

University of Pittsburgh School of Pharmacy

Doctor of Pharmacy Curriculum Outcomes

These Doctor of Pharmacy Degree Program Curriculum Outcomes unify themes to: 1) establish learning priorities of the program; 2) communicate a collective vision of what faculty plan and students aspire to achieve during the completion of the degree program; 3) link learning opportunities within and across all courses, whether required core or elective; didactic or experiential, and 4) communicate how experiences contribute to and build learning and skills throughout the program. These provide the foundation for teaching and learning and will direct construction of course-specific outcomes and learning objectives, delivery methods of teaching, content selection, assessment methods, and data collection to evaluate success of individual learners and the degree program.

The current statements are modifications of previous Pitt Pharmacy outcomes, incorporating contemporary and re-focused emphasis areas and language from many sources including the AACP Curriculum Outcomes and Entrustable Professional Activities (COEPA) 2022 document prepared by the 2022-2023 Academic Affairs Standing Committee: Revising the Center for the Advancement of Pharmacy Education (CAPE) Education Outcomes and Entrustable Professional Activities (Appendix 1) and stakeholder input.

LEARNER

The student will:

- **develop, integrate, and apply the breadth and depth of foundational knowledge and skills in biomedical, pharmaceutical, social, behavioral, administrative, clinical sciences, and digital health needed to advance patient-centered care and population health**

PROBLEM SOLVER

The student will use **problem solving and critical thinking skills, with a creative and innovative mindset, to promote positive change and effective solutions to address challenges in individual or population-based care, medication use systems, technology, or pharmacy practice or policy in any setting:**

- identify and define problems and challenges
- design and implement strategies and solutions
- design viable solutions and evaluate their outcomes
- use critical thinking skills including interpretation, analysis, evaluation, inference, and explanation
- retrieve and evaluate scientific literature
- develop creative, forward-thinking ideas and approaches to improve quality or overcome barriers

COMMUNICATOR and EDUCATOR

The student will **actively engage, listen, and communicate verbally, nonverbally, and in writing when interacting with or educating an individual, group, or organization:**

- determine effective and enduring ways (diverse teaching methods, instructional strategies, and assessment techniques) to engage with patients, caregivers, healthcare professionals and the community to effectively communicate information about medications and health
- identify, describe, acknowledge, and react appropriately to the emotions and behaviors of others to effectively communicate with and relate to them
- communicate effectively and professionally, orally and/or in writing, by articulating knowledge and recommendations with empathy, sensitivity, confidence, clarity, and respect
- assess the effectiveness of oral and written communications and adjust the messages accordingly

ALLY, PROMOTER, and CHAMPION

The student will work with individuals, communities, at-risk populations, and other members of the inter-professional health care team to:

- **mitigate health disparities by considering, recognizing, and navigating cultural and structural factors (e.g., social determinants of health, diversity, equity, inclusion, and accessibility) to improve access and health outcomes (Ally)**
 - demonstrate cultural humility and structural competency in identifying and working to resolve public health problems, including health disparities secondary to social determinants of health
 - apply a contextual understanding of the social and historical context of systemic oppression to health status and health outcomes for individuals and populations
 - apply principles of justice and equity into all decisions that influence the health of individuals and communities
- **evaluate factors that influence the health and wellness of individuals and populations and develop strategies to address those factors (Promoter)**
 - Identify factors that impact health and wellness
 - interpret data to assess the health needs of a community, population, and individual
 - design and participate in initiatives to address social determinants of health
 - develop strategies that actively promote disease prevention and health management across a continuum of care
 - demonstrate knowledge of national and international public health priorities
 - contribute to the development of local, national, and international public health agendas
- **empower patients and caregivers to advocate for the best care and health outcomes at the community, state, or national level (Champion)**
 - take responsibility for health outcomes while making culturally responsive and ethical decisions that represent the best interest of the individual and the community
 - adapt care plans and practice to meet the needs of diverse groups of individuals and populations to diminish disparities and inequities in access to quality care

PROVIDER

The student will provide person-centered (holistic) care to individuals as the medication specialist using the Pharmacists' Patient Care Process, inclusive of data collection and assessment and the development of care plans with implementation and follow-up strategies. The student will partner with patients, families, and caregivers to design and deliver personalized care that maximizes therapeutic benefits, minimizes medication toxicity and costs, prevents/resolves drug-related problems, addresses health goals, provides educational information, and promotes health and wellness.

- gather and interpret pertinent information from direct patient assessment, caregivers, health care professionals and health records
- utilize organized interview skills, patient-appropriate language, and active listening skills to perform the patient assessments such as medical histories and selected elements of physical examination
- create and take ownership of a prioritized drug-related problem list
- formulate evidence-based care plans, including appropriate prescription and nonprescription medications, alternative and complementary therapies, monitoring and testing, immunizations, and non-pharmacologic therapies
- articulate sound, evidence-based recommendations in appropriate language for patients, caregivers and providers
- document care plans in writing and, when appropriate, the impact and value of the services provided
- evaluate the success of the care plan, monitor the patient's progress in meeting the goals of therapy, and modify the care plan, as needed, to address therapeutic efficacy, safety, adherence, and access issues

MEDICATION USE STEWARD

The student will optimize patient healthcare outcomes using human, financial, technological, and physical resources to improve the safety, efficacy, and environmental impact of medication use systems:

- comply with local policy, state and federal laws, recommendations of regulatory agencies, and best practices in all aspects of pharmacy practice
- take responsibility for accurate and complete evaluation and interpretation of prescriptions/orders and selection of appropriate products, dosage forms, routes and methods of administration
 - ensure preparation, compounding, and dispensing of medications consistent with specific patient needs
 - perform calculations and demonstrate techniques to prepare, compound, package, label, and dispense prescriptions to assure product quality and patient safety
- protect and respect the privacy and confidentiality of an individual's health and other personal information
 - improve overall health of the individual and the community through delivery of medications and immunizations within the scope of practice of the healthcare setting while observing local, state, and federal regulations
 - identify immunization, testing, and prescribing needs of the individual and community
 - accurately prescribe, prepare, dispense, record, and administer medications and immunizations when appropriate
- identify and effectively use human, financial, technological, and physical resources
 - manage the medication use system (i.e., procurement, storage, prescribing, transcription, dispensing, administration, monitoring, and documentation), while assuring safety, efficacy, and efficiency
 - apply principles and processes for budgeting and financing, as well as the methods for quality assurance and improvement, human resource development, program marketing, and management policy development
- detect and report actual and potential medication errors and adverse drug events to identify underlying causes and minimize/prevent harm

INTERPROFESSIONAL COLLABORATOR

The student will actively engage and contribute as a healthcare team member by demonstrating core inter-professional competencies:

- collaborate as an integral part of an inter-professional team, inclusive of patients, caregivers, other health profession disciplines, non-healthcare collaborators, and community members
- actively participate and engage as a healthcare team member by demonstrating and maintaining mutual respect, understanding and shared values
- acquire and use knowledge of one's role and those of others
- evaluate inter-professional team dynamics, relationship-building values, and teamwork principles

LEADER

The student will demonstrate the ability to influence and support the achievement of shared goals on a team, regardless of one's role:

- work effectively, respectfully, and collaboratively with all individuals to achieve goals in patient care and/or team activities including school and experiential settings
- demonstrate formal and informal leadership by taking responsibility for creating trust, open communication, and empowering others to achieve shared goals
- develop skills of management including identifying, implementing, and overseeing resources to accomplish goals, demonstrating ability to manage self, others, and roles in medication use systems

SELF-AWARE

The student will examine, reflect on, and address personal and professional attributes (e.g., knowledge, metacognition, skills, abilities, beliefs, biases, motivation, help-seeking strategies, and emotional intelligence) that could enhance or limit growth, development, and professional identity formation.

Self-Awareness

- maintain situational awareness and need for professionalism in all settings (including classrooms, experiential sites, co-curriculum activities)
- apply principles of metacognition to regulate thinking, learning, and management of emotions and behavior of self through self-monitoring, self-evaluation, and self-reinforcement
 - develop self-confidence and self-acceptance
 - ability to accept constructive feedback and admit mistakes
 - ability to manage emotions in difficult situations

Professional Development

- identify and articulate one's personal strengths and limitations
- set personal and professional goals and achieve objectives, including acquisition of new skills and knowledge, to attain expertise that will enhance professional success
- effectively plan and manage time, and organize work
- formulate plans, finding assistance where needed, and assess progress toward meeting goals

Professional Identity

- develop and articulate a personal professional identity to think, act and feel like a member of the pharmacy community
- be a life-long learner able to examine and reflect on knowledge and skills that may enhance or limit personal or professional identity formulation
- articulate one's own professional identity, building on self-reflection, professional socialization and perception of roles and inclusive of motives, values, beliefs, and personal experiences that define a pharmacist

PROFESSIONAL AND ADVOCATE

The student will exhibit attitudes and behaviors that embody a commitment to building and maintaining trust as aspiring medication experts with patients, colleagues, and society in accordance with moral, legal, social, economic, and professional principles and guidelines:

- embody characteristics in the Oath of the Pharmacist and in the Code of Ethics for Pharmacists
- demonstrate desire to maintain professional competence through principles of life-long learning
- advocate for social and organizational changes to improve health and well-being for all
- demonstrate a commitment to active participation and advocacy for advancement of the profession of pharmacy

Adopted May 2023

Appendix 1 – Glossary of Terms

Extracted from the AACP Curriculum Outcomes and Entrustable Professional Activities (COEPA) 2022

Report of the 2022-2023 Academic Affairs Standing Committee: Revising the Center for the Advancement of Pharmacy Education (CAPE) Educational Outcomes and Entrustable Professional Activities

1.1 Scientific Thinking (Learner) Definitions	<ul style="list-style-type: none"> • Foundational knowledge - outlined in ACPE Appendix 1 and include the biomedical, pharmaceutical, social/behavioral/administrative, and clinical sciences as they pertain to the practice of pharmacy.¹⁶ • Biomedical sciences - the preprofessional sciences (e.g., chemistry, physics, biology) and biomedical (e.g., anatomy, physiology, biochemistry, immunology, biostatistics).¹⁶ • Pharmaceutical sciences – The pharmaceutical sciences build on principles introduced in the preprofessional biomedical sciences including pharmaceuticals/biopharmaceuticals, pharmacokinetics, pharmacology, toxicology, pharmacogenomics, medicinal chemistry, clinical chemistry, pharmaceutical calculations, and pharmaceutical compounding, which are taught in the professional pharmacy curriculum and collectively explain drug and/or drug product formulation, delivery, stability and action.¹⁶ • Social, behavioral, administrative sciences - the disciplines and concepts of public health, epidemiology, economics, financial management, health behavior, outcomes, research methods, law and ethics, healthcare administration, management, and operations, marketing, communications, medication distribution systems taught within the professional pharmacy curriculum.¹⁶ • Clinical sciences - the areas of the professional pharmacy curriculum focused on the integration and application of the biomedical, pharmaceutical, and social/behavioral/ administrative sciences to improve the human condition through the safe and efficacious use of medications.¹⁶ • Digital health –digital technologies that improve health and includes categories such as mobile health, health information technology, wearable devices, telehealth and telemedicine, personalized medicine, and tools such as mobile health apps and software.²⁰
2.1 Problem Solving Process (Problem Solver) Definitions	<ul style="list-style-type: none"> • Problem solving skills: Identify define problems that have multiple considerations (and possibly more than one viable solution); explore and prioritize potential strategies; compare and contrast potential solutions; design and evaluate implemented solutions using evidence and/or rationale and anticipate and reflect on outcomes.²¹ • Critical thinking - evaluating conclusions by systematically examining the problem, evidence, & solution. It includes 6 core skills including interpretation, analysis, evaluation, inference, explanation, and self-regulation.^{22,23} • Innovative mindset – a set of beliefs that includes being forward thinking, creative, open to testing, comfortable making mistakes and trying again; collaborative and focused on progress that allows a person to generate creative or novel solutions to problems that result in improved performance.²⁴
2.2 Communication (Communicator) AND EPAs 8 and 11 Definitions	<ul style="list-style-type: none"> • Communication: Communication is the exchange of information between patients, health care providers and others that involves skills such listening, speaking, writing, observing nonverbal communication, decoding messages, giving and receiving feedback, and empathizing.²⁵ • Educating: Educating focuses how to package, deliver, coach and assess individuals to increase their ability to learn, retain, access and use knowledge. Educating involves teaching methods, instructional strategies, individual differences, and assessment techniques.²⁶

2.3 Cultural and Structural Humility (Ally) Definitions	<ul style="list-style-type: none"> • Cultural humility – Ability to recognize one's own limitation in order to avoid making assumptions about other cultures, admitting that one does not know and is willing to learn from patients/person/client/consumer/community about their experiences, while being aware of one's own embeddedness in culture(s).²⁷ • Structural humility - The capacity of health care professionals to appreciate that their role is not to surmount oppressive structures but rather to understand knowledge and practice gaps vis-a`-vis structures, partner with other stakeholders to fill these gaps, and engage in self-reflection throughout these processes.²⁸ • Health disparities - preventable differences in the burden of disease, injury, violence, or opportunities to achieve optimal health that are experienced by socially disadvantaged populations.²⁹ • Navigating – strategies provided by individuals or teams that reduce barriers to care.³⁰ • Structures – The policies, economic systems, and other institutions (policing and judicial systems, schools, etc.) that have produced and maintain social inequities and health disparities, often along the lines of social categories such as race, class, gender, and sexuality.²⁸ • Structural competency – The trained ability to discern how a host of issues defined clinically as symptoms, attitudes, or diseases (e.g., depression, hypertension, obesity, smoking, medication “non-compliance”, trauma, psychosis) also represent the downstream implications of several upstream decisions about such matters as health care and food delivery systems, zoning laws, urban and rural infrastructures, medicalization, or even about the very definitions of illness and health.³¹ • Social determinants of health – conditions in the environments where people are born, live, work, play, age, and worship that affect a wide range of health, functioning, and quality of life outcomes and risks. There are 5 key domains: social and community context, education, neighborhood and built environment, health and health care, and economic stability.³²
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2.4 Person-Centered Care (Provider) Definitions	<ul style="list-style-type: none"> • Person-centered care – A holistic approach to use with patients to be more inclusive. A broadened definition of patient-centered care that extends the concept beyond clinical care where health-care providers are encouraged to partner with patients, families, and caregivers, to co-design and deliver personalized care, including prevention and promotion activities, that provides people with the high-quality care they need and improves health-care system efficiency and effectiveness.^{33,34} • Whole person care- Whole person health involves looking at the whole person—not just separate organs or body systems—and considering multiple factors that promote either health or disease. It means helping and empowering individuals, families, communities, and populations to improve their health in multiple interconnected biological, behavioral, social, and environmental areas.³⁵ • Patient – An individual who interacts with a clinician either because of real or perceived illness, for health promotion and disease prevention and/or to meet social needs.³⁶ • Medication Specialist – During the PharmD program students develop specialized knowledge in the safe and effective use of medications. However, a PharmD curriculum does not provide sufficient deliberate practice with focused feedback to achieve expert-level performance. We expect they will continue to develop expertise after graduation.³⁷ • Pharmacist’s Patient Care Process (PPCP) – a consistent process for the delivery of patient care across the profession that is applicable to any setting where pharmacists provide care and for any patient care service provided by pharmacists. The process includes collect, assess, plan, implement, and follow-up.⁸ See Figure 1.
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2.5 Advocacy (Advocate) Definitions	<ul style="list-style-type: none"> • Advocacy – The process by which the actions of individuals or groups attempt to bring about social and/or organizational change on behalf of a particular health goal, program, interest, or population.³⁸⁻⁴⁰
2.6 – Medication-use Process Stewardship (Steward) AND EPA 3 Definitions	<ul style="list-style-type: none"> • Optimize medications - Occurs when there is a blend between: 1) developing an optimal medication regimen, that is appropriate for the patient, effective for the medical condition, evidence-based, cost effective, and safe for the patient to use; and 2) using shared decision making: a person-centered approach that incorporates the patient’s needs, abilities, values, and beliefs, and taking steps to ensure the medication can be properly used in the setting it will be administered.⁴¹⁻⁴³ • Medication Use System/Process - A complex process comprised of medication prescribing, order processing, dispensing, administration, and effects monitoring (e.g., intended or unintended effects).⁴⁴
2.7 Interprofessional Collaboration (Collaborator) Definitions	<ul style="list-style-type: none"> • IPEC competencies – There are four core competency domains: 1) values and ethics; 2) roles and responsibilities for collaborative practice; 3) interprofessional communication; and 4) teamwork and team-based care. The IPEC competencies address maintaining a climate of mutual respect and shared values; using knowledge of one’s own role and those of other professions; communicating using a team approach; and appreciating team dynamics, relationship-building values, and teamwork principles.¹¹
2.8 Population Health and Wellness (Promoter) AND EPA 12 Definitions	<ul style="list-style-type: none"> • Population-based care - A comprehensive care approach where practitioners assess the health needs of a specific population, implement and evaluate interventions to improve the health of that population, and provide care for individual patients in the context of the culture, health status, and health needs of the populations of which that patient is a member.⁴⁵
2.9 Leadership (Leader) Definitions	<ul style="list-style-type: none"> • Leadership - Leadership is a function of knowing yourself, creating a culture of trust and open communication, having a vision that is well communicated, empowering others, taking a broad view of situations, and forming strategic alliances.⁴⁶ Leaders are compared to managers where there are some subtle differences. Managers are responsible for identifying, implementing, and overseeing resources to effectively accomplish specific projects or processes.⁴⁷
3.1 Self-awareness (Self-aware) Definitions	<ul style="list-style-type: none"> • Metacognition – a type of cognition that regulates thinking and learning and consists of 3 self-assessment skills including planning, monitoring, and evaluating.^{48,49} • Help seeking - Assessing needs and finding assistance when a deficit is identified that is associated with academic success. Behaviors may include seeking professional counseling, meditating, exercising, or engaging in the arts.⁵⁰ • Emotional intelligence - The ability to identify and manage one’s own emotions, as well as the emotions of others. It includes the skills of emotional awareness, or the ability to identify and name one’s own emotions; the ability to harness those emotions and apply them to tasks like thinking and problem solving; and the ability to manage emotions, which includes both regulating one’s own emotions when necessary and helping others to do the same.⁵¹ • Professional Identity Formation - Involves internalizing and demonstrating the behavioral norms, standards, and values of a professional community, such that one comes to “think, act and feel” like a member of that community. Professional identity influences how a professional perceives, explains, presents and conducts themselves.¹²⁻¹⁴
3.2 Professionalism (Professional)	<ul style="list-style-type: none"> • Professionalism – Includes the elements of adherence to ethical principles, effective interactions with patients and with people who are important to those patients, effective interactions with other people working within the health system, reliability, and
Definition	commitment to autonomous maintenance and continuous improvement of competence and citizenship and professional engagement. ^{52,53} <ul style="list-style-type: none"> • Oath of a Pharmacist was revised in 2021.⁹