poorer outcomes can be observed in differences of health risk, illness, health services utilization and mortality that vary by gender, race and ethnicity, age, and place of residence. This course will explore regional health disparities through understanding the pivotal influence of pharmacy needs and care. This course will engage students in teams to explore regional health disparities and define the influence of the presence or absence of pharmacy-related services and initiatives on regional health.

PMSC 7201 Veterinary Pharmacy (2 credit hours)

This class contains an overview of biologicals and pharmaceuticals commonly encountered in the practice of veterinary medicine, concentrating on those drugs and diseases that could be encountered by a pharmacist. The course will include agents that are used solely as veterinary pharmaceuticals as well as drugs used in human medicine that have unique application in veterinary practice. Theoretical and practical aspects of veterinary compounding will be discussed and accomplished. The most common companion animal diseases and pharmacotherapy options will be presented and discussed. Diseases communicable between animals and humans (zoonotic disorders) will also be presented.

PMSC 7202 Principles of Toxicology (2 credit hours)

This course will provide students with an understanding of the basic principles and concepts of toxicology, including various mechanisms of toxicological response. The course will also present clinical applications, including the toxicology of various drug classes, vitamins, alcohols, metals, environmental chemicals, and agents used for chemical and biological warfare.

PMSC 7203 Non-Medicinal Drug Use (2 credit hours)

This course covers a wide range of topics centered around the use of drugs for non-medicinal purposes. Inherent in the course is the discussion on the continuum of legitimate versus non-legitimate drug use, or medical versus non-medical use. The major focus of the subject material pertains to issues of drug abuse, particularly in Appalachia and other rural environments. Other issues such as ergogenic drugs, entheogenics, and cultural drug use, both current and historical, will be considered. Multiple faculty participate in the course.

PMSC 7204 Special Problems (1-4 credit hours)

This course will provide the student with an opportunity to learn and apply skills in methods and/or techniques of research, and to demonstrate an ability to work independently. *Prerequisite: Signed agreement with the student and a specific faculty member and approved by the department chair*

Approved Electives in other ETSU Colleges

The following courses have been approved by the Curriculum Committee of the Gatton College of Pharmacy. Students' opportunity to enroll in courses offered by other colleges on campus may be dependent upon class space, instructor permission, and/or scheduling constraints. For further information, please contact the Office of Academic Affairs.

ANTH 3500 Appalachian Folk Medicine (3 credit hours)

The study of folk medical beliefs and practices, focusing on Southern Appalachia from the late 1800s to 1940. Topics examined include folk *materia medica* and therapeutics, magico-religious beliefs and practices, folk healers, folk concepts of illness and human physiology.

ENVH 4357/5357 Toxicology (3 credit hours)

A study of the essentials of toxicology, including toxicity determinations and measurements, and biologic factors important in understanding toxicity. A review of toxic substances in air, water, foods, and the workplace with a consideration of exposure limits, their rationale and evaluation methods.

Prerequisite(s): CHEM 2010/ 11 and HSCI 3320, or permission of instructor

IDMD 1940 Rural Health Research and Practice (3 credit hours)

Student and faculty teams in rural communities partner with communities to assess health priorities and develop plans to address identified needs. Students develop an understanding of interdisciplinary working relationships among health professional disciplines. Students will develop an understanding of issues associated with research involving human subjects and receive IRB Training.

IDMD 2950 Rural Community Based Health Project (3 credit hours)

In this course students work in interdisciplinary teams to develop a community-based health proposal in collaboration with their rural community partners. Through implementing and evaluating the proposed community-based project, students gain hands-on experience in using participatory methods to promote the health of a selected rural population. Students enhance their formal presentation skills through presenting the results of their community-based project.

PUBH 4927/5927 Cultural Competence and Spirituality in Health Care (3 credit hours)

Health care effectiveness increases when the spiritual and cultural traditions of the patient are addressed. In this class, students will receive an orientation to the practices and concerns of diverse cultural and religious groups.

PUBH 4937/5937 Stress Management (3 credit hours) Acquaints the student with the literature and research on stress and provides a holistic introduction into the theory and practice of stress management that encompasses physical, emotional, psychological, and spiritual dimensions of stress responses. The course uses an experiential approach to applying coping strategies and relaxation techniques covered in class by requiring students to develop and implement a personal stress management project.

PUBH 5400 Epidemiology I (3 credit hours)

This course is designed to provide the student with an introduction to the principles of epidemiology and the application of epidemiology to public health practice. The use and analysis of health statistics are emphasized.

SPAN 1011 Beginning Spanish for Health Care I (3 credit hours)

A study of the four language skills of speaking, listening, reading and writing, with an emphasis on vocabulary and cultural situations appropriate for health care professions. This course does not satisfy high school deficiencies for students enrolled in areas other than health care professions.

SPAN 1021 Beginning Spanish for Health Care II (3 credit hours)

A continuation of the study of the four language skills of speaking, listening, reading and writing, with an emphasis on vocabulary and cultural situations appropriate for health care professions. This course does not satisfy high school deficiencies for students enrolled in areas other than health care professions.

Prerequisite: SPAN 1011