

Graduate Certificate in Precision Medicine Curriculum:

Foundational Knowledge Courses (Required)		
Course Title	Credit Hours	Brief Course Description
Foundations in Precision Medicine 1: Genomic Technologies	1	Overview of current developments and trends in emerging genomic technologies, including data science technology, genetic and genomic testing and reporting, big data, bioinformatics, clinical decision support and other genetic applications supported by emerging technologies
Foundations in Precision Medicine 2: Medical Molecular Genetics	1	Provides foundational knowledge on human genetics/genomics, including pedigree analysis, non-Mendelian genetics, cytogenetics, polymorphism analysis, physical mapping and the human genome, mutation analysis and pathogenesis, genomic imprinting, viral and non-viral gene therapy
Foundations in Precision Medicine 3: Genetic Epidemiology	1	Reviews clinically important principles of genetic epidemiology, including population genetics, familial aggregation and heritability analysis, TagSNPs and haplotype blocks, population-based studies, GWAS and issues related to genetic association studies, and epigenetics
Precision Medicine Seminar	1	This conference, hosted by the College of Pharmacy, brings together precision medicine experts to provide the latest information and implications of discovery, trends, technologies, and clinical applications of genomic/genetic data. Students can either attend in person or view via web link. A capstone assignment will be included that is important for all students and an essential outcomes measure.
Clinical Applications Courses (Electives, ≥ 5 Credit Hours Required)		
Clinical Applications of Precision Medicine: Precision Health	3	Reviews knowledge and applications of precision medicine diagnosis and treatment considerations of concepts in monogenic diseases and complex diseases. Important concepts include susceptibility genomics, diagnostic approaches, laboratory testing, and treatment considerations for genomic medicine. Diseases include cystic fibrosis, monogenic diabetes, Marfan syndrome, Huntington's disease, as well as cardiovascular, metabolic, neurologic, mental health disorders and addiction, and others.
Clinical Applications of Precision Medicine: Oncology	2	Reviews knowledge and clinical applications of precision medicine approaches and technologies in diagnosing or treating cancer, including the genetics of cancer, targeted cancer treatments, somatic testing, current and future research and clinical trends, and other information
Clinical Applications of Precision Medicine: Pharmacogenomics	2	Includes knowledge and clinical applications of pharmacogenomics in precision medicine, including its contribution to variability in drug metabolism, use of pharmacogenomics to identify patients at risk for adverse drug reactions, and clinical use of pharmacogenomic data in drug therapy for multiple therapeutic areas, including cardiovascular, oncology, pain management, neurologic, psychiatric, transplantation, and infectious diseases
Patient Education and Communication in the Era of Precision Medicine	1	Provides guidance on patient education and communication about genomic medicine information, including informed consent, patient education, documentation, future trends, and ethical, legal, and social issues