

# PHARMACY, DOCTOR OF (PHARM.D.)/PHARMACEUTICAL SCIENCES, DOCTOR OF PHILOSOPHY (PH.D.) [DUAL DEGREE]

The VCU School of Pharmacy offers a Pharm.D./Ph.D. dual degree program for outstanding Pharm.D. students to obtain both a Pharm.D. and a Ph.D. in Pharmaceutical Sciences. The dual degree program provides curricular efficiencies in both the Pharm.D. and Ph.D. programs, opportunities for summer research and elective advanced pharmacy practice experiences, which allow dual degree students to graduate with their Pharm.D. after four years and with efficiencies to complete the Ph.D. degree after approximately two to three additional years.

## Student learning outcomes

The student learning outcomes described on the individual Ph.D. concentration pages also apply to Pharm.D.-Ph.D. students.

- Ph.D. with a concentration in medicinal chemistry (<https://bulletin.vcu.edu/graduate/school-pharmacy/pharmaceutical-sciences-phd-medicinal-chemistry/>)
- Ph.D. with a concentration in pharmaceuticals (<https://bulletin.vcu.edu/graduate/school-pharmacy/pharmaceutical-sciences-phd-pharmaceuticals/>)
- Ph.D. with a concentration in pharmacoconomics and health outcomes (<https://bulletin.vcu.edu/graduate/school-pharmacy/pharmaceutical-sciences-phd-pharmacoconomics-health-outcomes/>)
- Ph.D. with a concentration in pharmacotherapy (<https://bulletin.vcu.edu/graduate/school-pharmacy/pharmaceutical-sciences-phd-pharmacotherapy/>)

The educational outcomes of the Pharm.D. program (<https://pharmacy.vcu.edu/about-us/educational-outcomes/>) can be viewed on the School of Pharmacy website.

## Admission requirements

The program is designed for VCU School of Pharmacy Pharm.D. students to apply during their P-2 year, but applications from P-3 students will be considered. Applicants will be evaluated according to the following criteria:

- Pharm.D. GPA:  $\geq 3.0$  (required)
- Personal statement/essay
- Personal interview by two Pharm.D.-Ph.D. subcommittee members
- Research experience (Summer Research Fellowship or equivalent)
- Three letters of recommendation
- Research experience/interests compatible with research of SOP graduate faculty

## Degree requirements

Students will take 148.5 credit hours of courses required for the Pharm.D. (which includes six didactic credits and 10 APPE/directed research credits that may also be applied toward the Ph.D. degree) and a minimum

of 30 didactic credit hours and 30 directed research credit hours to be eligible for the Ph.D.

## Curriculum requirements for the dual degree

| Course                       | Title   | Hours |
|------------------------------|---|-------|
| <b>Pharm.D. requirements</b> |   |       |
| IPEC 501                     | Foundations of Interprofessional Practice                     | 1     |
| IPEC 502                     | Interprofessional Quality Improvement and Patient Safety      | 1     |
| IPEC 560                     | Interprofessional Collaborative Care for Older Adults         | 1     |
| MEDC 527                     | Basic Pharmaceutical Principles for the Practicing Pharmacist | 3     |
| MEDC 533                     | Pharmacognosy   | 1     |
| MEDC 542                     | Biotechnology-derived Therapeutic Agents                      | 1     |
| MEDC 553                     | Concepts in the Medicinal Chemistry of Therapeutics Agents    | 1     |
| PCEU 507                     | Pharmaceutics and Biopharmaceutics I                          | 2.5   |
| PCEU 508                     | Pharmacokinetics  | 3     |
| PCEU 509                     | Pharmaceutics and Biopharmaceutics II                         | 3     |
| PCEU 601                     | Applied Pharmacokinetics and Pharmacogenomics                 | 2.5   |
| PHAR 501                     | Pharmaceutical Calculations                                   | 1     |
| PHAR 502                     | Introduction to Pharmacoconomics                              | 1     |
| PHAR 503                     | Ethics and Equity   | 1.5   |
| PHAR 505                     | Pathophysiology and Patient Assessment Skills                 | 3     |
| PHAR 506                     | Nonprescription Medications and Self-care                     | 2     |
| PHAR 507                     | Introduction to Health Informatics                            | 1     |
| PHAR 508                     | Evidence-based Pharmacy I                                     | 2     |
| PHAR 511                     | Evidence-based Pharmacy II                                    | 2     |
| PHAR 515                     | Continuous Professional Development I                         | 1     |
| PHAR 523                     | Foundations I   | 2     |
| PHAR 524                     | Foundations II  | 1.5   |
| PHAR 530                     | Introductory Pharmacy Practice Experience: Community Practice | 4     |
| PHAR 532                     | Introductory Pharmacy Practice Experience: Hospital Practice  | 3     |
| PHAR 533                     | Introductory Pharmacy Practice Experience: Patient Care       | .5    |
| PHAR 534                     | Foundations III   | 1.5   |
| PHAR 535                     | Foundations IV  | 1.5   |
| PHAR 544                     | Clinical Therapeutics Module: Cardiovascular                  | 4.5   |
| PHAR 545                     | The U.S. Health Care System                                   | 1.5   |
| PHAR 546                     | Pharmacy-based Immunization Delivery                          | 1.5   |
| PHAR 551                     | Pharmacy-based Point of Care Testing                          | 1.5   |
| PHAR 555                     | Clinical Therapeutics Module: Endocrinology                   | 2.5   |
| PHAR 556                     | Clinical Therapeutics Module: Neurology                       | 3.5   |

|   |  |     |   |
|---|--|-----|---|
| PHAR 602  | Clinical Therapeutics Module: Psychiatry   | 3   | Medicinal chemistry concentration (13 credits)  |
| PHAR 603  | Clinical Therapeutics Module: Respiratory/Immunology                                 | 2.5 | CHEM 504 Advanced Organic Chemistry I   |
| PHAR 604  | Clinical Therapeutics Module: Infectious Diseases                                    | 4   | IBMS 600 Laboratory Safety  |
| PHAR 605  | Clinical Therapeutics Module: Hematology/Oncology                                    | 2.5 | MEDC 555 Fundamentals of Drug Discovery I   |
| PHAR 606  | Clinical Therapeutics Module: Nephrology/Urology                                     | 2   | MEDC 556 Fundamentals of Drug Discovery II<br>or MEDC 541 Survey of Molecular Modeling Methods  |
| PHAR 609  | Clinical Therapeutics Module: Reproductive Health, Dermatology, EENT, Bone and Joint | 3.5 | MEDC 601 Advanced Medicinal Chemistry I   |
| PHAR 615  | Continuous Professional Development II   | 1   | Concentration electives (six of nine credits satisfied by Pharm.D. electives) <sup>1</sup>  |
| PHAR 618  | Clinical Therapeutics Module: Gastrointestinal/Nutrition                             | 2.5 | Pharmaceutics concentration (14 credits)  |
| PHAR 640  | Foundations V  | 1.5 | BIOS 543 Graduate Research Methods I<br>or STAT 543 Statistical Methods I   |
| PHAR 645  | Foundations VI   | 1.5 | PCEU 612 Advanced Physical Pharmacy and Biopharmaceutics  |
| PHAR 652  | Health Promotion and Communication in Pharmacy Practice                              | 2   | PCEU 625 Pharmaceutical Analysis  |
| PHAR 702  | Pharmacy Practice Management   | 2.5 | PCEU 690 Pharmaceutics Research Seminar (one credit per semester)   |
| PHAR 703  | Clinical Therapeutics Module: Complex Patient Cases and Critical Care                | 3.5 | Concentration electives (six of eight credits satisfied by Pharm.D. electives) <sup>1</sup>   |
| PHAR 715  | Continuous Professional Development III  | 1   | Pharmacoeconomics and health outcomes concentration (12 credits)  |
| PHAR 724  | Pharmacy Law   | 2.5 | BIOS 544 Graduate Research Methods II<br>or STAT 544 Statistical Methods II   |
| PHAR 730  | Continuous Professional Development IV   | .5  | PHAR 637 Introduction to Research Methods in Pharmaceutical Sciences  |
| PHAR 760  | Acute Care Pharmacy Practice I   | 5   | PHAR 638 Pharmaceutical Benefit Management  |
| PHAR 761  | Advanced Hospital Pharmacy Practice  | 5   | PHAR 671 Applied Pharmacoeconomics and Outcomes Research  |
| PHAR 763  | Ambulatory Care Pharmacy Practice  | 5   | Concentration electives (six of 10 credits satisfied by Pharm.D. electives) <sup>1</sup>  |
| PHAR 765  | Elective I (satisfies directed research in Ph.D.)                                    | 5   | Pharmacotherapy concentration (nine credits)  |
| PHAR 766  | Elective II (satisfies directed research in Ph.D.)                                   | 5   | BIOS 544 Graduate Research Methods II<br>or STAT 544 Statistical Methods II   |
| PHAR 767  | Clinical Selective I   | 5   | PHAR 626 Advanced Pharmacotherapy Research Methods  |
| PHAR 768  | Advanced Community Pharmacy Practice   | 5   | PHAR 637 Introduction to Research Methods in Pharmaceutical Sciences  |
| PHAR 773  | Acute Care Pharmacy Practice II  | 5   | Concentration electives (six of 13 credits satisfied by Pharm.D. electives) <sup>1</sup>  |
| PHTX 606  | Introduction to Pharmacology of Therapeutic Agents                                   | 1   | • Directed research (minimum) <sup>2</sup> 30   |
| Electives (satisfies six credits of Ph.D. electives)                  |  | 8   | Select directed research course appropriate to concentration; 10 credits satisfied by PHAR 765 and PHAR 766 in Pharm.D.   |
| <b>Ph.D. requirements</b>   |  |     | <b>Total Hours 192.5</b>  |
| • Ph.D. core requirements   |  |     | <b>The minimum number of credit hours required for this dual degree is 192.5.</b>   |
| OVPR 601  | Scientific Integrity   | 1   | <sup>1</sup>  |
| or OVPR 602   | Responsible Scientific Conduct   |     | The elective courses taken will generally be selected from a list identified by the major adviser and will be agreed upon by the major adviser and student. These electives may include courses outside the department. |
| or OVPR 603   | Responsible Conduct of Research  |     | <sup>2</sup>  |
| PSCI 607  | Introduction to Pharmaceutical Sciences From Bench to Shelf                          | 2   |   |
| PSCI 614  | Research Techniques  | 1   |   |
| PSCI 690  | Seminars in the Pharmaceutical Sciences (one credit per semester)                    | 4   |   |
| • Concentration and electives requirements (select one concentration) |  | 22  |   |

Students will select MEDC 697, PCEU 697 or PHAR 697, as appropriate for the concentration.

## Plan of study

Students in the dual degree program spend the first two years (P1-P2) in the professional Pharm.D. curriculum. Years three and four (P3/G1-P4/G2) students continue in the Pharm.D. professional curriculum and begin graduate course work by taking core or elective graduate courses as Pharm.D. electives (applied toward six credits of didactic Ph.D. credits) and two elective APPEs (applied toward 10 credits of their Ph.D. research credits). The Pharm.D. degree is conferred in year four when Pharm.D. requirements are completed. Years five and beyond (G3-G5), students engage in graduate course work and Ph.D. research to complete the Ph.D. degree requirements.

### Contact

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**Program website:** [pharmacy.vcu.edu/programs/pharmd/dual-degrees/pharmdphd/](https://pharmacy.vcu.edu/programs/pharmd/dual-degrees/pharmdphd/) (<https://pharmacy.vcu.edu/programs/pharmd/dual-degrees/pharmdphd/>)