The Department of Pharmaceutical Sciences, along with the Department of Pharmacy Practice, offers the entry-level Doctor of Pharmacy Degree and the post-baccalaureate Doctor of Pharmacy Degree. Persons interested in the post-baccalaureate Doctor of Pharmacy (Pharm.D.) should contact the Office of the Assistant Dean for Student Services in the College of Pharmacy and Health Sciences at Texas Southern University directly for details on the requirements for this degree. The entry-level Doctor of Pharmacy (Pharm.D.) is a six-year program requiring two years of study at the pre-professional (pre-pharmacy) level and four years of study at the professional level. Courses offered through this unit include the following: (1) pharmaceutical and medicinal chemistry (PHCH), (2) pharmaceutics (PHAR), and (3) pharmacology and allied sciences (PAS).

The Department of Pharmaceutical Sciences also offers the Master of Science (M.S.) degree and the Doctor of Philosophy (Ph.D.) degree in Pharmaceutical Sciences. Students who are interested in pursuing the M.S. and/or Ph.D. degree in Pharmaceutical Sciences should consult the Graduate School Bulletin of Texas Southern University for further information or visit the website (www.tsu.edu).

Members of the Department of Pharmaceutical Sciences are housed in Gray Hall with the Department Office located in Room 124. The Department supports the primary mission of the College of Pharmacy and Health Sciences.

Since the Department offers the entry-level Pharm.D. and the post-baccalaureate Pharm.D. along with the Department of Pharmacy Practice (described in the next section), students are referred to the end of the next section for a summary of requirements for the entry-level Pharm.D. and the sequence in which required courses should be taken. Courses offered through this instructional unit are described below.

Students should refer to admission policies, comprehensive examination information, and other important information regarding the completion of the entry-level Pharm.D. under the College of Pharmacy and Health Sciences introductory section of this document.
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Department</th>
<th>Degrees</th>
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</thead>
<tbody>
<tr>
<td>Akpaffiong, Macauly J.</td>
<td>Professor</td>
<td>Pharmacology</td>
<td>B.S., Texas Southern University&lt;br&gt;M.Sc., Ph.D., University of Bath&lt;br&gt;Pharm.D., University of Southern California</td>
</tr>
<tr>
<td>Bates, Theodore R.</td>
<td>Professor</td>
<td>Pharmacokinetics</td>
<td>B.S., Ph.D., Columbia University</td>
</tr>
<tr>
<td>Bhansali, Kantilal G.</td>
<td>Professor (Retired)</td>
<td>Pharmaceutical Chemistry</td>
<td>B.S., Gujarat University&lt;br&gt;M.S., Ph.D., State University of Iowa</td>
</tr>
<tr>
<td>Enigbokan, Mofolorunso A.</td>
<td>Associate Professor</td>
<td>Pharmacology</td>
<td>B.S., M.S., Texas Southern University&lt;br&gt;Ph.D., Howard University</td>
</tr>
<tr>
<td>Eugere, Edward J.</td>
<td>Professor</td>
<td>Pharmacology</td>
<td>B.S., Xavier University&lt;br&gt;M.S., Wayne State University&lt;br&gt;Ph.D., University of Connecticut</td>
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<tr>
<td>Felder, Tyrone B.</td>
<td>Associate Professor</td>
<td>Pharmaceutics</td>
<td>B.S., Florida A &amp; M University&lt;br&gt;Ph.D., University of Kentucky</td>
</tr>
<tr>
<td>Guilford, James</td>
<td>Professor</td>
<td>Pharmaceutical Chemistry</td>
<td>B.S., St. John's University&lt;br&gt;M.S., Ph.D., University of Michigan</td>
</tr>
<tr>
<td>Hayes, Barbara E.</td>
<td>Associate Professor</td>
<td>Pharmacology</td>
<td>B.S., Texas Southern University&lt;br&gt;M.S., Purdue University&lt;br&gt;Ph.D., University of Houston</td>
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<tr>
<td>Hickman, Eugene, Sr.</td>
<td>Professor (Retired)</td>
<td>Pharmaceutics</td>
<td>B.S., Texas Southern University&lt;br&gt;M.S., University of Texas&lt;br&gt;Ph.D., University of Iowa</td>
</tr>
<tr>
<td>Jadhav, Arun L.</td>
<td>Professor</td>
<td>Pharmacology</td>
<td>B.S., M.S., University of Poona&lt;br&gt;Ph.D., Loyola University</td>
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<tr>
<td>Liang, Dong</td>
<td>Assistant Professor</td>
<td>Pharmaceutics</td>
<td>B.S., M.S., Zhejiang Medical University&lt;br&gt;Ph.D., University of Houston</td>
</tr>
<tr>
<td>Mehta, Chander S.</td>
<td>Professor</td>
<td>Pharmacology</td>
<td>B.S., University of Bombay&lt;br&gt;B.Pharm., Ph.D., Washington State University</td>
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<tr>
<td>Milton, Shirlette Glover</td>
<td>Assistant Professor</td>
<td>Pharmaceutical Chemistry</td>
<td>B.S., Texas Southern University&lt;br&gt;M.S., Ph.D., University of Texas</td>
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<tr>
<td>Oyekan, Adebayo O.</td>
<td>Professor</td>
<td>Pharmacology</td>
<td>D.V.M., University of Nigeria&lt;br&gt;Ph.D., University of London</td>
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<tr>
<td>Shivachar, Amruthesh</td>
<td>Assistant Professor</td>
<td>Pharmaceutical Chemistry</td>
<td>B.Sc., Sarada Vilas Science College&lt;br&gt;M.Sc., Ph.D., University of Mysore</td>
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<tr>
<td>Wells, Patrick</td>
<td>Dean Emeritus</td>
<td></td>
<td>B.S., Texas Southern University&lt;br&gt;M.S., Ph.D., University of Nebraska at Lincoln</td>
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PHARMACEUTICAL SCIENCES COURSES

PAS 415  Pathophysiology Laboratory (1)
Demonstrations, case studies, recitation, presentations, and small group discussions to accompany PAS 435. Three hours of laboratory per week. Prerequisite/Corequisite: Successful completion of or concurrent enrollment in PAS 435.

PAS 435  Pathophysiology I - Cells and Tissues (3)
Concepts of pathophysiology of cells and tissues; altered cellular and tissue biology; cellular environment of fluids and electrolytes; genes and genetic disease. Mechanisms of immunity and inflammation, tumorigenesis, and carcinogenesis. Three hours of lecture per week. Prerequisite: First professional year standing in the College of Pharmacy and Health Sciences. Corequisite: Concurrent enrollment in PAS 415.

PAS 436  Pathophysiology II - Organs and Tissues (3)
Pathophysiologic alterations in organs and systems with emphasis on the nervous, endocrine, reproductive, hematologic, cardiovascular, and lymphatic systems. Three hours of lecture per week. Prerequisites: PAS 415 and PAS 435.

PAS 517  Pharmacology Toxicology I Laboratory (1)
Demonstrations, case studies, recitation, presentations, and small group discussions to accompany PAS 537. Three hours of laboratory per week. Prerequisite/Corequisite: Successful completion of or concurrent enrollment in PAS 537.

PAS 535  Pathophysiology III - Alterations (2)
Pathophysiologic alterations of organs and organ systems, including the pulmonary, digestive, musculoskeletal systems and skin. Two hours of lecture per week. Prerequisite: PAS 436.

PAS 537  Pharmacology Toxicology I (3)
Pharmacology and toxicology of drugs used to treat disorders of the gastrointestinal, respiratory, and cardiovascular systems. Three hours of lecture per week. Prerequisite: Second professional year standing in the College of Pharmacy and Health Sciences or consent of the instructor. Corequisite: Concurrent enrollment in PAS 517 and PAS 535.

PAS 539  Chemotherapeutics (3)
In-depth study of the principles of chemotherapy and a thorough discussion of agents used to manage infectious and neoplastic diseases. Three hours of lecture per week. Prerequisites: PAS 517, PAS 535, PAS 537, second professional year standing in the College of Pharmacy and Health Sciences and BIOL 347 or the equivalent.

PAS 547  Pharmacology Toxicology II (4)
Elucidates the pharmacology and toxicology of drugs used to treat disorders of the central nervous system, musculoskeletal system, and renal system. Three hours of lecture and three hours of laboratory per week. Prerequisites: PAS 517 and PAS 537.

PHAR 111  Pharmacy Orientation (1)
Survey of the pharmacy profession with emphasis on history, ethics, careers, and professional organizations. One hour of lecture per week.

PHAR 112  Pharmacy Orientation (1)
Survey of the pharmacy profession with emphasis on history, ethics, careers, and professional organizations. One hour of lecture per week.
PHAR 211  Pharmacy Applications (1)
Study of the fundamental principles underlying the science and practice of pharmacy in the United States. One hour of lecture per week. Prerequisites: PHAR 111, PHAR 112 and successful completion of freshman biology and chemistry courses.

PHAR 212  Medical Terminology (1)
Programmed course of study building medical words from Greek and Latin prefixes, suffixes, word roots, and combining forms. Professional students are required to complete this course. One hour of lecture per week.

PHAR 413  Pharmaceutics I Laboratory (1)
Demonstrations, case studies, recitation, presentations, and small group discussions to accompany PHAR 433. Three hours of laboratory per week. Prerequisite/Corequisite: Successful completion of or concurrent enrollment in PHAR 433.

PHAR 414  Pharmaceutics II Laboratory (1)
Demonstrations, case studies, recitation, simulations, presentations, and small group discussions to accompany PHAR 434. Three hours of laboratory per week. Prerequisite/Corequisite: Successful completion of or concurrent enrollment in PHAR 434.

PHAR 420  Computer Applications in Pharmacy (2)
Designed to provide knowledge and skills necessary to use microcomputers in pharmacy practice management, with emphasis on the study and evaluation of computer information systems. Two hours of lecture per week. Prerequisite: First professional year standing in the College of Pharmacy and Health Sciences or consent of the instructor.

PHAR 433  Pharmaceutics I - Calculations (3)
Problems, calculations, and processes involving weights and measures, specific gravity, percentage, solutions, and alligations peculiar to pharmacy and related sciences. Three hours of lecture per week. Prerequisite: First professional year standing in the College of Pharmacy and Health Sciences. Corequisite: Concurrent enrollment in PHAR 413.

PHAR 434  Pharmaceutics II - Dosage Forms I (3)
Biopharmaceutics and the application of physicochemical principles with applications to drugs, dosage forms, and drug action. Three hours of lecture per week. Prerequisites: PHAR 413 and PHAR 433. Corequisite: Concurrent enrollment in PHAR 414.

PHAR 513  Pharmaceutics III Laboratory (1)
Demonstrations, experiments, simulations, case studies, recitation, presentations, and small group discussions to accompany PHAR 533. Three hours of laboratory per week. Prerequisite/Corequisite: Successful completion of or concurrent enrollment in PHAR 533.

PHAR 514  Pharmaceutics IV Laboratory (1)
Demonstrations, case studies, recitation, presentations, and small group discussions to accompany PHAR 534. Three hours of laboratory per week. Prerequisite/Corequisite: Successful completion of or concurrent enrollment in PHAR 534.

PHAR 533  Pharmaceutics III - Dosage Forms II (3)
Biopharmaceutics and applications of physicochemical principles to drugs, dosage forms, and drug action. Three hours of lecture per week. Prerequisites: PHAR 414 and PHAR 434. Corequisite: Concurrent enrollment in PHAR 513.

PHAR 534  Pharmaceutics IV - Dosage Forms III (3)
Explores the principles and application of novel drug delivery systems and sterile products. Three hours of lecture per week. Prerequisites: PHAR 513 and PHAR 533. Corequisite: Concurrent enrollment in PHAR 514.
PHAR 601  Special Problems  
Methods in pharmaceutical sciences and clinical research; application of hypothesis formulation, literature evaluation, experimental design, clinical skills, data acquisition/analysis, and formal presentations. Variable number of hours of lecture per week. Students may enroll in up to a total of 8 semester credit hours of Special Problems while in the professional pharmacy program. Prerequisite: Special permission by the Department.

PHAR 611  Substance Abuse Education  
Drug educational program for organizing and training pharmacy students to speak to junior and senior high school students on the potential hazards of drug abuse. Two hours of lecture per week. Prerequisite: Second professional year standing in the College of Pharmacy and Health Sciences or consent of the instructor.

PHAR 614  Pharmaceutics V Laboratory  
Demonstrations, case studies, recitation, presentations, computer simulations, and small group discussions to accompany PHAR 634. Three hours of laboratory per week. Prerequisite/Corequisite: Successful completion of or concurrent enrollment in PHAR 634.

PHAR 616  Pharmaceutics VI Laboratory  
Demonstrations, case studies, recitation, presentations, and small group discussions to accompany PHAR 636. Three hours of laboratory per week. Prerequisite/Corequisite: Successful completion of or concurrent enrollment in PHAR 636.

PHAR 634  Pharmaceutics V - Basic Pharmacokinetics  
Study of factors affecting bioavailability and time course of action of drugs in humans. Three hours of lecture per week. Prerequisites: PHAR 514 and PHAR 534. Corequisite: Concurrent enrollment in PHAR 614.

PHAR 636  Pharmaceutics VI - Applied Pharmacokinetics  
Application of pharmacokinetic principles in selection, dosing, dosage adjustments, and evaluation of drug therapy in the institutionalized patient. Three hours of lecture per week. Prerequisites: PHAR 614 and PHAR 634. Corequisite: Concurrent enrollment in PHAR 616.

PHCH 411  Pharmaceutical Chemistry I Laboratory  
Demonstrations, case studies, recitation, presentations, and small group discussions to accompany PHCH 431. Three hours of laboratory per week. Prerequisite/Corequisite: Successful completion of or concurrent enrollment in PHCH 431.

PHCH 412  Pharmaceutical Chemistry II Laboratory  
Demonstrations, case studies, recitation, presentations, and small group discussions to accompany PHCH 432. Three hours of laboratory per week. Prerequisite/Corequisite: Successful completion of or concurrent enrollment in PHCH 432.

PHCH 431  Pharmaceutical Chemistry I  
Introduction to medicinal chemistry that includes review of chemistry of natural products; relationship of physicochemical properties to drug action; and biochemistry of carbohydrates, lipids, proteins, and enzymes. Three hours of lecture per week. Prerequisite: First professional year standing in the College of Pharmacy and Health Sciences or consent of the instructor. Corequisite: Concurrent enrollment in PHCH 411.

PHCH 432  Pharmaceutical Chemistry II - Biochemistry  
Discussion of hormones, vitamins, enzymes, nucleic acids, protein synthesis, biological oxidation, and intermediary metabolism. Drug metabolism and biochemical basis of common clinical laboratory tests discussed. Three hours of lecture per week. Prerequisites: PHCH 431 and PHCH 411. Corequisite: Concurrent enrollment in PHCH 412.
PHCH 531  Pharmaceutical Chemistry III  (3)
Principles of medicinal chemistry and drug metabolism pathways. Application of chemical principles to specific drug categories. Three hours of lecture per week. Prerequisites: Successful completion of PHCH 411, PHCH 412, PHCH 431, and PHCH 432. Corequisite: Concurrent enrollment in PAS 537.

PHCH 532  Pharmaceutical Chemistry IV  (3)
Application of chemical principles to the central nervous system; non-steroidal, anti-inflammatory, chemotherapeutic, diagnostic, radio-pharmaceutical, and miscellaneous organic and inorganic medicinal agents. Three hours of lecture per week. Prerequisite: PHCH 531.