

## Curriculum

### For Standards 9-15:

Use a check  to indicate the information evaluated to assess the standards in this section:

- Description of the professional competencies of the Curriculum. (9)
- Licensing statistics of graduates (e.g., North American Pharmacist Licensure Examination™ (NAPLEX®) and Multistate Pharmacy Jurisprudence Examination® (MPJE®)) for the last 5 years including first-time pass rates and competency area scores. (9, 15)
- Description of the curricular structure. (10)
- Demonstrate how both the didactic and experiential components meet the Standards for core curriculum and IPPE and APPEs in regard to percentage of curricular length. (10)
- Description of how the results of curricular assessments are used to improve the curriculum. (10)
- Demonstrate how the components and contents of the curriculum are linked to the expected competencies and outcomes through curricular mapping or other techniques. (10)
- Description of any nontraditional pathway(s) leading to the Doctor of Pharmacy degree. **(If Applicable)**(10)
- Description of the members of the Curriculum Committee (or equivalent) and charges in the last academic year. (10)
- Description of teaching and learning methods used in the curriculum, including nontraditional pathway(s) leading to the Doctor of Pharmacy degree (if applicable). (11)
- Description of efforts to address the diverse learning needs of students. (11)
- Data that link teaching-and-learning methods with curricular outcomes (Standards 3, 10 and 15). (11)
- Examples of instructional tools, such as portfolios **(to be made available on-site)**, used by students to assist them in assuming responsibility for their own learning and for measuring their achievement. (11, 15)
- Description of both formative and summative assessments used to evaluate teaching and learning methods used in the curriculum, including nontraditional pathway(s) leading to the Doctor of Pharmacy degree **(if applicable)** (Standards 3, 10 and 15). (11)
- List of the professional competencies and outcome expectations for the professional program in pharmacy. (12)
- Examples of didactic and experiential course syllabi, including stated outcomes related to desired competencies **(to be made available on-site)**. (12, 13)
- Description of the assessment measures and methods used to evaluate achievement of professional competencies and outcomes along with evidence of how feedback from the assessments is used to improve outcomes (Standards 3, 9, 10 and 15). (12)
- Description of the curricular structure and content of all curricular pathways. (13)
- Description of how the curricular content for all curricular pathways is linked to Appendix B of Standards 2007 through mapping or other techniques. (13)
- Examples of assessment and documentation of student performance and the attainment of desired core knowledge, skills and values (Standards 3, 9, 10 and 15). (13)
- Evidence that knowledge, practice skills and professional attitudes and values are integrated, reinforced and advanced throughout the curriculum, including the pharmacy practice experiences. (13)
- Introductory and advanced pharmacy practice experience manuals, including assessment forms **(to be made available on-site)**. (14)
- List of introductory and advanced pharmacy practice experience sites and locations offered in the previous academic year, with sites affording student interactions with other health care professionals designated. (14)
- The objectives for each required pharmacy practice experience and the responsibilities of the student, preceptor, and site. (14)
- Examples of assessment and documentation of student performance, nature and extent of patient and health care professional interactions, and the attainment of desired outcomes (Standards 3, 9, 10 and 15). (14)
- List of current preceptors with details of credentials (including licensure) and practice site. (14)
- Description of how the aggregate experiential programs address students having direct interactions with diverse patient populations in a variety of health care settings. (14)
- Aggregate data from students about the type (diverse) and number of patients, problems encountered, and interventions. (14)
- Evidence of assuring, measuring, and maintaining quality of the site. (14)
- Examples of quality improvement as a result of the practice site assessments. (14)
- Description of assessment measures used to evaluate student learning and curricular effectiveness. (15)

- ☑ Examples of assessment instruments and activities employed, including comparisons with national data and, if desired, selected peer-group programs (include a description of the basis for the peer-group selection) and trends over time (Standard 3, 9 and 10). (15)
  - ☑ Examples of how assessment data has been used to improve student learning and curricular effectiveness (Standards 3,9 and 10). (15)
  - ☑ Assessments of teaching-and-learning methods used in the curriculum, including nontraditional pathway(s) leading to the Doctor of Pharmacy degree (if applicable) Standards 3, 9, and 10). (15)
  - ☑ Assessment measures and methods to evaluate achievement of professional competencies and outcomes (Standards 3, 9, 10 and 12). (15)
  
  - ☑ Interpretation of the data from the AACP Surveys of Students, Faculty, Preceptors and Alumni.
  - ☑ Raw data from the AACP Surveys of Students, Faculty, Preceptors and Alumni.
  - ☑ Other documentation or data that provides evidence of meeting the standard.
-

**Standard No. 9: The Goal of the Curriculum:** The college or school's professional degree program curriculum must prepare graduates with the professional competencies to enter pharmacy practice in any setting to ensure optimal medication therapy outcomes and patient safety, satisfy the educational requirements for licensure as a pharmacist, and meet the requirements of the university for the degree.

	S	N.I.
The college or school's professional degree program curriculum prepares graduates with the professional competencies to enter pharmacy practice in any setting to ensure optimal medication therapy outcomes and patient safety, satisfies the educational requirements for licensure as a pharmacist, and meets the requirements of the university for the degree. Including:		
<ul style="list-style-type: none"> <li>The ability to provide patient care in cooperation with patients, prescribers, and other members of an interprofessional health-care team based upon sound therapeutic principles and evidence-based data, taking into account relevant legal, ethical, social, cultural, economic, and professional issues, emerging technologies, and evolving biomedical, pharmaceutical, social/behavioral/administrative, and clinical sciences that may impact therapeutic outcomes.</li> </ul>	●	○
<ul style="list-style-type: none"> <li>The ability to manage and use resources of the health care system, in cooperation with patients, prescribers, other health care providers, and administrative and supportive personnel, to promote health; to provide, assess, and coordinate safe, accurate, and time-sensitive medication distribution; and to improve therapeutic outcomes of medication use.</li> </ul>		
<ul style="list-style-type: none"> <li>The ability to promote health improvement, wellness, and disease prevention in cooperation with patients, communities, at-risk populations, and other members of an interprofessional team of health care providers.</li> </ul>		
The curriculum develops in graduate's knowledge that meets the criteria of good science; professional skills, attitudes, and values; and the ability to integrate and apply learning to both the present practice of pharmacy and the advancement of the profession.	●	○
Graduates are able to identify and implement needed changes in pharmacy practice and health care delivery.	●	○
In developing knowledge, skills, attitudes, and values in students, the college or school ensures that the curriculum fosters the development of professional judgment and a commitment to uphold ethical standards and abide by practice regulations.	●	○
The college or school ensures that the curriculum addresses patient safety, cultural competence, health literacy, health care disparities, and competencies needed to work as a member of or on an interprofessional team.	●	○
The curriculum encompasses content, instructional processes, course delivery, and experiential education.	●	○
The college or school has addressed the guidelines for this standard.	●	○

**Describe how the program is meeting the Standard and Guidelines.**

Our curricular vision statement is to continue as a premier urban pharmacy program with excellence in teaching, research, and service with a focus on a dynamic curriculum that insures the knowledge, skills, attitudes, and values of the professional student. Students are prepared for the challenges of a varied and complex professional practice in a variety of pharmacy settings and diverse populations (9-A).

In keeping with the curricular vision, the goal of the Doctor of Pharmacy program is to provide students with a curriculum and learning environment that prepares them to become effective practitioners and leaders in a dynamic healthcare environment as reflected by the professional program's terminal outcomes. (9-B) The curriculum is designed to provide a foundation of knowledge in the basic sciences and introductory application of pharmacy practice in the first two years. During this time, the IPPE's are utilized as the gateway to clinical thinking and pharmacy practice application. In years three and four, emphasis is placed on comprehensive clinical and administrative sciences application through both didactic and advanced pharmacy practice experiences.

Specifically, the college's curriculum (9-C) provides a strong fundamental background in the basic pharmaceutical sciences with integrated pathophysiology and biochemistry courses in PY1 and pharmacology, medicinal chemistry, and

toxicology in PY2. Management courses are included throughout the curriculum to focus on healthcare delivery systems, professional practice management, human resource and conflict management, and pharmacoeconomics. Pharmacy Practice courses are sequenced throughout the didactic curriculum starting with the fundamentals of communication and drug information in PY1, drug distribution, patient counseling, community practice in PY2, and over-the-counter (OTC) medications along with sterile products in PY3. Pharmacotherapy/disease state management is introduced in the second semester of PY2 and continued throughout PY3 with a focus on ambulatory care, chronic diseases, and acute care. In addition, PY3 includes an emphasis on physical assessment. Application of knowledge and skill is conducted and evaluated in the college's Pharmacy Skills Program courses (9-D), which are embedded throughout the didactic curriculum. In addition, a variety of electives are offered in the summer between the PY2 and PY3 years, providing the student with a variety of options to enhance their knowledge in specialized areas such as infectious diseases, research, and pediatric and geriatric pharmacotherapy (9-E).

Promotion of professionalism begins with the application and admissions interview process, continues throughout the preparation of the students to enter the program and is emphasized during New Student Orientation, culminating with the recitation of the Oath of Professionalism at the UHCOP White Coat Ceremony. Professional attitudes and values are further promoted throughout the curriculum but are a focal point within UHCOP IPPE and Professional Development Courses (9-F). IPPEs are first offered in the PY2 and PY3 years allowing the student to develop skills in emergency preparedness, patient monitoring in long term and acute care, development of patient care plans, and interdisciplinary patient care. In addition, a four-week introductory community practice experience is offered in the summer between PY2 and PY3. Reflection assignments, patient care discussions, and examinations are utilized for both formative and summative assessment of these experiences.

After successful completion of all didactic coursework, IPPEs, and cumulative assessments, students begin the fourth professional year (PY4) consisting of seven, six-week long advanced pharmacy practice experiences (APPE). Of the seven APPEs, four are required with the remaining being a variety of electives (9-G). These APPEs are assessed thru preceptor evaluations, periodic examinations, and final seminar presentations.

The curriculum's effectiveness is highlighted by the success and perceptions of UHCOP graduates. Since 2006, the average annual first-time passing rates on the NAPLEX for UH graduates has been >98.05% as compared to the national annual first-time passing rate averages >92.46% (9-H). In addition, average annual first-time passing rates on the MPJE for UH graduates for the previous 5 years have also consistently above the national averages with school averages >96.37% as compared to national averages >89.36\$ (9-I). The strength of the UHCOP curriculum and ability to produce competent and confident professionals is reflected in the attitudes of graduates. Results from the AACP 2009 Graduating Pharmacy Student Survey Summary Report indicates that a majority of UHCOP graduates either

strongly agreed or agreed that they were prepared to enter pharmacy practice (93%) and that they would choose the UHCOP program (81%) if they were to choose a school again (2-C, n=94 ).

**Comments:**

In 2005, the UHCOP Curriculum Committee set forth a five-year strategic plan (9-J). Specifically, we evaluated the Curriculum Committee's responsibilities as related to our UHCOP Strategic Plan and the new 2007 ACPE Standards. Furthermore, strategic planning defined the relationship of the curriculum committee to other components/committees of the college (9-K), determined the need for IT expert input within the committee, acknowledged the need to effectively and efficiently evaluate the quantitative and qualitative nature of our curriculum and to insure that changes in course matter was reviewed and approved by the Curriculum Committee. There were nine strategic initiatives targeted and the development of a curriculum management system (9-L) in a relational database was determined to be essential in achieving many of these. Consequently, the Curriculum Management System (CMS) was developed in a Sequel® database and has been implemented with continued development and refinement occurring. Other strategic initiatives such as IT expert inclusion in the committee membership, development of IPPEs, and increases in elective offerings have been achieved. Finally, the college and the Curriculum Committee are determining how our newly purchased E\*Value™ system may help with various curricular assessments and improvements including those within the CMS. The Curriculum Committee plans to initiate committee strategic planning for the next five years shortly after the UHCOP Strategic Planning occurs in the spring/summer of 2011.

**Quality Improvements:**

The current charge of the Curriculum Committee is to continue in-depth review of curricular delivery. Specifically, the committee will evaluate the integration of courses for earlier introduction of critical thinking and clinical skills applications, increasing curricular emphasis on problem solving skills to enhance the students' life-long learning skills and abilities.

<i>Meets the Standard</i>	<i>Partially Meets the Standard</i>	<i>Does Not Meet the Standard</i>
<ul style="list-style-type: none"> <li>• Faculty are able to discuss the goal and philosophy of the curriculum</li> <li>• NAPLEX Pass rates are not lower than 2 standard deviations below the national mean.</li> <li>• Graduates work in all areas of the profession (e.g. not all in hospitals or community settings).</li> </ul> <p style="text-align: right;"><input checked="" type="checkbox"/> Meets the Standard</p>	<ul style="list-style-type: none"> <li>• The goal of the curriculum is poorly communicated or understood among the faculty and administration (e.g., the dean and department heads, know about it, but not the faculty).</li> <li>• Graduates are directed toward one particular practice (e.g. community pharmacy) to the exclusion of others.</li> <li>• NAPLEX scores are significantly inconsistent from year to year.</li> <li>• The college or school has a plan and is in the process of addressing all issues related to not meeting the requirements of this standard.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Partially Meets the Standard</p>	<ul style="list-style-type: none"> <li>• NAPLEX scores of students are 2 or more standard deviations below the national mean (refer to ACPE policy).</li> <li>• Graduates have difficulty securing employment of choice or suffer from low employment rates.</li> <li>• Students do not exhibit professional attitudes, values and behaviors.</li> <li>• Employers or state boards of pharmacy indicate that students are unprepared for practice.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Does Not Meet the Standard</p>

**Standard No. 10: Curricular Development, Delivery, and Improvement:** The college or school's faculty must be responsible for the development, organization, delivery, and improvement of the curriculum. The curriculum must define the expected outcomes and be developed, with attention to sequencing and integration of content and the selection of teaching and learning methods and assessments. All curricular pathways must have both required and elective courses and experiences and must effectively facilitate student development and achievement of the professional competencies.

The curriculum for the professional portion of the degree program must be a minimum of four academic years or the equivalent number of hours or credits. The curriculum must include didactic course work to provide the desired scientific foundation, introductory pharmacy practice experiences (not less than 5% of the curricular length) and advanced pharmacy practice experiences (not less than 25% of the curricular length).<sup>3</sup>

	S	N.I.
The college or school's faculty is responsible for the development, organization, delivery, and improvement of the curriculum.	●	○
The curriculum defines the expected outcomes and is developed with attention to sequencing and integration of content and the selection of teaching and learning methods and assessments.	●	○
All curricular pathways have both <i>required</i> and <i>elective</i> courses and experiences and effectively facilitate student development and achievement of the professional competencies.	●	○
The curriculum for the professional portion of the degree program is a minimum of four academic years or the equivalent number of hours or credits.	●	○
The didactic course work provides the desired scientific foundation.	●	○
Introductory pharmacy practice experiences are not less than 5% of the curricular length (i.e., 300 hours).	●	○
The advanced pharmacy practice experiences are not less than 25% of the curricular length (i.e., 1440 hours).	●	○
On behalf of the faculty, the Curriculum Committee (or equivalent) manages curricular development, evaluation, and improvement to ensure that the curriculum is consistent with the collective vision of the faculty and administration.	●	○
The curriculum complies with university policies and procedures and the accreditation standards.	●	○
Student representation and feedback are integral parts of curricular development and improvement.	●	○
The Curriculum Committee (or equivalent) has adequate resources to serve as the central body for the management of orderly and systematic reviews of curricular structure, content, process, and outcomes, based on assessment data.	●	○
The college or school has addressed the guidelines for this standard.	●	○

### Describe how the program is meeting the Standard and Guidelines.

The college has a strong commitment to providing a robust curricular experience for its students. The Curriculum Committee has been empowered to provide the continuous quality assurance and improvement of the curriculum to insure that the curriculum meets and/or exceeds the accreditation standards and provides the student with the didactic and experiential training necessary to provide pharmacist-directed patient centered care. The Curriculum Committee consists of a faculty chair appointed by the Dean, two faculty members from each of the two departments, two student representatives (PY2 and PY3), one alumni practitioner, and ex-officio members from technology, experiential programs, academic affairs, assessment, and the Dean's office. The committee meets several times a semester and reviews the curriculum in relationship to the accreditation standards, CAPE outcomes, and the college's Terminal Competencies/Outcomes ([10-A](#), [9-B](#)). In addition, the committee works with the UHCOP Assessment Committee to determine curricular outcomes and needs for change or enhancement, as well as faculty and other stakeholders of the curriculum ([9-K](#)). Both committees work together to evaluate the level of learning methods utilized for teaching and assessment throughout the professional program. In the spring of 2010, the Curriculum Committee revised the college's

<sup>3</sup> Refer to Standards 13 and 14 and Appendices B and C for additional detail and guidance.

terminal outcomes, which were approved by the faculty. These outcomes are concise and reflect the professional vision for today and for the future, focusing on producing graduates with the ability to adapt in a dynamic healthcare environment with emphasis on increased scientific inquiry (9-B). In relationship to the new terminal outcomes, the committee has embarked on a mapping of the current curriculum to evaluate the need for curricular changes to achieve such outcomes. The Curriculum Committee presents all recommendations for programmatic revision and/or enhancement to the faculty for a vote before such changes are made.

The current UHCOP curriculum is structured to provide the student with knowledge, skills, attitudes, and values to practice pharmacy and meet the challenges of a dynamic healthcare system (9-C). PY1 provides a total of 30 hours of course work, including the basic sciences and pharmacy practice. PY2 focuses on the fundamentals of science and practice with a total of 28 hours of course work by introducing pharmacology, medicinal chemistry, management, toxicology, therapeutics, and pharmacokinetics while continuing to emphasize pharmacy practice and professional development. It is the first semester of the PY2 in which Introductory Pharmacy Practice Experiences I (IPPE I) occurs with the students being assigned to long-term care facilities to expose them to and engage them in current pharmacy practices in a long-term care setting. The students review medical charts and critically evaluate residents' drug regimens and participate in structured reflection exercises to reinforce and emphasize internalization of their learning experience and encouraging the application of their learning in future practice. In addition, another component of IPPE is emergency response training in case of bioterrorism or other mass emergencies. PY3 begins in the summer after the PY2 and consists of Introductory Community Pharmacy Experience with 4 hours credit and a number of electives with a total opportunity to satisfy a required 6 hours of elective credit (9-E). Starting in the fall of PY3, the curriculum offers the student continued experiences in therapeutics and pharmacy practice with the addition of management, ethics/law, and physical assessment/anatomy with a total hour credits for both spring and fall semesters of 28 hours. It is in the second semester of the PY3 that the Introductory Pharmacy Practice Experience II occurs with the students being assigned to health-systems institutions to expose them to and engage them in current pharmacy practices in an institutional setting. The students gain experience in gathering information and evaluating patient's drug regimen by reviewing both paper and electronic medical charts along with introducing them to the structure of pharmacy departments within this setting. PY4 consists of the Advanced Pharmacy Practice Experiences (APPE), of which the student is required to take Advanced Hospital Pharmacy, Advance Community Pharmacy, Internal Medicine, and Ambulatory Care and may choose three electives of which two will be patient-focused for a total of 42 weeks with 42 hours credit awarded. In addition, the student pharmacists are required to attend and present a major seminar for 1 credit hour (9-C). The professional program consists of a total of 139 hours of which 82 required didactic hours, 6 required didactic elective hours, and 51 experiential hours consisting of IPPE 8 credit hours with 300 contact hours (or ~ 5.7% of program hours), APPE 42 credit hours with 1,750 contact hours (or ~ 25% of program hours), and a seminar (1 credit/1 hour).

**Comments:**

According to the AACP Pharmacy Faculty Survey Summary Reports 2007–2010, a majority of faculty agreed or strongly agreed with all the statements in Section VI - *Curriculum, Teaching, and Assessment*. Likewise, a majority of students responding to the AACP Student Surveys 2007–2010 agreed with all the statements in Section II - *Doctor of Pharmacy Curriculum* (2-C, n=120).

**Quality Improvements:**

The college and the Curriculum Committee are dedicated in finding more efficient ways to continually and effectively evaluate the College's curriculum. Current methods of evaluating the effectiveness of the curriculum include course assessments, MME, OSCES, and curricular mapping. The College has recently purchased the E\*Value™ System and the Curriculum Committee is implementing the curricular mapping ability and other utilities for curricular application i.e. electronic portfolios.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
<ul style="list-style-type: none"> <li>• The curriculum committee is an agent for improvement that is broadly composed of faculty members and students.</li> <li>• The curriculum committee evaluates and approves all courses and oversees the sequencing and integration of course content.</li> <li>• The curriculum committee's reviews are proactive, recurrent, and systematic.</li> <li>• The faculty as a whole is engaged in committee processes through discussion and voting.</li> <li>• Introductory-practice experiences are not less than 5% of total credit during the didactic component and include exposure to community and institutional settings.</li> <li>• Advanced-practice experiences are not less than 25% of total credit, and occur after the didactic component is complete.</li> <li>• Preparation and reflection periods are included in the syllabus for early and advanced practice experiences.</li> <li>• The curriculum has elective as well as required courses.</li> </ul> <p style="text-align: right;"><input checked="" type="checkbox"/> Meets the Standard</p>	<ul style="list-style-type: none"> <li>• Preparation or reflection periods are missing from either early or advanced-practice experiences, but not both.</li> <li>• The curriculum committee exists, but it is not representative of the faculty.</li> <li>• The curriculum committee has no mechanism for proactive, recurrent, and systematic reviews.</li> <li>• Introductory practice experiences are all in one setting.</li> <li>• The college or school has a plan and is in the process of addressing all issues related to not meeting the requirements of this standard.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Partially Meets the Standard</p>	<ul style="list-style-type: none"> <li>• No preparation and reflection periods are included in the syllabus for early and advanced practice experiences.</li> <li>• The college or school has no curriculum committee or it is ineffective.</li> <li>• Introductory-practice experiences are nonexistent or less than 5% of total credit during the didactic component.</li> <li>• Advanced-practice experiences are less than 25% of total credit.</li> <li>• The curriculum has few elective courses, or poor scheduling practices effectively make it impossible for many students to take desired electives.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Does Not Meet the Standard</p>

**Standard No. 11: Teaching and Learning Methods:** The college or school, throughout the curriculum and in all program pathways, must use and integrate teaching and learning methods that have been shown through curricular assessments to produce graduates who become competent pharmacists by ensuring the achievement of the stated outcomes, fostering the development and maturation of critical thinking and problem-solving skills, meeting the diverse learning needs of students, and enabling students to transition from dependent to active, self-directed, lifelong learners.

	S	N.I.
The college or school, throughout the curriculum and in all program pathways, uses and integrates teaching and learning methods that have been shown through curricular assessments to produce graduates who become competent pharmacists by ensuring the achievement of the stated outcomes, fostering the development and maturation of critical thinking and problem-solving skills, meeting the diverse learning needs of students, and enabling students to transition from dependent to active, self-directed, lifelong learners.	●	○
The college or school evaluates the effectiveness of its curricular innovations through its assessment activities.	●	○
The outcomes of the distance-learning activities are appropriate for the student population and achievable through distance study.	○	○
N/A ■		
The college or school has addressed the guidelines for this standard.	●	○

### Describe how the program is meeting the Standard and Guidelines.

The first three years of the curriculum are predominantly taught in the traditional didactic format. The majority of these courses are team-taught with faculty delivering their area of expertise. However, pharmacy practitioners in the Texas Medical Center (TMC) and the Houston area may contribute to the teaching effort if a faculty resource is not available or the individual has an exceptional reputation and experience in the particular area of practice. UHCOP Pharmacy Skills Program sessions are dispersed throughout the didactic curriculum and serve as an amalgam from the various courses to enrich the classroom activities, and typically involve a problem solving and a group work component (9-D). These sessions focus on active and collaborative learning and provide an environment where students can engage in critical thinking and demonstrate ability. The Pharmacy Skills Program Sessions are facilitated by faculty, graduate students, pharmacy residents, and fellows. Included in these are focus areas such as compounding, community pharmacy practice, applied medicinal chemistry and pharmacology, sterile products preparation, physical assessment, literature evaluation, and applied pharmacotherapy. Some Pharmacy Skills Program sessions have skills check-offs, clinical presentations, patient counseling, videotaped presentations, and student reflection exercises that help the student tangibly measure their own participation and knowledge progression.

Student performance in didactic course work is primarily evaluated via written examinations throughout the semester including a final, although other assessments such as self-reflection, paper writing, and peer evaluation may take place as well. Written summative exams are typically multiple-choice and short answer formats. In addition, case presentations, projects, and assessments of skills and abilities are integrated throughout the courses. In PY4, each student is enrolled in the senior seminar course and required to present an evidence-based PowerPoint presentation on a clinically relevant topic to their peers and to faculty who evaluate them. In addition, each PY4 student must complete an approximate 12-page paper report on their topic, which is graded by experiential faculty.

To assess the knowledge acquisition and retention for PY1, PY2, and PY3, a comprehensive capstone exam (MME) ([11-A](#)), is administered after completion of the professional year. MME I and II are formative, but the MME III is summative. These exams are used to identify areas of strengths and weaknesses of the student related to learning retention. Performance on all MMEs is provided individually to students and to course coordinators in a composite manner. This information can then be used by the student and course coordinator to identify areas for curricular improvement. Students who do not pass MME III may not progress to PY4 until they pass this exam or complete remediation. Students may retake MME III once and if a passing grade is not achieved, then the student is remediated ([11-B](#)).

The faculty and the Curriculum Committee work together to align course topics to flow within the curriculum. For example, in PY2 the medicinal chemistry and pharmacology courses topic matters are aligned and the coordinators of these courses work closely to share handouts, skills sessions, and student assessment data. Similarly, in the PY3 year, every attempt is made to align the Advanced Therapeutics II and III courses with the OTC course.

IPPEs in PY2 engage the student in patient chart review, provide training in emergency preparedness, promote blood pressure measurement ability, and introduce the student to chronic disease treatment and assessment in the areas of dyslipidemia, diabetes, and osteoporosis. The student is required to evaluate patient medications and formulate a pharmacotherapy note relative to a patient in a long-term care facility. In addition, reflection exercises reinforce and emphasize internalization of their learning experience and encourage the application of their learning in future practice.

UHCOP Experiential Programs Office coordinates the PY4 APPEs, and the student's performance on the APPE is assessed by the preceptor using forms developed by the Joint Committee on Internship Programs and the Texas State Board of Pharmacy ([11-C](#)). Students not meeting the criteria for competency must repeat the APPE. For some APPEs such as the Advanced Community Pharmacy, Advanced Hospital Pharmacy, and Internal Medicine, there are final exams (written and practical) and the student must meet minimum competency to pass these exams. Students may retake the Internal Medicine APPE Exam one time if they do not pass. If students fail the exam a second time they are required to repeat the APPE.

Among the many areas of the curriculum that students can apply their knowledge, skills, abilities, and attitudes is in community outreach opportunities. As mentioned previously, our students assisted in the mass administration of H1N1 vaccine in the fall of 2009. In addition, they routinely volunteer at the Houston Outreach Medicine, Education, and Social Services (H.O.M.E.S) Clinic, an interdisciplinary, student-run, free health care clinic for Houston's homeless population. In this setting, students assist in providing medications, assessing blood pressure, blood glucose levels, physical assessment, and patient counseling. Students are evaluated by faculty preceptors and attending physicians. UHCOP students also help run an annual local health fair located in Humble, Texas, a suburb of Houston. At this health-fair,

which is attended by 750-1,000 patients, students check blood pressures, blood glucose levels, lipid profiles, perform diabetic foot exams, assist or administer vaccinations, and screen for osteoporosis. Summative evaluations by the faculty as well as faculty mentorship are provided for all of these community outreach programs.

Newer technologies (e.g. Audience Response Systems and tablet laptops) are utilized along with standard technologies (e.g. PowerPoint and document cameras) throughout the didactic curriculum. Several course coordinators utilizing Audience Response Systems (ARS) have compared in-class results with performance of the same question on the semester exam or final, thus providing another way to measure student learning and retention ([11-D](#)). Furthermore, tutorial videos on physical assessments techniques such as measuring blood pressure and cholesterol screening have been developed by UHCOP faculty which students may access via the UH Blackboard Vista. Additional electronic resources such as textbooks, interactive cases, self-assessment quizzes, and video animations are available to students through UH's M.D. Anderson Library. Additional resources such as medical and scientific journals are available to students and faculty through the Texas Medical Center's Jesse H. Jones Library. The Lexicomp® database is licensed and available for PY3 and PY4 students to download on their PDA's, smartphones, iPhones, and similar technologies.

Faculty are encouraged and supported to enhance their teaching methods and technology. Educational learning sessions are routinely presented at the annual faculty retreats, such as formulating effective exam questions, applying unique assessment opportunities (clickers), and maximizing the benefits of classroom technology ([11-E](#)). Faculty members are encouraged and financially supported by the college to attend teaching workshops at the annual AACP meetings. Additionally, the college supports a full-time instructional designer to assist faculty with various areas of course development such as UH Blackboard Vista, and all courses are now fully or partially administered using Blackboard Vista. Other aspects that the designer assists faculty within this format are discussion group formation, written assignments submission, creation of the virtual classrooms, provision of online practice assessments, and examinations.

### **Comments:**

As mentioned previously in Standard No. 7 we are embarking on distance education and the utilization of distance technologies.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
<ul style="list-style-type: none"> <li>• Faculty members use a variety of teaching-and-learning techniques (e.g., active learning, case studies, etc.).</li> <li>• Results from capstone exams are used to assess and remediate individual student learning as well as to assess the effectiveness of the curriculum.</li> <li>• A process is used throughout the curriculum to document that students are applying knowledge and skills.</li> <li>• Preceptors tailor instruction to meet the needs of the student by challenging strengths and remediating weaknesses.</li> <li>• Students are supported to become self-directed, lifelong learners.</li> </ul> <p style="text-align: right;"><input checked="" type="checkbox"/> Meets the Standard</p>	<ul style="list-style-type: none"> <li>• A process is used in the curriculum to document knowledge, but not application and skills.</li> <li>• Faculty are participating in structured development activities in order to move from a lecture-based curriculum to one that uses a variety of teaching-and-learning techniques.</li> <li>• The college or school has a plan and is in the process of addressing all issues related to not meeting the requirements of this standard.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Partially Meets the Standard</p>	<ul style="list-style-type: none"> <li>• Lecture is the primary mode of instruction.</li> <li>• No process is used to document that students are applying knowledge and skills.</li> <li>• The college or school has no evidence of assessing and evaluating teaching methodologies.</li> <li>• Students are dependent learners and lack critical-thinking and problem-solving skills.</li> <li>• The college or school has no strategies or systems to support the needs of diverse learners.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Does Not Meet the Standard</p>

**Standard No. 12: Professional Competencies and Outcome Expectations:** Professional pharmacist competencies that must be achieved by graduates through the professional degree program curriculum are the ability to:

	S	N.I.
Professional Competencies 1, 2 and 3 guide the development of stated student learning outcome expectations for the curriculum.	●	○
Graduates are able to provide patient care in cooperation with patients, prescribers, and other members of an interprofessional health-care team based upon sound therapeutic principles and evidence-based data, taking into account relevant legal, ethical, social, cultural, economic, and professional issues, emerging technologies, and evolving biomedical, pharmaceutical, social/behavioral/administrative, and clinical sciences that may impact therapeutic outcomes.	●	○
Graduates are able to manage and use resources of the health care system, in cooperation with patients, prescribers, other health care providers, and administrative and supportive personnel, to promote health; to provide, assess, and coordinate safe, accurate, and time-sensitive medication distribution; and to improve therapeutic outcomes of medication use.	●	○
Graduates are able to promote health improvement, wellness, and disease prevention in cooperation with patients, communities, at-risk populations, and other members of an interprofessional team of health care providers.	●	○
Outcome statements include developing skills to become self-directed lifelong learners.	●	○
Graduates possess basic knowledge, skills, attitudes, and values to practice pharmacy independently by graduation.	●	○
The college or school has addressed the guidelines for this standard.	●	○

### Describe how the program is meeting the Standard and Guidelines.

The UHCOP Terminal Outcomes ([9-B](#)) are embedded with the Center for Advancement of Pharmaceutical Education (CAPE) outcomes ([10-A](#)), and are the targeted competencies of each graduate. The outcomes are coupled to the core areas of patient care, dispensing medications, health promotion and disease prevention, professionalism, and health systems management. The curricular structure ([9-C](#)) is designed to build from the basic sciences background of the prerequisites and the Curriculum Committee reviews and determines the most relevant and necessary prerequisites for the professional program ([12-B](#)). The didactic courses in years PY1 and PY2 of the professional curriculum build the foundation for the students with a mix of the administrative, social and behavioral sciences, and then transitioning into the clinical sciences in the latter part of PY2 and PY3. Critical thinking skills and clinical applications are developed and assessed throughout the curriculum through the Pharmacy Skills Program sessions, IPPEs, electives, professional service, and APPE's. Each course has proficiencies that are developed by the course coordinator and reviewed by the college's Assessment Committee for appropriateness of taxonomy and level of learning, then approved by the Curriculum Committee.

The college's comprehensive program prepares students for a variety of practice settings upon graduation, including community, institutional, and clinical settings. ([9-A](#)) A measure of UHCOP graduates' ability to perform the functions outlined in the guidelines of this section is their self-reported data from the 2009 AACP Graduating Pharmacy Student Survey Summary Report. In regards to Section I: Professional Competencies/Outcomes, more than 90% of respondents agreed or strongly agreed with all statements with the exception of item 17, "interpret economic data relevant to treatment of disease," which received a response rate of 71.3% ([2-C](#), n=94 ). UHCOP Employer Satisfaction Surveys done with both hospital and community employers during PY4 Placement Conferences from 2004-2010 corroborate the

2009 AACP Graduating Pharmacy Student Survey Summary Report with respondents either agreeing or strongly agreeing in the abilities of UHCOP graduates ([12-C](#), n=40; [12-D](#), n=13).

**Comments:**

A noteworthy area of the program is the collaboration between the Assessment and Curriculum Committees to review and maintain current state of the art competencies for our graduates.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
<ul style="list-style-type: none"> <li>• Faculty have written and adopted a set of competencies and outcomes and are conversant about them.</li> <li>• The curriculum is built on the competencies which are linked to courses through the curricular map.</li> </ul> <p style="text-align: right;"><input checked="" type="checkbox"/> Meets the Standard</p>	<ul style="list-style-type: none"> <li>• Faculty are in the process of developing competencies and outcomes and there is a high likelihood that they will be adopted.</li> <li>• The faculty are in the process of curricular mapping.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Partially Meets the Standard</p>	<ul style="list-style-type: none"> <li>• The program does not use a curricular map or equivalent.</li> <li>• The program has no stated competencies.</li> <li>• The college or school's educational outcomes or competencies are not aligned with those required by the standards.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Does Not Meet the Standard</p>

**Standard No. 13: Curricular Core—Knowledge, Skills, Attitudes, and Values:** To provide the thorough scientific foundation necessary for achievement of the professional competencies, the curriculum of the professional degree program must contain the following:

- biomedical sciences
- pharmaceutical sciences
- social/behavioral/administrative sciences
- clinical sciences

Knowledge, practice skills, and professional attitudes and values must be integrated and applied, reinforced, and advanced throughout the curriculum, including the pharmacy practice experiences.

	S	N.I.
The curriculum contains the necessary elements within the following areas as outlined in Appendix B of the Standards:		
• biomedical sciences	●	○
• pharmaceutical sciences	●	○
• social/behavioral/administrative sciences	●	○
• clinical sciences	●	○
Knowledge, practice skills, and professional attitudes and values are integrated and applied, reinforced, and advanced throughout the curriculum, including the pharmacy practice experiences.	●	○
The biomedical, pharmaceutical, social/behavioral/administrative, and clinical sciences are of adequate depth, scope, timeliness, quality, sequence, and emphasis to provide the foundation and support for the intellectual and clinical objectives of the professional degree program.	●	○
The sciences provide the basis for understanding the development and use of medications and other therapies for the treatment and prevention of disease.	●	○
Where instruction is provided by academic units of the university other than the pharmacy program, these areas are developed in accordance with the professional degree program's curricular goals and objectives; and assessment liaison mechanisms ensure effective instructional delivery and achievement of the educational objectives of the program.	●	○
N/A (no outside instruction) <input type="checkbox"/>		
The college or school has addressed the guidelines for this standard.	●	○

### Describe how the program is meeting the Standard and Guidelines.

The UHCOP professional curriculum provides a thorough scientific foundation leading to the knowledge, skills, attitudes, and values required for entry-level practice of the profession of pharmacy. This is accomplished by a variety of approaches throughout the curriculum, including didactic, small group problem solving, self-paced independent learning, and laboratory instruction.

PY1 provides the basic science foundation in a number of scientific disciplines. During PY1, a comprehensive basic knowledge of human physiology, biochemistry, and fundamentals of immunology are provided. Simultaneous with this, the pharmaceutical sciences are introduced, including the basic physicochemical properties of solid and liquid dosage forms, bio-pharmaceutics, design of specialized dosage forms, and fundamental principles of drug absorption, elimination, and metabolism. An introduction to medicinal chemistry provides the study of chemical functional groups and their contributions to drug solubility, bioavailability, stability, and method of degradation and metabolism. Introduction to medical terminology, history of pharmacy, and foundational work on the development of communication and interpersonal skills essential to the pharmacy profession also begins here. Pharmaceutical calculations are taught

through a self-paced, web-based curriculum. Students also receive laboratory training in the preparation of extemporaneous dosage forms that is coupled with developing an appreciation for the unique opportunities these skills can provide to improve patient care. In addition to the basic sciences, students are introduced to the evaluation of scientific literature and the use of that literature for the purpose of responding to drug information requests from patients and other health care providers. This includes assessment of different sources, evaluation of study design and statistic validity, and practice in distillation and presentation of this information. Along with this, training in management is initiated with introduction into the health care system, including the influences and roles of various providers and payers, as well as the impact of business models on the practice of the profession.

PY2 continues with the provision of basic and pharmaceutical science foundation along with introductory pharmacy practice experiences, building on the essentials provided in PY1. Pharmacology is provided in an organ/system/disease-based format. Medicinal Chemistry is presented in a separate but highly coordinated manner with complementary sequencing to facilitate integration of structure-activity relationships with pharmacodynamics. Pharmacokinetic principles are applied through a rigorous coverage of the math/science discipline followed by exploration of clinical pharmacokinetic challenges presented by specific pharmacotherapies. Toxicology focuses on adverse drug events, including but not limited to mutagenesis, teratogenesis, specific organ toxicity, and strategies for prevention. Teaching methods within these courses include both didactic lecture and small group problem solving sessions, where the students begin to make therapeutic decisions based upon applying their biomedical and pharmaceutical knowledge to make therapeutic decisions. Both therapeutics and administrative sciences begin at the introductory level in PY2. Therapeutics introduces the student to the application of pharmacotherapy as it relates to common chronic diseases such as diabetes and hypertension. Likewise, the administrative sciences are continued within the management sequence with a focus on reducing costs and optimizing healthcare outcomes. Topics such as general fundamentals of business and progressing into management issues more specifically directed to the practice of pharmacy are covered. Pharmacoeconomics is addressed, both from the perspective of how pharmacy services contribute to the health care system and how these services are reimbursed by third party providers. After the student finishes the spring semester of PY2, they continue their IPPEs by completing an introductory community pharmacy experience, which further allows application and enhancement of their professional attitudes and values.

The PY3 curricular emphasis shifts markedly towards the clinical sciences. This includes advanced training in therapeutic problem solving via both didactic and small group sessions, training in medical devices and durable medical equipment, physical assessment with an emphasis on human anatomy, and pharmacy law and ethics. Laboratory training with pharmacy computer systems, dispensing, intravenous dosage preparation, advanced training in counseling skills with standardized patients and case settings, and additional training in literature evaluation are also a part of this year. The PY3 represents the melding and maturation of student knowledge, skills, and attitudes that is the foundation

for performance in and satisfactory completion of the final year of practical training in pharmacy. The MMEs serve to assess student knowledge and retention throughout the PY1-PY3s and satisfactory performance on this exam is required to advance into the PY4, ensuring students have the requisite knowledge.

The PY4 of the curriculum consists entirely of APPE experiences (9-C). Preceptors have rated UHCOP PY4 students high with a majority indicating they strongly agree or agree with performance measures stated in the AACP Preceptor Survey. In the 2010 AACP Pharmacy Preceptors Survey Report Summary, a majority of the respondents strongly agreed or agreed with the statements that UHCOP students can develop and use patient specific pharmacy care plans (94%), communicate effectively with patients, caregivers, and other professional members of the health care team (95%), have expertise in informatics (88%), and can retrieve and evaluate health sciences literature (93%). (2-C, n=96) The most recent 2010 AACP Pharmacy Alumni Survey Summary Report showed comparable results (2-C, n=24).

### Comments:

Several notable areas of the curriculum include:

1. Dosage formulation training occurs at Professional Compounding Centers of America (PCCA) and their state-of-the-art training facility provides a unique opportunity for our students. This training is holistic, in that it addresses not just the art of formulation, but uses real-world case examples to illustrate how compounding can improve patient care and therapeutic outcomes. In order to educate pharmacists, scientists, and pharmacy educators we have developed the PharmD/PhD and PharmD/MS programs.

2. Our IPPE experiences incorporating disaster and bio-terrorism training are examples of the dynamic nature of the curriculum in response to the ever changing environment. As the fourth largest city, a major petrochemical center in the U.S., and located on the Gulf Coast, Houston is a potential target for both man-made and natural disasters and pharmacists have and can make significant contribution to both preparedness and response to these events, and we have incorporated this into our experiences with Hurricanes Katrina, Rita, and Ike.

3. Another notable area in our curriculum is an emphasis on team taught courses in pharmacology and therapeutics, involving both college faculty and experts from the local community. In pharmacology, team teaching provides very current information about pharmacological agents, and the dedication of the course coordinator, who attends most lectures, insures consistency of coverage. In therapeutics, we are able to capitalize on the expertise afforded by being located in the largest medical center in the world, examples being experts in oncology from the M.D. Anderson Cancer Center and pediatrics from Texas Children's Hospital.

**Quality Improvements:**

Continuous quality improvement is accomplished by coordination between the college's Curriculum Committee and Assessment Committee. Examples of curricular changes initiated by this process include moving Toxicology to PY2 from PY3 to integrate it better with the basic sciences and introductory therapeutic, movement of business management curriculum closer to APPE's in the curriculum, and removing Functional Group Analysis and Pharmacy Calculations from the Skills program to stand-alone courses to increase student accountability for essential parts of the curriculum.

In 2010, members of the Curriculum Committee, the Director of Assessment, and the Associate Dean for Operations attended the AACP Workshop on Curricular Change. Two issues struck the group as we listened to presenters and examined our curriculum. First, our students are well prepared when they enter their final experiential year, but most of the development of integrative therapeutic skills takes place in PY3 because of the linear nature of the curriculum. In the course of this self-study, we are examining how we might introduce therapeutics into the curriculum earlier, enabling more time for maturation of these skills and to prepare students to be better practitioners. Many of our graduates pursue advanced training after graduation, and this would be of great benefit to them. [\(13-A\)](#) However, we think we could do more to encourage our students to be agents of change within the profession and are looking at ways that we could do this within the curriculum. We have started this process by changing our terminal outcomes [\(9-B\)](#) to reflect the goal to enrich our graduates with the ability to be professionals prepared to practice in a dynamic healthcare environment, and the abilities to be life-long learners. We have begun increasing professionalism and critical thinking activities within the curriculum beginning with PHAR 4251 Pharmacy Skills Program II in PY1 (leading with emotional intelligence; how to inspire, influence and achieve results as a leader; time management; dressing professionally, E-professionalism, leadership awareness).

The College of Pharmacy is partnering with the Hispanic Studies Department of the College of Liberal Arts and Social Sciences to develop a certificate program for pharmacy students entitled "Spanish for the Professions in the Globalized World". This program is designed for students who anticipate careers in which they will need to interact with the Hispanic communities in the U.S. and/or abroad and who wish to continue the study of Spanish language and culture specifically for the profession of pharmacy and healthcare in general. The certificate includes a core course in the Spanish language and culture for professionals and then a course addressing the Spanish language as it specifically relates to the medical and pharmacy profession. In addition to these two courses, students will eventually be able to elect to participate in a Spanish language immersion experience with emphasis on increasing language proficiency and in-depth learning about the Spanish culture.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
<ul style="list-style-type: none"> <li>• Courses have coordinators and are integrated across disciplines.</li> <li>• Faculty from different disciplines communicate with each other and all disciplines are represented on committees.</li> <li>• Courses are well managed with content experts delivering specific topics as needed.</li> <li>• Faculty cooperate and work as teams when preparing courses.</li> <li>• The content is aligned with the recommendations listed in Appendix B of Standards 2007.</li> </ul> <p style="text-align: right;"><input checked="" type="checkbox"/> Meets the Standard</p>	<ul style="list-style-type: none"> <li>• The content is in the process of being mapped to the recommendations listed in Appendix B of Standards 2007.</li> <li>• The college or school has a plan and is in the process of addressing all issues related to not meeting the requirements of this standard.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Partially Meets the Standard</p>	<ul style="list-style-type: none"> <li>• Courses are integrated in name, but not in actual practice, i.e., information is presented independently without respect to the material being covered by other disciplines.</li> <li>• Content areas noted in Appendix B of the Standards 2007 are not addressed in the curriculum.</li> <li>• The instruction provided by other academic units of the university does not meet the educational objectives of the curriculum.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Does Not Meet the Standard</p>

**Standard No. 14: Curricular Core—Pharmacy Practice Experiences:** The college or school must provide a continuum of required and elective pharmacy practice experiences throughout the curriculum, from introductory to advanced, of adequate scope, intensity, and duration to support the achievement of the professional competencies presented in Standard 12.

The pharmacy practice experiences must integrate, apply, reinforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum. The objectives for each pharmacy practice experience and the responsibilities of the student, preceptor, and site must be defined. Student performance, nature and extent of patient and health care professional interactions, where applicable, and the attainment of desired outcomes must be documented and assessed.

In aggregate, the pharmacy practice experiences must include direct interaction with diverse patient populations in a variety of practice settings and involve collaboration with other health care professionals. Most pharmacy practice experiences must be under the supervision of qualified pharmacist preceptors licensed in the United States.

	S	N.I.
The college or school provides a continuum of required and elective pharmacy practice experiences throughout the curriculum, from introductory to advanced, of adequate scope, intensity, and duration to support the achievement of the professional competencies presented in Standard 12.	●	○
The pharmacy practice experiences integrate, apply, reinforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum.	●	○
The objectives for each pharmacy practice experience and the responsibilities of the student, preceptor, and site are defined.	●	○
Student performance, nature and extent of patient and health care professional interactions, where applicable, and the attainment of desired outcomes are documented and assessed.	●	○
In aggregate, the pharmacy practice experiences include direct interaction with diverse patient populations in a variety of practice settings and involve collaboration with other health care professionals.	●	○
Most pharmacy practice experiences are under the supervision of qualified pharmacist preceptors licensed in the United States.	●	○
The college or school ensures that preceptors receive orientation regarding the outcomes expected of students and the pedagogical methods that enhance learning, especially for first-time preceptors prior to assuming their responsibilities, ongoing training, and development.	●	○
Students do not receive remuneration for any pharmacy practice experiences (introductory or advanced) for which academic credit is assigned.	●	○
The introductory pharmacy practice experiences involve actual practice experiences in community and institutional settings and permit students, under appropriate supervision and as permitted by practice regulations, to assume direct patient care responsibilities.	●	○
All required advanced pharmacy practice experiences in all program pathways are conducted in the United States or its territories and possessions (including the District of Columbia, Guam, Puerto Rico, and U.S. Virgin Islands).	●	○
Required experiences include primary, acute, chronic, and preventive care among patients of all ages and develop pharmacist-delivered patient care competencies in the following settings: <ul style="list-style-type: none"> <li>● community pharmacy</li> <li>● hospital or health-system pharmacy</li> <li>● ambulatory care</li> <li>● inpatient/acute care general medicine</li> </ul>	●	○
The college or school has addressed the guidelines for this standard.	●	○

**Describe how the program is meeting the Standard and Guidelines.**

The UHCOP curriculum is comprised of a variety of pharmacy practice experiences starting in PY2. The pharmacy practice experience include over 300 contact hours of IPPE's and 1750 contact hours of APPE's. All these experiences allow the application of basic and clinical sciences to advance knowledge, to develop and refine skills, and to instill attitudes and values of a professional pharmacist through application.

UHCOP has fully implemented all of the IPPE requirements effective with the graduating class of 2011 (entering class in the fall of 2007). In the summer of 2003, the curriculum required an introductory community practice experience. The IPPE's begin in the fall of the PY2 with IPPE I and Professional Development, PHAR 5254. Afterwards, the

students are assigned to long-term care facilities and participate in patient medication/chart reviews followed up by reflection exercises where they present the patients and their respective interventions. Following long-term care facility practice standards, students compose a formal letter to the physician with suggested medication interventions. If a concern is discovered, the preceptor consultant pharmacist at the facility is contacted and addresses the concern as necessary.

In addition, 36 hours of this course is dedicated to emergency preparedness and students are trained by staff from the Texas A&M Health Science Center and the City of Houston Health Department. Topics include basic disaster life support, advanced disaster life support, and bioterrorism/disaster preparedness training with simulations. Each student receives a certificate of completion and in the event of a disaster, may be contacted by the Harris County Office of Emergency Preparedness to respond to the disasters in the Houston and surrounding areas.

Additionally, students are required to complete a 4-week (170 contact hours) Introductory Community Practice Experience during the summer between PY2 and PY3. IPPE II and Professional Development, PHAR 5257, occurs in the PY3 spring semester. This experience offers 65 contact hours in an acute care setting in the greater Houston area. Activities include evaluating charts and monitoring patients' progress. Through a formal mentoring and discussion time, the students present and discuss findings with PY4 students, pharmacy residents, preceptors, and/or faculty. These experiences are designed to familiarize students to the acute hospital care environment and facilitate their transition into their APPE's.

The PY4 consists of seven, six-week (250 hours) APPE's consisting of four required and three elective. Required APPEs include Advanced Community Pharmacy, Advanced Hospital Pharmacy, Internal Medicine, and Ambulatory Care. The elective APPEs offer a wide variety of opportunities for the student to pursue individual professional interests and can include Infectious Diseases, Pharmacokinetics, Nutritional Support, Government Pharmacy, Academic APPEs, etc. The required APPEs provide opportunities for the student to develop skills required to deliver medication therapy management in both acute care and community practice settings and build upon their previous IPPE experiences ([9-G](#)) ([9-F](#)).

To provide pharmacy practice experiences, the college utilizes its own clinical faculty and volunteer preceptors in the Texas Medical Center, the Houston Metropolitan Area, and in many other locations throughout the State of Texas and the United States. There are over 1,000 available preceptors, with 331 active for the 2010-2011 internship year. These sites/preceptors are discussed in Standard No. 28: Practice Facilities section. ([6-B](#))

Currently, the college has 648 available sites with 186 active for the 2010-2011 internship year. Some sites are located in federal institutions (i.e. NIH, NCI, CDC, FDA, IHS) out-of-state. With a large number of sites and preceptors offering experiential education opportunities to our students, quality and consistency within APPEs and among instructional sites is a matter that receives constant attention. Evaluation and development of students, sites and

preceptors are continuously monitored and issues are addressed as needed. Educational and preventative measures include preceptor training, site visits by the experiential staff, student and preceptor feedback as well as interactions with The Joint Committee on Internship Programs and the Texas State Board of Pharmacy.

The UHCOP Internship Program must meet rules and requirements of the Texas State Board of Pharmacy. The colleges of pharmacy in Texas established a Joint Committee on Internship Programs (JCIP) in 1994 to address common problems and to adopt standardized forms for use in the Internship Programs. The JCIP standardized Intern Evaluation Form continues to be updated and revised annually and reflects the goals and objectives of the college's Internship Program ([11-C](#)). With a statewide common internship calendar as well as standardized student evaluation form, Texas preceptor education activities can be focused on student evaluation techniques and standardization exercises designed to promote consistent ratings of students across all Texas Colleges of Pharmacy. The UHCOP presents a biannual ACPE accredited preceptor CE program and additional programs are offered by JCIP at statewide association meetings.

The JCIP meets regularly with the Texas Pharmacy Congress including two representatives from the Texas State Board of Pharmacy. JCIP has input into the Texas State Board of Pharmacy rules that affect the internship experience. Texas internship sites must meet certain State standards and preceptors must have a State preceptor's certificate in addition to their Texas pharmacy license in good standing. Upon the initial application for a preceptor's certificate, the pharmacist must have at least one year of experience or six months of residency training in a program accredited by the American Society of Health-System Pharmacists (ASHP), must have completed at least three hours of preceptor education provided by a Texas college of pharmacy every two years and must be in good standing with the Texas State Board of Pharmacy. The preceptor certificate must be renewed every two years, at the time of licensure renewal, and additional preceptor education is required.

Ongoing evaluation of experiential sites and preceptors is addressed through several mechanisms. The faculty internship directors have regular contact via site visits, email, and/or telephone with students and preceptors to assure that the academic content and objectives of the experience are being attained. When necessary, the ADEP and directors visit sites to resolve problems and observe students' progress. This regular contact between the director, the preceptor, and the student provides an excellent source of information for ongoing site evaluation. Problems come to the attention of the director through all of these routes. Sites are excluded from the program when they are experiencing difficulties that would interfere with their ability to properly instruct students. With the number and variety of sites available, the college at present, is able to select the best sites to meet the professional and geographic needs of the student.

Preceptors evaluate student interns utilizing the standard Intern Evaluation Form described above, as well as additional evaluations specific to the experience. In both hospital and community pharmacy APPEs, there is a mid-term

practical examination and final written examination designed and administered by the faculty internship director to evaluate practical skills essential to the internship experience.

Presentations and reports submitted in the clinical and elective APPEs allow the faculty internship director to assess written and oral communication skills. Students must also pass a written exam to earn credit for the Institutional Medicine, Advanced Hospital Pharmacy, and Advanced Community Pharmacy APPEs. Students are allowed only one retake for all exams administered for APPEs before repeating the rotation. From 2005-2010, the frequency of PY4 students required to repeat one of these three APPEs was 1.35% (n=664).

The Assistant Dean for Experiential Programs and directors are accessible to students for special problems, announcements, and assistance with any other issues or needs that might arise throughout the year. Practical and written exams described above indirectly reflect the effectiveness of the ongoing program at the site. Students evaluate sites and preceptors at the end of each experience.

Additionally, the college's Experiential Advisory Committee consisting of faculty and non-faculty practitioners, serves as a liaison with the community of practitioners as well as ensures that the quality of experiential instruction is maintained and in compliance with ACPE standards. This is supplemented by cooperative activities with the Texas State Board of Pharmacy and with the other Texas colleges of pharmacy through the JCIP.

#### Comments:

In September 2008, Hurricane Ike hit the Galveston/Houston area during the (4<sup>th</sup>) week of APPE 3 and had dramatic impact with much of the greater Houston area without electricity for up to a month. During this time, several experiential sites were significantly damaged and students were unable to return. Due to our collaborative efforts with the other schools of pharmacy in the State where we have a planned 10% reserve of experiential sites for all schools to use in emergent situations, we were able to quickly place these displaced students in other practice sites.

In the fall of 2008, we implemented our first IPPE I course with the Class of 2010. Utilizing an opportunity to integrate UHCOP with the City of Houston and Harris County, we required the students to become certified in Emergency Preparedness Training. Since more than 90% of our students are certified immunizers through the college's elective, we became an integral part of the 2009 H1N1 pandemic response in Harris County and the City of Houston via vaccination clinics. During the height of the epidemic and controlled vaccine roll-outs, students and faculty staffed City of Houston and Harris County clinics for two weeks and triaged, screened, and administered over 9,000 vaccinations.

#### Quality Improvements:

We have purchased E\*Value™ to streamline computer data entry and tracking of experiential activities, and improve communications with preceptors.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
<ul style="list-style-type: none"> <li>• The introductory through advanced practice experiences form a continuum with no gaps.</li> <li>• The college or school provides elective rotations.</li> <li>• Introductory experiences expose students to actual practice sites not simulated ones.</li> <li>• Most experiences are under the supervision of a pharmacist.</li> <li>• The student-to-preceptor ratio facilitates individual instruction, guidance, supervision, and assessment.</li> <li>• Students are not paid for practice experiences.</li> <li>• Preceptors are primarily licensed as pharmacists.</li> <li>• Preceptors are trained to meet the needs of the college or school and have defined positions with it.</li> <li>• Preceptors evaluate students and vice versa.</li> <li>• The college or school has quality assurance mechanisms that include visiting sites.</li> <li>• The coordination and management of rotations is straightforward and efficient (e.g., students are notified in a timely manner whether their choices for rotations have been accepted).</li> <li>• Rotations occur in diverse practice settings covering all required areas (community, institutional, etc.).</li> <li>• Practice experiences cover diverse patient populations in terms of disease state, race, age, gender, and cultural background.</li> <li>• The college or school has criteria for defining the level of practice (e.g., advanced community) which are validated by the faculty (e.g., worksheet to enroll a preceptor; review syllabi for the rotation).</li> <li>• The practice experiences support the achievement of the required professional competencies.</li> <li>• Student outcomes and patient interaction are documented and assessed.</li> </ul> <p style="text-align: right;"><input checked="" type="checkbox"/> Meets the Standard</p>	<ul style="list-style-type: none"> <li>• Some introductory practice experiences are missing in first 3 academic years or the progression of experiences do not form a continuum from introductory to advanced.</li> <li>• The college or school has quality assurance mechanisms that do not include visiting sites.</li> <li>• The college or school has a plan and is in the process of addressing all issues related to not meeting the requirements of this standard.</li> <li>• Some required areas are not adequately covered.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Partially Meets the Standard</p>	<ul style="list-style-type: none"> <li>• One or more required introductory or advanced experiences is/are missing.</li> <li>• Preceptors are not properly trained.</li> <li>• Some preceptors are not licensed in the state of practice.</li> <li>• Required rotations fall below the expectations the standard.</li> <li>• One or more required pharmacy practice experiences occur(s) overseas.</li> <li>• The college or school has no quality assurance mechanisms.</li> <li>• The college or school has an inadequate number of preceptors.</li> <li>• The majority of students are not precepted by pharmacists.</li> <li>• Outcomes are not documented or not assessed.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Does Not Meet the Standard</p>

**Standard No. 15: Assessment and Evaluation of Student Learning and Curricular Effectiveness:** As a component of its evaluation plan, the college or school must develop and carry out assessment activities to collect information about the attainment of desired student learning outcomes. The assessment activities must employ a variety of valid and reliable measures systematically and sequentially throughout the professional degree program. The college or school must use the analysis of assessment measures to improve student learning and the achievement of the professional competencies.

The college or school must systematically and sequentially evaluate its curricular structure, content, organization, and outcomes. The college or school must use the analysis of outcome measures for continuous improvement of the curriculum and its delivery.

	S	N.I.
The college or school develops and carries out assessment activities to collect information about the attainment of desired student learning outcomes. The assessment activities employ a variety of valid and reliable measures systematically and sequentially throughout the professional degree program.	●	○
The college or school uses the analysis of assessment measures to improve student learning and the achievement of the professional competencies.	●	○
The college or school systematically and sequentially evaluates its curricular structure, content, organization, and outcomes.	●	○
The college or school uses the analysis of outcome measures for continuous improvement of the curriculum and its delivery.	●	○
The college or school has developed a system to evaluate curricular effectiveness.	●	○
The college or school ensures the credibility of the degrees it awards and the integrity of student work.	●	○
The college or school has addressed the guidelines for this standard.	●	○

**Describe how the program is meeting the Standard and Guidelines.**

The role of the Center for Assessment is to conduct comprehensive programmatic assessment ([1-C](#); [1-D](#)) of the professional pharmacy program. During the time period of this report, the Assessment Committee was chaired by the Director of Assessment. Effective September 2010, the committee is now chaired by a faculty member appointed by the Dean, and the Director of Assessment now serves as an *ex-officio* member. Additional members include four faculty representatives and various other *ex-officio* representatives. The Director of Assessment works with the Assessment Committee to oversee assessment activities within the college. College faculty developed a list of “general abilities” and “analysis/critical thinking abilities” which are posted on the college’s website ([15-A](#)). These abilities are incorporated into the curriculum and included in the development of a new course or the revision of a current course. All required course proficiencies are reviewed annually by the assessment and curriculum committees. At the close of each semester, students review and score their competencies for the relevant course proficiency statements. The Director of Assessment compiles student evaluation data and makes this information available to the course coordinators for consideration of content or delivery modification.

Global knowledge assessments and capstone exams are administered through the Center for Assessment. A “Prior Knowledge” exam is given to the incoming PY1 class during orientation ([15-B](#)). The results of this exam are used to assess fundamental professional program entry knowledge.

The Director of Assessment quota samples professional students to participate in the Student Curricular Assessment Team group (SCAT). These student groups meet twice a year to voice concerns about learning gaps and suggestions for course improvement. After reviewing the data and student input, if a true weakness is identified within a

course, the Assessment Committee meets with the course coordinator to discuss the relationship between the students' perceived competency with the stated learning objective and potential strategies for improvements.

The MileMarker Examination sequence (MME) is a series of formative and summative instruments rooted in case-based questions that have been fully vetted by faculty and student assessment data. The content is reviewed and updated by course coordinators at least once a year and as necessary. At the close of each academic year, an MME that is reflective of the course work completed is administered. The PY2 and PY3 exams focus heavily on the most recent curriculum for that year but will also include questions on curriculum from the PY1 or PY1 and PY2 years, respectively. The exams administered in PY1 and PY2 are formative. However, students not achieving minimum competency are required to either retake the exam or are assigned a self-directed remediation. Typically, self-directed remediation is based on areas of deficiencies and constructed through a "develop a case-premise" where the student develops a case relevant to their deficiencies. These cases are evaluated by faculty. By contrast, the MME III is summative and students who do not meet minimum competency may not progress to their PY4 APPEs. The student is allowed one additional attempt and if a passing grade is not achieved then self-directed remediation will be completed. The majority of students pass on the first attempt (99%). The students who do not pass on their first attempt typically pass on their second attempt. No student has been prevented from beginning the APPEs since 2003.

The MME series allows the college to specifically assess the effectiveness of previous year's course work and allows timely feedback between the Assessment Committee, Center for Assessment, and the faculty. Results can be compared between the various years to identify any inadvertent disconnection between the course proficiency statement and the course content, changes in delivery, faculty substitutions, thus allowing the college to assure content consistency. Moreover, having UHCOP student data allows the college to spot-remediate deficiencies.

The college has piloted Objective Structured Clinical Examinations (OSCEs) ([15-C](#)) as a part of the annual assessments. At this time, all of the PY1s were included in the formative OSCE for 2010 and results of their performance have been distributed to the students. Students were provided with a highest-lowest range, average, and their own score. They also received an indication of where the faculty believes the students should be performing. The PY1 OSCE cases, rubrics, and competency scale were developed by six of the college's established clinical faculty, each having active practices and serving as preceptors. Volunteers consisted of PY4 pharmacy students who were trained by the faculty member directing the OSCE administration to develop and standardize their responses. The PY1 students have various resources available, such as [Facts and Comparisons](#) or a relevant package insert during the OSCE. OSCEs for the PY2 class will be implemented in March 2011. As to whether or not these OSCEs will continue to be formative or summative is currently under discussion by college faculty.

The Director of Assessment maintains an inventory of which courses utilize which types of assessments as a part of the curricular mapping ([9-L](#)). Most courses offer several multiple choice exams during the semester and a

comprehensive final and the type of assessment, whether or not it is formative or summative, is left up to the course coordinator and the course instructors. These may include assessments other than traditional exams such as student papers, the use of audience response systems, presentations, and observed structured clinical examinations (OSCEs).

The college adopted the use of ARS in 2006. Since that time, ARS are routinely used in Pharmacology 1 and Pharmacology 2, Pharmacy Practice 4, and Therapeutics I in the PY2 year. The instructor inserts multiple choices, true/false, or opinion questions directly into PowerPoint presentations. As the questions appear, the students, who have individual response pads, are polled for answers. Questions might be those testing prior knowledge, recall of recently presented material, or those that require critical thinking and synthesis. After results are obtained, the instructor may remove a choice, ask the students to discuss the remaining answer choices between themselves for two minutes, and then re-poll. Whether re-pollled or not, the results are discussed by the instructor as to why they are correct/incorrect unless the question is an opinion question. In this way, comprehension can be reinforced while misconceptions can be addressed on the spot. One instructor has also included one of these in-class questions on the semester test and the final and compared the results ([11-D](#)). In this way, classroom learning is assessed both in the classroom and on the exams. In general, students perform better on these questions during the semester test and the final. Moreover, students who miss questions on the test, often as not, are absent the day the question was presented and discussed. These systems have also been used anonymously to poll student opinions in ethics classes. This classroom option has improved student participation and active learning.

### Comments:

Three notable areas of the program are the comprehensive MMEs, OSCEs, and use of ARS in the classroom. The MME as described previously allows selective remediation of student knowledge deficiencies when they appear, after each annual exam, and PY3 students typically perform well and are prepared for their APPEs.

### Quality Improvements:

Systematic and sequential evaluation of the entire curriculum needs to be more proactive. With the acquiring of the E\*Value® program, continual and efficient evaluations of the curriculum should be possible.

Feedback to faculty and curriculum on formative and summative assessments throughout the curriculum need to be improved. As a result, the college by-laws have been changed. The Director of Assessment is now an ex-officio member and the Chair of the Assessment Committee is a faculty member appointed by the Dean. There is a new expectation that the committee will meet on a regular basis and a new charge to the committee to provide a comprehensive assessment of the entire college.

The development of OSCEs throughout the curriculum will be an additional measure of application and skills; however, it is in the early stages and need to be further developed.

The Curriculum Committee recognizes that student exposure to scientific inquiry, knowledge retention, and life-long learning skills need to begin earlier in the curriculum. The recently developed and implemented student convocation series will address topics such as professionalism and life-long learning beginning Fall 2011. Structured student portfolio development utilizing E\*Value's® MyFolio will be required, implemented and maintained through the Pharmacy Skills Program, IPPEs, and APPEs. In addition, new professionalism topics and activities are being researched and developed by students through a Special Topics course and are being piloted in PHAR 4251 Pharmacy Skills Program Course II in spring 2011 of PY1.

Meets the Standard	Partially Meets the Standard	Does Not Meet the Standard
<ul style="list-style-type: none"> <li>• Assessment data are used for program improvement.</li> <li>• The college or school uses multiple measures to evaluate professionalism.</li> <li>• The college or school has a systematic plan for assessing student learning outcomes.</li> <li>• The college or school is gathering and using both formative and summative assessment data.</li> <li>• Portfolios document progressive achievement of the competencies through integrated learning experiences.</li> <li>• Students are involved in self assessment.</li> </ul> <p style="text-align: right;"><input checked="" type="checkbox"/> Meets the Standard</p>	<ul style="list-style-type: none"> <li>• The assessment plan is not systematic.</li> <li>• Data from the assessment plan are not analyzed or not fed back into the curriculum.</li> <li>• The college or school has a plan and is in the process of addressing all issues related to not meeting the requirements of this standard.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Partially Meets the Standard</p>	<ul style="list-style-type: none"> <li>• The college or school has no assessment plan or does not systematically carry out evaluations of student learning and curricular effectiveness.</li> <li>• The college or school can not document progressive achievement of the competencies as demonstrated in the learning experience.</li> <li>• The college or school does not have mechanisms to diagnose and correct underlying problems that might diminish learning such as perceived stress on the faculty, staff, or students.</li> <li>• Assessment and evaluation activities to allow comparison of outcomes between alternate program pathways are not carried out.</li> <li>• Data is not used to improve the curriculum or its delivery.</li> <li>• Assessment activities do not use valid or reliable measures.</li> <li>• Assessment activities do not include assessment of students, faculty or preceptors.</li> <li>• Assessment methods do not promote consistency and reliability within and among faculty, practice sites and preceptors.</li> <li>• No systems are in place to ensure the integrity of student work and limit opportunities for academic misconduct.</li> </ul> <p style="text-align: right;"><input type="checkbox"/> Does Not Meet the Standard</p>