

# ACCREDITATION COUNCIL FOR PHARMACY EDUCATION



## ACCREDITATION STANDARDS AND KEY ELEMENTS FOR THE PROFESSIONAL PROGRAM IN PHARMACY LEADING TO THE DOCTOR OF PHARMACY DEGREE

(“STANDARDS 2025”)

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# ACCREDITATION COUNCIL FOR PHARMACY EDUCATION

## STANDARDS 2025

### *PREAMBLE*

#### **Accreditation Council for Pharmacy Education (ACPE)**

The Accreditation Council for Pharmacy Education (ACPE) is the national agency for the accreditation of professional degree programs in pharmacy and providers of continuing pharmacy education. ACPE (until 2003 known as the American Council on Pharmaceutical Education) was established in 1932 for the accreditation of professional degree programs in pharmacy, and in 1975 ACPE's scope was broadened to include accreditation of providers of continuing pharmacy education ([www.acpe-accredit.org](http://www.acpe-accredit.org)). ACPE expanded its activities to include evaluation and international-accreditation of professional degree programs internationally in 2011 and entered into a collaboration with the American Society of Health-System Pharmacists (ASHP) to accredit pharmacy technician education and training programs beginning in 2014.

The mission of ACPE is to assure and advance quality in pharmacy education. ACPE is an autonomous and independent agency whose Board of Directors consists of appointees from the American Association of Colleges of Pharmacy (AACCP, academy/educators), the American Pharmacists Association (APhA, practitioners), the National Association of Boards of Pharmacy (NABP, regulators) (three appointments each), and a public member (one appointment by ACPE). Since the inception of its accreditation agency recognition program in 1952, the U.S. Department of Education (USDE) has continuously recognized ACPE as an accreditation agency. ACPE also gained recognition by the Council for Higher Education Accreditation (CHEA) in April 2004. State boards of pharmacy require that licensure applicants from the United States have graduated from an accredited pharmacy degree program to be eligible to sit for the North American Pharmacist Licensure Examination® (NAPLEX®).

#### **Importance of Standards**

To achieve and maintain ACPE accreditation, professional Doctor of Pharmacy (PharmD) degree programs (*hereafter described as 'programs'*) must meet the standards contained in this document. ACPE standards are minimum requirements, and it is expected that programs will exceed these required standards through initiatives designed to ensure continuous quality improvement. These standards describe the various elements needed for quality-assured professional pharmacy education and are based on evidence and experience. They articulate expectations that ACPE (as well as pharmacy practice and the pharmacy academy) has of academic institutions offering the Doctor of Pharmacy degree. ACPE standards also reflect the expectations that the U.S. Department of Education and state boards of pharmacy have of the colleges and schools, and of ACPE, regarding the quality of programs.

These standards have been developed with input from a broad range of constituents interested in and affected by pharmacy education. The standards focus on the educational outcomes required of PharmD programs, the assessment of those outcomes, and the structural and process-related elements within pharmacy education necessary to implement evidence-based outcome measures that document achievement of the standards. In addition, these standards describe areas where programs can experiment

and innovate within the didactic and experiential components of their curricula to meet the required educational outcomes. Establishing a commitment to continuing professional development (CPD) by students and graduates is also addressed, as are contemporary educational concepts such as student readiness to:

- Enter advanced pharmacy practice experiences (APPE-ready).
- Provide patient care in a variety of healthcare settings (Practice-ready).
- Contribute as a member of an interprofessional collaborative patient care team (Team-ready).

### **Revision of Standards: Background**

All accrediting bodies, including ACPE, periodically review and revise their standards. A number of environmental factors prompted ACPE to conduct a careful reassessment of the standards. These factors included:

- The experience gained by ACPE in its accreditation reviews since the adoption of the Doctor of Pharmacy standards in 2016.
- Feedback from ACPE stakeholders regarding quality improvement of the standards.
- Expansion of the scope of pharmacy practice.
- The revision of the American Association of Colleges of Pharmacy's Curriculum Outcomes and Entrustable Professional Activities (COEPA), 2022, which are intended to be the target toward which the evolving pharmacy curriculum should be aimed.  
<https://www.aacp.org/sites/default/files/2022-11/coepa-document-final.pdf>
- The Joint Commission of Pharmacy Practitioners' (JCPP) *Vision of Pharmacy Practice*, accepted by the governing boards of 10 pharmacy organizations, including ACPE, and released in 2013.  
<https://jcpp.net/wp-content/uploads/2016/03/PatientCareProcess-with-supporting-organizations.pdf>
- The document *Pharmacists' Patient Care Process*, developed by a work group from 11 national pharmacy organizations to promote a consistent approach to the process of care. This document was first endorsed by the Joint Commission of Pharmacy Practitioners in 2014.  
<https://jcpp.net/patient-care-process/>
- Core Competencies for Interprofessional Collaborative Practice.  
[https://www.ipecollaborative.org/assets/core-competencies/IPEC\\_Core\\_Competencies\\_Version\\_3\\_2023.pdf](https://www.ipecollaborative.org/assets/core-competencies/IPEC_Core_Competencies_Version_3_2023.pdf).
- Revised NAPLEX Competency Statements.  
<https://nabp.pharmacy/programs/examinations/naplex/competency-statements-2021/>

### **Revision of Standards: Process Employed**

In January 2021, ACPE announced to its stakeholders (including pharmacy colleges and schools, professional pharmacy organizations, student pharmacist organizations, and other accrediting bodies) the

intent to revise the Accreditation Standards and Key Elements for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree. Written comments were solicited from stakeholders, and many were received. In addition, a web-based survey which allowed anonymous completion was distributed to all stakeholders. ACPE also held multiple stakeholder town halls to discuss issues facing pharmacy practice and education. The results of the town halls and written comments influenced the direction and content of these revised standards. The first draft of the revised standards was approved by the ACPE Board of Directors in January 2024 and distributed to ACPE stakeholders. Subsequently, a series of open hearings were conducted at national pharmacy meetings and town halls. Another web-based survey which allowed anonymous completion by stakeholders was conducted in 2024. The ACPE Board of Directors approved the revised standards at the **June 12–14, 2024**, meeting with an effective date of **July 1, 2025**. The new standards will be referred to as “Standards 2025.” Programs being evaluated by ACPE beginning in the fall of 2025 must comply with the new standards.

### **Revision of Standards: What’s Different?**

- *Format* – The standards revision process yielded one document: **Standards 2025**. The *Standards 2025* document includes the seven standards and respective required (key) elements for each individual standard. A separate *Guidance* document was used with prior Standards to support programs’ efforts to enhance quality. The *Guidance* document has been incorporated into the *Standards 2025* document for ease of use. ACPE expects programs to be in compliance with all elements outlined in the *Standards 2025* document to meet minimum standards for pharmacy education and improve the quality of their programs. In other words, the *Standards 2025* document contains required elements that all accredited programs must meet.
- *Philosophy and Emphasis* – Based on stakeholder feedback, the Standards have been refined to ensure that graduating students are “practice-ready” and “team-ready,” that is, prepared to directly contribute to patient care working in collaboration with other healthcare providers. The revision has also placed greater emphasis on critical educational outcomes identified by COEPA and the assessment of the level of student achievement of these outcomes. The Standards focus on the (1) development of students’ professional knowledge, skills, abilities, behaviors, and attitudes, including scientific foundation, knowledge application, and practice competencies; (2) the manner in which programs assess students’ acquisition of knowledge and application of knowledge to practice; (3) mastery of skills and achievement of competencies; and (4) the importance of both curricular and co-curricular experiences in advancing the professional development of students. Throughout the revision process, ACPE has focused on addressing the environmental factors noted above in *Revision of Standards: Background*.
- *Importance of Assessment* – Based on feedback from the academy and other stakeholders, *the new Standards* emphasize assessment as a means of determining and improving the quality of pharmacy education. Having valid and reliable assessment mechanisms in place will provide additional insights to programs regarding their strengths and deficiencies. Programs are expected to use assessment outcome data to determine if the available resources are adequate and sufficient to allow for compliance with the Standards.
- *Organization of Standards* – Although, at a minimum, the Standards address the same critical areas as in previous versions, they have been restructured, simplified, and clarified. The Standards are organized and combined into seven standards. Standards and Key Elements are phrased as declarative statements describing the various attributes of an accredited program. Programs not

meeting the expectations and requirements outlined within these statements will be out of compliance with the Standard(s). One appendix is included within the Standards. Appendix 1 is a revision of the former Appendix 1 in *Standards 2016* and describes the required elements of the didactic component of the Doctor of Pharmacy curriculum. Appendix 2 of *Standards 2016* has been incorporated into *Standards 2025*.

- *Innovation* – Programs may choose avenues other than those suggested to achieve compliance with the Standards. In all cases, however, ACPE requires evidence that standards are being met.
- *Style* – The Chicago Manual of Style, 15<sup>th</sup> Edition, Chicago: The University of Chicago Press, 2003, was used in the preparation of the Standards.

### **Summary**

ACPE looks forward to working with programs during the transition to *Standards 2025*. Through ACPE's strategic plan, the organization will be investigating opportunities for more standardized ways to evaluate the achievement of the Standards, including the identification of valid outcome measures to be monitored across all accredited programs. When needed, ACPE will be revising its policies and procedures to allow for greater standardization, consistency, efficiency, and effectiveness in its accreditation activities and evaluations. Feedback from ACPE stakeholders is always invited and valued.

**ACPE Board of Directors and Staff  
June 14, 2024**

## **STANDARDS AND KEY ELEMENTS**

### **Standard 1. Organization and Governance**

The college or school is organized and staffed to advance its vision, mission, and strategic plan; meets all stated degree-granting eligibility and reporting requirements; and provides an environment and culture that promotes self-directed lifelong learning, professional behavior, and collaboration.

#### **1.1. Eligibility and Reporting Requirements**

- 1.1.a Autonomy** – The academic unit offering the Doctor of Pharmacy degree is an autonomous unit organized as a college or school of pharmacy (within a university or as an independent entity). This includes autonomy to manage the program within stated policies and procedures, as well as applicable state and federal regulations.
- 1.1.b Legal empowerment** – The college or school is legally empowered to offer and award the Doctor of Pharmacy degree.
- 1.1.c Administrative oversight** – The college or school is led by a qualified dean, who serves as the chief administrative and academic officer of the college or school and is responsible for ensuring that all ACPE accreditation requirements are met.
- 1.1.d Institutional accreditation** – The institution housing the college or school, or the independent college or school, has (or, in the case of new programs, is seeking and in good standing) full accreditation by an institutional accreditation agency recognized by the U.S. Department of Education.
- 1.1.e Institutional accreditation actions** – The college or school reports to ACPE within 30 days any issue identified in institutional accreditation actions that may have a negative impact on the quality of the program and compliance with ACPE standards.
- 1.1.f Substantive change** – The dean ensures prompt reporting of substantive changes as defined in the policies and procedures to ACPE for the purpose of evaluation of their impact on program quality.

## **1.2. College or School Vision and Mission**

**1.2.a College or school vision and mission** – These statements are compatible with the vision and mission of the university in which the college or school operates.

**1.2.b Education, research and scholarship, service, and practice** – The statements address the college's or school's commitment to professional education, research and scholarship, professional and community service, pharmacy practice, and continuing professional development.

## **1.3. Strategic Plan**

**1.3.a Inclusive process** – The strategic plan is developed through an inclusive process, including faculty, staff, students, preceptors, practitioners, and other relevant constituents, and is disseminated in summary form to key stakeholders.

**1.3.b Appropriate resources** – Elements within the strategic plan are appropriately resourced for implementation.

**1.3.c Substantive change planning** – Substantive programmatic changes contemplated by the college or school are linked to its ongoing strategic planning process.

## **1.4. Organization and Governance**

**1.4.a Qualified dean** – The dean is qualified to provide leadership in pharmacy professional education and practice, research and scholarship, and professional and community service with adequate autonomy to lead the program. The dean demonstrates support for pharmacy education and the profession of pharmacy.

**1.4.b Dean's other substantial administrative responsibilities** – If the dean is assigned other substantial administrative responsibilities, the university ensures adequate resources to support the effective administration of the affairs of the college or school.

**1.4.c Qualified administrative team** – The dean and other college or school administrative leaders have credentials and experience that have prepared them for their respective roles and collectively have the needed backgrounds to effectively manage and support the program. The college or school has a process to solicit feedback on the performance and effectiveness of the dean and other administrative leaders from other administrators, faculty, and staff.



- 1.4.d Authority, collegiality, and resources** – The college or school administration has defined lines of authority and responsibility, fosters organizational unit collegiality and effectiveness, and allocates resources appropriately.
- 1.4.e Leadership collaboration** – University leadership and the college or school dean collaborate to advance the program’s vision and mission and to meet ACPE accreditation standards. The dean directly reports to the university administrator(s) charged with oversight of the program.
- 1.4.f College or school participation in university governance** – College or school administrators and faculty are effectively represented in the governance of the university, in accordance with its policies and procedures.
- 1.4.g Faculty participation in college or school governance** – The college or school uses updated and published documents, such as bylaws, policies, and procedures, to ensure broad faculty participation in the governance of the college or school.
- 1.4.h Contingency planning** – Comprehensive policies and procedures are in place to ensure the continued delivery of the program in response to significant disruption.
- 1.4.i Alternate pathway equitability** – The college or school ensures that any alternative pathways to the Doctor of Pharmacy degree are equitably resourced and integrated into the college’s or school’s regular administrative structures, policies, and procedures, including planning, oversight, and evaluation.
- 1.5. Organizational Culture**
- 1.5.a Leadership and professionalism** – The college or school demonstrates a commitment to developing professionalism and fostering leadership in administrators, faculty, preceptors, staff, and students. Faculty and preceptors serve as mentors and positive role models for students. Faculty and administrators model professionalism through active and visible participation in professional organizations, meetings, events, and lifelong learning.
- 1.5.b Behaviors** – The college or school has policies that define expected behaviors for administrators, faculty, preceptors, staff, and students, along with consequences for deviation from those behaviors.

- 1.5.c Culture of collaboration** – The college or school develops and fosters a culture of collaboration within subunits of the college or school, as well as within and outside the university, to advance its vision, mission, and strategic plan, and to support the profession.
- 1.5.d Culture of Diversity, Equity, Inclusion, and Belonging** – The college or school promotes the inclusion of diverse perspectives, lived experiences, and backgrounds, to create environments that support and enhance learning, teaching, research, and the delivery of patient care.

## **Standard 2. Curriculum**

The program, incorporating the educational outcomes described below, imparts to the graduate the knowledge, skills, abilities, behaviors, and attitudes necessary for the contemporary practice of pharmacy in a healthcare environment that demands interprofessional collaboration and professional accountability for holistic patient well-being.

The curriculum is designed, delivered, and monitored by faculty to ensure breadth and depth of knowledge and skills, the maturation of professional attitudes and behaviors, and the opportunity to explore professional areas of interest. The curriculum provides a rigorous foundation in the biomedical, pharmaceutical, social/administrative/behavioral, and clinical sciences, while emphasizing active learning pedagogy, content integration, knowledge acquisition, skill development, and the application of knowledge and skills to therapeutic decision-making.

### **2.1 Educational Outcomes and Activities**

Adapted from the American Association of Colleges of Pharmacy's Curriculum Outcomes and Entrustable Professional Activities (COEPA), 2022.

#### **Knowledge**

**2.1.a Scientific thinking (Learner)** – The graduate is able to seek, analyze, integrate, and apply foundational knowledge of medications and pharmacy practice (biomedical; pharmaceutical; social, behavioral, and administrative; and clinical sciences; drug classes; and digital health).

#### **Skills**

**2.1.b Problem solving process (Problem-Solver)** – The graduate is able to use problem solving and critical thinking skills, along with an innovative mindset, to address challenges and to promote positive change.

**2.1.c Communication (Communicator)** – The graduate is able to actively engage, listen, and communicate verbally, nonverbally, and in writing, when educating or interacting with an individual, group, or organization.

- 2.1.d Cultural and structural humility (Ally)** – The graduate is able 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.
- 2.1.e Person-centered care (Provider)** – The graduate is able to provide whole person care and comprehensive medication management to individuals as the medication specialist using the Pharmacists’ Patient Care Process.
- 2.1.f Advocacy (Advocate)** – The graduate is able to promote the best interests of patients and/or the pharmacy profession within healthcare settings and at the community, state, or national level.
- 2.1.g Medication-use process stewardship (Steward)** – The graduate is able to optimize patient healthcare outcomes using human, financial, technological, and physical resources to improve the safety, efficacy, and environmental impact of medication use systems.
- 2.1.h Interprofessional collaboration (Collaborator)** – The graduate is able to actively engage and contribute as a healthcare team member by demonstrating core interprofessional competencies.
- 2.1.i Population health and wellness (Promoter)** – The graduate is able to assess factors that influence the health and wellness of a population and develop strategies to address those factors.
- 2.1.j Leadership (Leader)** – The graduate is able to demonstrate the ability to influence and support the achievement of shared goals, regardless of one’s role.

### **Attitudes**

- 2.1.k Self-awareness (Self-aware)** – The graduate is able to 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.
- 2.1.l Professionalism (Professional)** – The graduate is able to exhibit attitudes and behaviors that embody a commitment to building and maintaining trust with patients, other health care providers, and society.

## **Professional Development Activities**

**2.1.m Entrustable professional activities** – The program develops and assesses the achievement of professional activities a graduate can perform routinely designed to gain the trust of the healthcare team and the public.

**2.1.n Professional skills and attitudes** – Activities and experiences, intended to advance professional, personal, and career development, are purposely designed and implemented to ensure an array of opportunities for students to document competency of advocacy, self-awareness, leadership, and professionalism. These curricular and co-curricular activities complement and advance the learning that can occur outside, alongside, or within the curriculum.

## **2.2. Curriculum Design, Delivery, and Oversight**

### **Curriculum Design**

**2.2.a Program duration** – The Doctor of Pharmacy curriculum is a minimum of four academic years of full-time study or the equivalent.

**2.2.b Care across the lifespan** – The Pre-APPE curriculum provides foundational knowledge and skills that allow for care across the patient’s lifespan.

**2.2.c Curricular expectations** – The Doctor of Pharmacy curriculum is organized to allow for the logical building of a sound scientific and clinical knowledge base, sequenced to promote integration and reinforcement of content and the demonstration of competency in skills required to achieve the educational outcomes, and inculcates professional attitudes and behaviors leading to personal and professional maturity consistent with the Oath of a Pharmacist.

**2.2.d Content breadth and depth** – A program documents, through mapping or other comparable methods, the breadth and depth of exposure to didactic curricular content areas deemed essential to pharmacy education at the doctoral level (see Appendix 1). Learning outcomes and activities for each APPE experience are mapped to the key elements 2.1.a-m, as well as to any additional competencies developed by the college or school.

**2.2.e Electives** – Time is reserved within the required curriculum for elective courses in both the didactic and APPE curriculums that permit exploration of and/or advanced study in areas of professional interest. Each student must complete both didactic and APPE electives.

- 2.2.f Course syllabi** – Syllabi for didactic and experiential education courses, developed and updated through a faculty-approved process, contain information that supports curricular quality assurance assessment. Course syllabi minimum requirements include: (1) expected learning outcomes, (2) the methods by which achievement of those outcomes will be assessed, and (3) aspects of patient care (for clinical practice courses).

### **Curriculum Delivery**

- 2.2.g Teaching and learning methods** – The didactic curriculum is delivered via teaching/learning methods that address the diverse learning needs of students that: (1) facilitate achievement of learning outcomes, (2) actively engage learners, (3) promote student responsibility for self-directed, lifelong learning, (4) foster collaborative learning, (5) provide timely, formative performance feedback to students in both didactic and experiential education courses, and (6) are appropriate for the student population (i.e., campus-based vs. distance-based).
- 2.2.h Academic integrity** – To ensure the credibility of the degree awarded, the validity of individual student assessments, and the integrity of student work, the college or school ensures that assignments and examinations take place under circumstances that minimize opportunities for academic misconduct. The college or school ensures the correct identity of all students (including distance students) completing proctored assessments.

### **Curriculum Oversight**

- 2.2.i Committee structure** – Curricular oversight involves collaboration between faculty and administration. The body/bodies charged with curricular oversight: (1) are representative of the faculty at large, (2) include student representation, and (3) are adequately resourced to ensure and continually advance curricular quality.
- 2.2.j Committee functions** – The curriculum committee meets regularly and effectively communicates, coordinates, and documents efforts with the body/bodies responsible for curricular assessment in a systematic, ongoing process.
- 2.2.k Student feedback** – Students are provided the opportunity to give formative and/or summative feedback to faculty, including preceptors, on their perceptions of teaching/learning effectiveness.

### **2.3. Interprofessional Education (IPE)**

**2.3.a Interprofessional team education** – To advance collaboration and quality of patient care, the didactic and experiential curricula include opportunities for students to learn about, from, and with other members of the interprofessional healthcare team. Through interprofessional education activities, students gain an understanding of the abilities, competencies, and scope of practice of team members. Some, but not all, of these educational activities may be simulations or simulated experiences. IPE activities should be guided by the Interprofessional Education Collaborative (IPEC) competencies.

**2.3.b Interprofessional team practice** – All students participate as a healthcare team member in providing patient care and contributing to therapeutic decision-making. Students participate in both didactic and experiential educational activities with a variety of types of prescribers and their students as well as other professional healthcare team members and their students.

### **Standard 3. Experiential Learning**

The curriculum incorporates Introductory Pharmacy Practice Experience (IPPE) and inculcates habits of self-directed, lifelong learning to prepare students for Advanced Pharmacy Practice Experience (APPE). APPEs integrate, apply, reinforce, and advance the knowledge, skills, attitudes, abilities, and behaviors developed in the Pre-APPE curriculum, co-curriculum, and extracurricular activities.

The college or school has a sufficient number of preceptors, who have professional credentials and expertise commensurate with their responsibilities to the program, to effectively deliver and evaluate students in the experiential component of the curriculum. The college or school has access to the appropriate number and mix of facilities in which IPPEs and APPEs are conducted to accommodate all students.

The college or school has adequate resources to assist sites in creating learning environments that are inclusive, welcoming, and support student learning and diverse student needs.

#### **3.1. Introductory Pharmacy Practice Experience (IPPE) Curriculum**

**3.1.a IPPE expectations** – IPPEs involve students in common contemporary U.S. practice models, including interprofessional practice involving shared patient care decision-making, professional ethics and expected behaviors, and patient care activities. IPPEs are structured and sequenced to intentionally develop in students a clear understanding of what constitutes exemplary pharmacy practice in the U.S. prior to beginning the APPE curriculum.

IPPE exemptions – Using an approved process of established criteria that encompass the depth and breadth of the practice, a college or school may exempt applicable students from the requirements of certain IPPE types provided that the college or school has documented that the student has achieved the desired outcomes of that experience through previous experience. Replacement IPPEs will then be used to advance students' understanding of practice and their preparation for success in APPEs.

**3.1.b IPPE duration** – IPPEs total no less than 300 clock hours of experience and are purposely integrated throughout the Pre-APPE curriculum. A minimum of 75 IPPE hours of patient care must be completed in both the community and the hospital/health system settings. The remaining 150 hours may be in a variety of pharmacy practice settings that expose students to patient care. Although simulation can provide an excellent learning modality in didactic education, simulated practice experiences cannot be counted toward the 300 IPPE hours.



### **3.2. Advanced Pharmacy Practice Experience (APPE) Curriculum**

- 3.2.a APPE expectations** – Collectively, APPEs emphasize continuity of care and incorporate acute, chronic, and wellness-promoting patient-care services in outpatient (community/ambulatory care) and inpatient (hospital/health system) settings. In the aggregate, APPEs expose students to diverse populations that include age; gender; neurodivergent, race/ethnicity, and socioeconomic factors; and disease states.
- 3.2.b APPE duration** – The curriculum includes no less than 36 weeks (1440 hours) of APPEs, and each APPE is at minimum 160 hours. The majority of the APPE curriculum is focused on patient care.
- 3.2.c Timing** – APPEs follow successful completion of all IPPE and required didactic curricular content. Required capstone courses or activities that provide opportunity for additional professional growth and insight are allowed during or after completion of APPEs. These activities do not compromise the quality of or decrease the time spent on the APPEs, nor count toward the required 1440 APPE hours.
- 3.2.d Required APPE** – Required APPEs are completed in the United States or its territories or possessions and occur in four practice settings: (1) community pharmacy; (2) ambulatory care; (3) hospital/health system pharmacy; and (4) inpatient adult patient care. The majority of required APPEs must involve interprofessional communication and collaboration. Nontraditional Doctor of Pharmacy (NTPD) pathways need to demonstrate that all students have completed or met the four required APPEs using a formalized faculty assessment that documents achievement of the outcomes of the four required APPEs. All aspects of any program offering an NTPD pathway will be assessed in the self-study process and reviewed by onsite evaluation team members during the program’s comprehensive evaluation.
- 3.2.e Elective APPE** – Elective APPEs are structured to give students the opportunity to: (1) mature professionally, (2) secure the breadth and depth of experiences needed to achieve the educational outcomes and activities articulated in Standard 2.1.a-m, and (3) explore various sectors of practice. Of the 1440 hours required, a maximum of 320 hours of non-patient care elective APPEs are allowed.

### **3.3. Preceptors**

- 3.3.a Preceptor criteria** – The college or school makes available and applies quality criteria for preceptor recruitment, orientation, performance, and evaluation. The majority of preceptors for any given student are U.S. licensed pharmacists.
- 3.3.b Preceptor credentials/expertise** – All experiential courses in the curriculum are taught by individuals with credentials and expertise that are explicitly linked to their precepting responsibilities.
- 3.3.c Preceptor education and development** – Preceptors are oriented to the program’s mission, the specific learning expectations for the experience outlined in the syllabus, and effective performance evaluation techniques before accepting students. The college or school fosters the professional development of its preceptors through a variety of learning tools and programs commensurate with their educational responsibilities to the program.
- 3.3.d Preceptor engagement** – The college or school solicits the active involvement of preceptors in the continuous quality improvement of the Doctor of Pharmacy curriculum, especially the experiential component.
- 3.3.e Student-to-preceptor ratio** – Student-to-precepting pharmacist ratios allow for the individualized mentoring and targeted professional development of learners. In most situations, student:preceptor ratios for IPPEs and for APPEs do not exceed 2:1.

### **3.4. Practice Facilities**

- 3.4.a Quality criteria** – The college or school employs quality criteria for practice facility recruitment and selection of a sufficient quantity that are appropriately licensed, as well as setting forth expectations and evaluation based on student opportunity to achieve the required educational outcomes.

### **3.5. Experiential Management**

- 3.5.a Experiential education personnel** – The experiential education component of the curriculum is led by a professional or professionals with knowledge and experience in pharmacy experiential learning. The experiential education curriculum is supported by an appropriate number of qualified faculty and staff.

- 3.5.b Affiliation agreements** – The college or school secures and maintains fully executed agreements with the practice facilities it utilizes for the experiential component of the curriculum. At a minimum, each affiliation agreement ensures that all experiences are conducted in accordance with state and federal laws.
- 3.5.c Student remuneration/employment** – Students do not receive payment for participating in curricular pharmacy practice experiences, nor are they placed in the specific practice area within a pharmacy practice site where they are currently employed. A Doctor of Pharmacy program in an institution that meets the definition of and has an institution-wide commitment to “cooperative education” (Cooperative Education and Internship Association; <http://www.ceiainc.org>) may apply to ACPE for a waiver of this requirement.

## Standard 4. Students and Student Services

The college or school has an appropriately staffed and resourced organizational element dedicated to providing a comprehensive range of services that promote student success and well-being.

The college or school develops, implements, and assesses its policies and procedures to promote student success, resilience, and well-being; ensures the selection of a qualified and diverse student body into the program; and supports student progression through the Doctor of Pharmacy curriculum.

### 4.1. Student Services

**4.1.a Student record management** – The college or school has an ordered, accurate, and secure system of student records in compliance with the Family Educational Rights and Privacy Act (FERPA). Student services personnel and faculty are knowledgeable regarding FERPA law and its practices.

**4.1.b Financial aid** – The college or school provides students with financial aid information and guidance by appropriately trained personnel.

**4.1.c Nondiscrimination** – The college or school establishes and implements policies that ensure nondiscrimination as defined by state and federal laws and regulations.

**4.1.d Disability accommodation** – The college or school provides accommodations to students with documented disabilities that are determined by the University Disability Office (or equivalent) to be reasonable and do not violate the professional and technical standards or prevent students from meeting the educational outcomes of the program and provides support to faculty in accommodating students with documented disabilities.

**4.1.e Healthcare** – The college or school ensures students have access to adequate and readily accessible physical and mental health services. Appropriate immunization standards are established, along with the means to ensure that such standards are satisfied.

**4.1.f Wellness and well-being** – The college or school offers students access to wellness and resilience programs/services.

**4.1.g Advising and mentorship** – The college or school provides academic advising, mentorship, curricular and career-pathway counseling, and information on post-graduate education, credentialing, and training opportunities adequate to meet the needs of its students.

**4.1.h Student services access** – The college or school ensures that all students have equitable access to a comparable system of individualized student services (e.g., tutorial support, counseling, etc.) regardless of pathway.

#### **4.2. Academic Environment**

**4.2.a Student information** – The college or school produces and makes available to enrolled and prospective students updated information of importance, such as: governance documents, policies and procedures, professional and technical standards, academic calendars, handbooks, catalogs, curricular and pathway information, and other resources appropriate to the student experience.

**4.2.b Complaints policy** – The college or school develops, implements, and makes available to students a complaints policy that includes procedures for how students may file complaints within the college or school and also directly to ACPE regarding their college’s or school’s adherence to ACPE standards. The college or school maintains a chronological record of such student complaints, including how each complaint was resolved.

**4.2.c Student misconduct** – The college or school develops and implements policies regarding academic and non-academic misconduct of students that clearly outline the rights and responsibilities of, and ensures due process for, all parties involved.

**4.2.d Student representation** – The college or school considers student perspectives and includes student representation, where appropriate, on committees, in policy-development bodies, and in assessment and evaluation activities.

**4.2.e Distance learning policies** – For colleges and schools offering distance learning opportunities, admissions information clearly explains the conditions and requirements related to distance learning, including an estimated cost of attendance and full disclosure of any requirements that cannot be completed at a distance.

#### **4.3. Admissions**

**4.3.a Enrollment management** – Student enrollment is managed by college or school administration. Enrollments are in alignment with available physical, educational, financial, faculty, staff, practice site, preceptor, and administrative resources.

- 4.3.b Admission procedures** – A duly constituted committee of the college or school has the responsibility and authority for the selection of students to be offered admission. Admission criteria, policies, and procedures are not compromised regardless of the size or quality of the applicant pool. All admission policies including early assurance and transfer should be detailed and readily available.
- 4.3.c Program description and quality indicators** – The college or school produces and makes available to the public, including prospective students: (1) a complete and accurate description of the Doctor of Pharmacy program requirements (preprofessional and professional); (2) the program’s current accreditation status; and (3) ACPE-required program performance information as defined in the ACPE Policies and Procedures manual.
- 4.3.d Admission criteria** – The college or school sets performance expectations for criteria (such as admission tests, grade point averages, evaluations, and interviews) used in selecting students who have the potential for success in the program and the profession. Applicant performance on admission criteria is documented; and the related records are maintained by the college or school as per program/university requirements.
- 4.3.e Non-Traditional (Post-Baccalaureate) Doctor of Pharmacy pathway** – Admission to a nontraditional (Post-Baccalaureate) Doctor of Pharmacy pathway must be limited to either: (1) pharmacists awarded a Baccalaureate degree from a program accredited by ACPE or the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) and holding a valid license to practice pharmacy in the U.S. or Canada; or (2) pharmacists awarded a pharmacy degree from a non-U.S. or non-Canadian program and holding a valid license to practice pharmacy in a U.S. jurisdiction. Advanced standing does not negate the requirements of pharmacy practice experiences.
- 4.3.f Admission materials** – The college or school produces and makes available to prospective students the criteria, policies, and procedures for admission to the program. All admission materials clearly state academic expectations, required communication skills, types of personal history disclosures that may be required, and professional and technical standards for graduation.
- 4.3.g Written and oral communication assessment** – Written and oral communication skills are assessed in a standardized manner as part of the admission process.

**4.3.h Candidate interviews** – Standardized, synchronous interviews (in-person, telephonic, and/or computer-facilitated) of applicants are conducted as a part of the admission process to assess affective domain characteristics. The interview process must allow for each individual candidate to be interviewed separately from other applicants. Interviewers receive training in the method that the college or school has chosen for standardization of the interview process.

**4.3.i Transfer and waiver policies** – A college or school establishes and implements policies and procedures for students who request to transfer credits into the program. Such policies and procedures are based on defensible and documented assessments of course equivalency. No more than the equivalent of one year of didactic credit shall be given to any student applying for advanced standing from any institution other than an ACPE accredited college/school of pharmacy.

A college or school offering multiple pathways to a Doctor of Pharmacy degree has policies and procedures for students who wish to change from one pathway to another.

#### **4.4. Progression**

**4.4.a Progression policies** – The college or school creates, makes available to students and prospective students, and abides by criteria, policies, and procedures related to:

- Academic progression including probation and remediation
- Appeal mechanisms (including grade appeals)
- Dismissals for academic and non-academic reasons
- Leaves of absence
- Missed course work or credit
- Readmission
- Rights to due process
- Suspension
- Withdrawals

**4.4.b Early intervention** – The college or school’s system of monitoring student performance provides for early detection of academic and behavioral issues. The college or school develops and implements interventions that have the potential for successful resolution of the identified issues.

## Standard 5. Faculty and Staff

The college or school has a cohort of faculty and staff with the qualifications and experience needed to effectively deliver and evaluate the program.

### 5.1. Faculty and Staff—Quantitative Factors

**5.1.a Sufficient faculty** – The college or school has a sufficient number of core faculty members to effectively address the following programmatic needs that include:

- Teaching (didactic and experiential)
- Professional development
- Research and other scholarly activities
- Assessment activities
- Service - college/school, institutional, professional, and community
- Interprofessional collaboration
- Student advising and career counseling
- Faculty mentoring
- Pharmacy practice
- Responsibilities in other degrees (if applicable)
- Support of distance students and campus(es) (if applicable)

Student-to-faculty (FTEs) ratios should provide students with the individualized attention needed to advance deep learning and foster professional development. The student-to-faculty ratio must be sufficient to allow faculty to effectively deliver the program with required expertise to address curricular content and fulfill service and scholarship duties required of faculty. In most situations, student:faculty ratio should not exceed 10:1.

Newly hired faculty members should have adequate time to onboard to full faculty duties.

**5.1.b Sufficient staff** – The college or school has a sufficient number of staff to effectively address the following programmatic needs that include:

- Student and academic affairs-related services, including recruitment and admission
- Experiential education
- Assessment activities
- Research administration
- Laboratory maintenance
- Information technology infrastructure
- Pedagogical and educational technology support
- Teaching assistance
- General faculty and administration clerical support
- Support of distance students and campus(es) (if applicable)



## **5.2. Faculty and Staff—Qualitative Factors**

- 5.2.a Academic credentials** – Faculty members, including adjunct and volunteer faculty members, have academic and professional credentials and expertise commensurate with their responsibilities within the program. Faculty members typically hold earned doctoral degrees.
- 5.2.b Professional credentials** – Staff members have professional credentials and expertise commensurate with their roles and responsibilities to the program.
- 5.2.c Educational effectiveness** – Faculty members have the capability and demonstrate a continuous commitment to be effective educators and are able to effectively use contemporary educational techniques to promote student learning in all offered pathways.
- 5.2.d Scholarly engagement** – The college or school creates an environment that both requires and promotes research and scholarship, collaboration, and develops mechanisms to assess both the quantity and quality of faculty scholarly activities.
- 5.2.e Service commitment** – In the aggregate, faculty and staff engage in college or school, institutional, professional, and community service that advances the program and the profession of pharmacy.
- 5.2.f Practice understanding** – Faculty members, regardless of their discipline, have a conceptual understanding of and commitment to advancing current and proposed future pharmacy practice.
- 5.2.g Faculty/staff development** – The college or school provides opportunities for career and professional development of its faculty and staff, individually and collectively, to enhance their role-related skills, scholarly productivity, and leadership. Faculty members, instructors, and teaching assistants involved in distance education have been provided training and skill development to manage, mentor, teach, engage, and evaluate students enrolled in distance learning courses or activities.
- 5.2.h Faculty/staff wellness and well-being** – Faculty and staff have access to wellness and resilience programs, including resources, peer support, and training to improve their ability to successfully manage and balance work related challenges as well as creating a sense of belonging.

**5.2.i Policy application** – The college or school ensures that policies and procedures for faculty and staff recruitment, performance review, promotion, tenure (if applicable), and retention are in place and applied in a consistent manner.

## Standard 6. Resources

The college or school has adequate and appropriately equipped physical and educational facilities to achieve its mission and goals.

The college or school has current and anticipated financial resources to deliver the program and accomplish its mission and strategic plan.

### 6.1. Physical Facilities and Educational Resources

**6.1.a Physical facilities** – The college or school physical facilities (or the access to other facilities) meet legal and safety standards, utilize current educational technology, and are clean and well maintained.

Colleges and schools provide students, faculty members, preceptors, instructors, and teaching assistants access to appropriate resources to support their contribution to the mission. Organized instruction is provided to these individuals in the effective and efficient use of the library and educational resources.

**6.1.b Physical facilities' attributes** – The college or school has access to physical facilities that provide adequate:

- Classrooms that comfortably accommodate the student body and that are equipped with technological capabilities needed to effectively deliver the curriculum.
- Laboratories suitable for compounding; demonstration; and skill and competency evaluation.
- Faculty office space with sufficient privacy to permit accomplishment of responsibilities.
- Space that facilitates interaction of administrators, faculty, students, and interprofessional collaborators.
- Access to educational simulation capabilities.
- Faculty research laboratories with well-maintained equipment.
- Animal facilities that meet care regulations (if applicable).
- Individual and group student study space and student meeting facilities.

Branch or distance campuses have access to physical facilities of comparable quality and functionality as those found on the main campus.

**6.1.c Educational resource access** – The college or school makes available technological and librarian access, current scientific and medical literature, and other academic and educational resources, to students in all pathways, faculty, staff, and preceptors (as needed). For distance course delivery, the college or school has sufficient resources to effectively support teaching and learning including appropriate laboratory space, for distance pathway students.

**6.2. Financial Resources**

**6.2.a Budgetary input** – The college or school provides input into the development and operation of a budget that is planned, executed, and managed in accordance with sound and accepted business practices.

**6.2.b Revenue allocation** – Sufficient funds are allocated to adequately deliver the program.

**6.2.c Equitable allocation** – The college or school has sufficient funds to maintain equitable facilities (commensurate with services and activities) across all program pathways.

**6.2.d Budget adequacy** – The college or school ensures that sufficient resources are matched to student enrollment and allocated for overall program needs.

## Standard 7. Assessment

The college or school develops, resources, and implements a plan to assess achievement of its mission, strategic plan, and attainment of educational outcomes to ensure that graduates are prepared to enter practice. Assessment data should be used for continuous quality improvement of the program.

### 7.1. Assessment Plan

**7.1.a Assessment plan expectations** – The college or school must develop and implement a written assessment plan that assesses the key elements of Standard 7. The college or school must use the analysis of process and outcome measures for continuous development and improvement of the program.

### 7.2. Assessment Elements for Organization and Governance

**7.2.a Organizational effectiveness** – The college or school assessment plan is designed to provide insight into the effectiveness of the organizational structure in engaging and uniting constituents and positioning the college or school for success through purposeful planning.

**7.2.b Strategic plan** – The college or school assessment plan is designed to monitor and assess the effectiveness of the strategic plan.

**7.2.c Organizational culture** – The college or school assesses the culture of the program. Contributing factors such as collaboration; diversity, equity, inclusion, and belonging; leadership; and professionalism should be considered.

**7.2.d Program evaluation by stakeholders** – The assessment plan includes the use of data from AACCP standardized surveys of graduating students, faculty, and preceptors.

### 7.3. Assessment Elements for Educational Outcomes, Curriculum, and Experiential Learning

**7.3.a Variety of assessment approaches** - The assessment plan incorporates (1) systematic, valid, and reliable knowledge-based and performance-based formative and summative assessments; and (2) standardized assessments, as required by ACPE (e.g., licensing examinations), that allow for national comparisons and college- or school-determined peer comparisons.

- 7.3.b Curriculum assessment and continuous improvement** – The college or school systematically assesses its curricular structure, content, organization, and outcomes to ensure optimal achievement of educational outcomes with reasonable student workload expectations. The college or school documents the use of assessment data for continuous improvement of the curriculum and its delivery.
- 7.3.c Experiential quality assurance** – The college or school develops and implements a quality assurance procedure for all pharmacy practice experiences that is established and implemented to: (1) facilitate achievement of stated course expectations, (2) standardize key components of experiences across all sites offering the same experiential course, and (3) promote consistent assessment of student performance.
- 7.3.d Student achievement and readiness** – The assessment plan measures student achievement at defined levels of the professional outcomes that support attainment of 2.1a-n, in aggregate and at the individual student level. Evidence should be provided to show that students are APPE-ready, and graduates are Practice-ready and Team-ready. Data are used to improve student achievement.
- 7.3.e Pathway comparability** – The assessment plan includes a variety of assessments that will allow comparison and establishment of educational parity of all alternative program pathways to degree completion, including geographically dispersed campuses and distance learning-based pathways.
- 7.4. Assessment Elements for Student Services, Faculty and Staff, and Resources**
- 7.4.a Student services assessment** – The college or school assesses the quality and quantity of student services to address the programmatic needs for healthcare, wellness, advising, and academic support in line with key elements 4.1e to 4.1.h.
- 7.4.b Admission criteria** – The college or school regularly assesses the criteria, policies, and procedures to ensure the selection of a qualified and diverse student body, members of which have the potential for academic success and the ability to practice in team-centered and culturally diverse environments.
- 7.4.c Student progression** – The college or school regularly assesses student retention and attrition data, criteria, policies, and procedures to identify and analyze trends and to make programmatic adjustments to optimize student progression as established in the annual monitoring policies documented in the ACPE Policies and Procedures manual.

**7.4.d Faculty and staff workload** – The college or school regularly assesses faculty and staff workload to effectively address the programmatic needs of key elements 5.1 and 5.2.

**7.4.e Faculty productivity** – The college or school systematically assesses the productivity of its faculty in scholarship, teaching, and service.

**7.4.f Preceptor capacity** – The college or school systematically assesses the preceptor quality and quantity needed based on enrollment.

**7.4.g Physical and financial resources** – The college or school evaluates the physical facilities and financial resources based on programmatic needs.

**7.5. Continuous Quality Improvement**

**7.5.a Quality improvements** – The college or school utilizes stakeholder feedback and assessment data to make changes to the program and improve the educational outcomes and programmatic processes.

The college or school makes available to key stakeholders, at least annually, the major findings and actions resulting from its assessment plan.

**7.5.b Continuous compliance with the accreditation standards** – The college or school has in place processes and procedures for reviewing and ensuring its program meets all accreditation standards and if applicable, all requested reporting, during the awarded accreditation term.

## **Appendix 1**

### **Required Elements of the Didactic Doctor of Pharmacy Curriculum**

The following didactic content areas and associated learning expectations are viewed as central to a contemporary, high-quality Doctor of Pharmacy education and are incorporated at an appropriate breadth and depth in the required didactic Doctor of Pharmacy curriculum. Where noted, content areas may be addressed in the pre-professional curriculum (i.e., as requirements for admission). Required content areas may be delivered within individual or integrated courses and may involve multiple disciplines and professions.

This appendix was purposely written at the level of broad learning outcomes. It was constructed to provide statements of concepts and understandings essential for pharmacists to master. The goal is to ensure that critical areas of learning are included in the curricula of all programs without dictating how the lessons are structured, organized, or delivered.

The clear expectation embedded within Appendix 1 is that students will develop the comprehensive knowledge base required to be 'APPE-ready' and that they will be able to retain, recall, build upon, and apply that knowledge to deliver quality patient care in a variety of entry-level practice settings.

**NOTE:** The topics under each Science category are organized in alphabetical order.

#### **Biomedical Sciences** (may be addressed in the pre-professional curriculum)

##### Biochemistry

- Structure, properties, biological functions, applicable kinetics, and metabolic fate of macromolecules essential to life (proteins, lipids, carbohydrates, and nucleic acids). Application of these concepts to identify endogenous targets for drug therapy and rational drug design strategies.

##### Biostatistics

- Appropriate use of commonly employed statistical tests, management of data sets, and the evaluation of the validity of conclusions generated based on the application of those tests to the data sets.

##### Human Anatomy

- Structure of major human body systems at the cellular, tissue, organ, and system level.



### Human Physiology

- Homeostatic function and normal response reactions across the lifespan of non-diseased human cells, organs, and systems.

### Immunology

- Human immune system components, innate and adaptive immune responses to infection, injury and disease, and augmentation of the human immune system to prevent disease.

### Medical Microbiology

- Structure, function, and properties of microorganisms (bacteria, viruses, parasites, and fungi) responsible for human disease, and rational approaches to their containment or eradication.

### Pathology/Pathophysiology

- Basic principles, mechanisms, functional changes and metabolic sequelae of human disease impacting cells, organs, and systems.

## **Pharmaceutical Sciences**

### Extemporaneous Compounding

- Preparation of sterile and non-sterile prescriptions which are pharmaceutically accurate regarding drug product and dose, free from contamination, and appropriately formulated for safe and effective patient use. Analysis of the scientific principles and quality standards upon which these compounding requirements are based.

### Medicinal Chemistry

- Chemical basis of drug action and behavior in vivo and in vitro, with an emphasis on pharmacophore recognition and the application of physicochemical properties, structure-activity relationships, intermolecular drug-receptor interactions and metabolism to therapeutic decision-making.

### Pharmaceutical Calculations

- Mastery of mathematical skills required to accurately prepare prescriptions (including extemporaneously compounded dosage forms) that are therapeutically sound and safe for patient use. Calculation of patient-specific nutritional and drug dosing/delivery requirements.

### Pharmaceutics/Biopharmaceutics

- Physicochemical properties of drugs, excipients, and dosage forms important to the rational design and manufacture of sterile and non-sterile products. Application of physical chemistry and dosage form science to drug stability, delivery, release, disposition, pharmacokinetics, therapeutic effectiveness, and the development of quality standards for drug products.

### Pharmacogenomics/genetics

- Genetic basis for disease and individual differences in metabolizing enzymes, transporters, and other biochemicals impacting drug disposition and action that underpin the practice of personalized medicine.

### Pharmacokinetics

- Mathematical determination of the rate of drug movement from one therapeutic or physiologic compartment to another. Application of physicochemical and kinetic principles and parameters to therapeutically important issues, such as drug delivery, disposition, therapeutic effectiveness, and beneficial or adverse interactions in general and specific populations.

### Pharmacology

- Pharmacodynamics, mechanisms of therapeutic and adverse drug actions and interactions, lifespan-dependent variations in physiology or biochemistry that impact drug action and effectiveness, and application of these principles to therapeutic decision-making.

### Toxicology

- Pharmacodynamics, mechanisms, prevention, and treatment of the toxic effects of drugs and poisons, including poisons associated with bioterrorism.

### **Social/Administrative/Behavioral Sciences**

#### Cultural Awareness

- Exploration of the potential impact of cultural values, beliefs, and practices on patient and population outcomes. Cultural practices commonly selected by practitioners and/or patients for use in the promotion of health and wellness, and their potential impact on pharmacotherapy.

## Ethics

- Exploration of approaches for resolving ethical dilemmas in patient care and its delivery, with an emphasis on moral responsibility and the ability to critically evaluate viable options against the needs of patients and other key stakeholders.

## Healthcare Systems

- Examination of U.S. health systems and contemporary reimbursement models in which patient-centered and/or population-based care is provided and paid for, and how social, political, economic, organizational, and cultural factors influence providers' ability to ensure patient safety and deliver coordinated interprofessional care services.

## History of Pharmacy

- Exploration of the evolution of pharmacy as a distinct profession, the transition from a focus on the drug to a focus on the patient and the therapy (including pharmacist-provided patient care), and major milestones and contributors in the evolution of pharmacy.

## Pharmacoeconomics

- Application of economic principles and theories to the provision of cost-effective pharmacy therapies and services that optimize patient-care outcomes, particularly in situations where healthcare resources are limited.

## Pharmacoepidemiology

- Cause-and-effect patterns of health and disease in large populations that advance safe and effective drug use as well as non-drug therapies and positive care outcomes within those populations.

## Pharmacy Law and Regulatory Affairs

- Federal and appropriate state-specific statutes, regulations, policies, executive orders, and court decisions that regulate the practice of pharmacy, including the mitigation of drug misuse (e.g., prescription, illicit, non-prescription) and diversion.

## Practice Management

- Application of sound management and leadership principles (including operations, information, resources, fiscal, and personnel including pharmacy technicians and interns) and quality metrics to advance patient care and service delivery within and between various practice settings.

### Professional Communication

- Analysis and practice of verbal, non-verbal, and written communication strategies that promote effective interpersonal dialog and understanding to advance specific patient care, education, advocacy, and/or interprofessional collaboration goals. Exploration of technology-based communication tools and their impact on healthcare delivery, healthcare access, healthcare information, and patient empowerment.

### Professional Development

- Development of professional self-awareness, capabilities, responsibilities, and leadership.

### Research Design

- Evaluation of research methods and protocol design required to conduct valid and reliable studies to test hypotheses or answer research questions, and to appropriately interpret/apply the validity and reliability of the conclusions of published research studies.

### Social and Behavioral Aspects of Practice

- Understanding of or experience with contemporary practice roles and innovative opportunities, and inculcation of professional attitudes, behaviors, and dispositions.

## **Clinical Sciences**

### Clinical Laboratory Data

- Application of clinical laboratory data to disease state management, including screening, diagnosis, progression, and treatment evaluation.

### Clinical Pharmacokinetics

- Application of basic pharmacokinetic principles and mathematical models to calculate safe and effective doses of drugs for individual patients and adjust therapy as appropriate through the monitoring of drug concentration.

### Health Informatics

- Effective and secure design and use of electronic and other technology-based systems, including electronic health records, to capture, store, retrieve, and analyze data for use in patient care, and confidentially and legally share health information in accordance with federal policies.

#### Health Information Retrieval and Evaluation

- Critical analysis and application of relevant health sciences literature and other information resources to answer specific patient care and/or drug-related questions and provide evidence-based therapeutic recommendations to healthcare providers or, when appropriate, the public.

#### Medication Prescribing, Preparation, Distribution, Dispensing, and Administration

- Prescribing, preparing, distributing, dispensing, and administering medications including, but not limited to: injectable medications, identification and prevention of medication errors and interactions, maintaining and using patient profile systems, prescription processing technology and/or equipment including oversight of support personnel, and ensuring patient safety. Educating about appropriate medication use and administration for various disease states including substance use disorder. All students must receive training in immunizations.

#### Pharmacognosy and Alternative and Complementary Therapies

- Evidence-based evaluation of the therapeutic value, safety, and regulation of pharmacologically active natural products and dietary supplements.

#### Patient Assessment

- Evaluation of patient function and dysfunction through the performance of tests and assessments leading to objective (e.g., physical assessment, health screening, and lab data interpretation) and subjective (patient interview) data important to the diagnosis and provision of care.

#### Patient Safety

- Analysis of the systems- and human-associated causes of medication errors, exploration of strategies designed to reduce/eliminate them, and interpretation and application of available and evolving error-reporting mechanisms.

#### Pharmacotherapy

- Evidence-based clinical decision making, therapeutic treatment planning (including diagnosing and prescribing), and medication therapy management strategy development for patients with specific diseases and conditions that complicate care and/or put patients at high risk for adverse events. Emphasis on patient safety, clinical efficacy, pharmacogenomic and pharmacoeconomic considerations, and treatment of patients across the lifespan.

## Public Health

- Exploration of population health management strategies, national and community-based public health programs, and implementation of activities that advance public health and wellness.

## Self-Care Pharmacotherapy

- Therapeutic needs assessment, including the need for triage to other health professionals, drug product recommendation/selection, diagnosis, prescribing, and counseling of patients on non-prescription drug products, non-pharmacologic treatments and health and wellness strategies including nutraceuticals.