Pharmacy Technology Overview

The CRC Pharmacy Technology Program includes didactic, laboratory, and practicum components that are structured to facilitate the achievement of educational and career goals. Pharmacy technicians are skilled technical health workers who perform a wide variety of pharmacy related tasks under the direct supervision of a registered pharmacist. Successful completion of the program not only qualifies students for registration with the California State Board of Pharmacy but also prepares graduates for entry-level pharmacy technician positions. The program is accredited by the American Society of Health-System Pharmacists.

Pharmacy Technology

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Associate Degree

A.S. in Pharmacy Technology

The CRC Pharmacy Technology Program includes didactic, laboratory, and practicum components that are structured to facilitate the achievement of educational and career goals. Pharmacy technicians are skilled technical health workers who perform a wide variety of pharmacy related tasks under the direct supervision of a registered pharmacist. Successful completion of the program not only prepares graduates to participate in taking the Pharmacy Technician Certification Exam (PTCE) but also qualifies students for licensure and registration with the California State Board of Pharmacy and be employed as entry-level pharmacy technician. The program has obtained a 6 year Accreditation Status conferred by the American Society of Health System Pharmacists (ASHP) and the Accreditation Council of Pharmaceutical Education (ACPE).

Catalog Date: June 1, 2020

Degree Requirements

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<thead>
<tr>
<th>COURSE CODE</th>
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<th>UNITS</th>
</tr>
</thead>
</table>

1st Semester (Fall):
<table>
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<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHARM 300</td>
<td>Introduction to Pharmacy Practice</td>
<td>3</td>
</tr>
</tbody>
</table>

**2nd Semester (Spring):**

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<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>PHARM 315</td>
<td>Pharmaceutical Calculations</td>
<td>3</td>
</tr>
<tr>
<td>PHARM 320</td>
<td>Pharmacology of Therapeutic Agents</td>
<td>5</td>
</tr>
</tbody>
</table>

**3rd Semester (Fall):**

<table>
<thead>
<tr>
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<th>COURSE TITLE</th>
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</thead>
<tbody>
<tr>
<td>PHARM 350</td>
<td>Pharmaceutical Information Management</td>
<td>3</td>
</tr>
<tr>
<td>PHARM 360</td>
<td>Retail Operation of Pharmaceutical Practice</td>
<td>3</td>
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<tr>
<td>PHARM 380</td>
<td>Preparation of Sterile Products</td>
<td>3</td>
</tr>
<tr>
<td>PHARM 400</td>
<td>Pharmacy Technician Profession</td>
<td>1</td>
</tr>
</tbody>
</table>

**4th Semester (Spring):**

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<thead>
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<td>PHARM 410</td>
<td>Acute Care Practicum</td>
<td>4</td>
</tr>
<tr>
<td>PHARM 420</td>
<td>Retail Practicum</td>
<td>2</td>
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<tr>
<td>COMM 301</td>
<td>Introduction to Public Speaking</td>
<td>3²</td>
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**Total Units:** 30

1. Course can be taken prior to admission into the Pharmacy Technology Program.
2. Course can be taken prior to admission into the Pharmacy Technology Program.

The Pharmacy Technology Associate in Science (A.S.) degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See CRC graduation requirements.

**Enrollment Eligibility**

To be eligible for enrollment in the program, the student must meet the following criteria:

- The American Society of Health System Pharmacists requires that all students in the program must have a high school diploma or G.E.D.
- Students may enter PHARM 300 and AH 120 without formal acceptance into the Pharmacy Technology Program, however in order to qualify for official acceptance into the Pharmacy Technology Program, and proceed forward to complete the hands-on laboratory training (PHARM 350, 360, 380) and externship training (PHARM 410, 420), students must complete the following prerequisite courses with a grade of a C or higher: AH 120 (corequisites BIOL 102 & AH 110), PHARM 300, PHARM 315 and PHARM 320.
- The American Society of Health System Pharmacists requires that all students must be successful in passing a Background Check prior to official acceptance into the Pharmacy Technology Training Program.

**Enrollment Process**

Eligible students are selected for the program according to the following steps:

- Students should complete all the prerequisite courses with a C grade or better to meet the minimum requirement for acceptance to the Pharmacy Technology Program.
- Qualified students should submit an Application Form electronically and a hard copy to the Pharmacy Technology Program Director after gaining instructor permission for enrollment in the Pharm 315 & 320 classes. Students will be formally notified by a Letter of Acceptance to the Pharmacy Technology Program. Applications will be made available in the Careers and Technology area office.

**Student Learning Outcomes**

Upon completion of this program, the student will be able to:

- PSLO 1: Application of the federal, state, and local laws; regulations and professional standards to pharmacy practice.
- PSLO 2: Analysis of the role of the Pharmacy Technician in distributive pharmacy.
- PSLO 3: Demonstrate the comprehension of knowledge pertaining to human anatomy, physiology, and pharmacology.
- PSLO 4: Perform math function, dosage calculation and compounding techniques.
- PSLO 5: Demonstrate ethical and professional conduct in all job-related activities.
- PSLO 6: Design and relate messages for effective and appropriate oral and written communication.

**Career Information**

Businesses that will make up the potential market for CRC's Pharmacy Technician graduates include hospitals; pharmacies/drug stores; grocery stores; department stores; state government; local government; and other general merchandise stores in the region. Retail pharmacies are expected to experience the largest growth in pharmacy technician jobs over the next ten years and will most likely benefit the most from a Pharmacy Technician degree program in the region.

**Pharmacy Technology (PHARM) Courses**

**PHARM 300 Introduction to Pharmacy Practice**

| Units: | 3 |
| Hours: | 54 hours LEC |
| Prerequisite: | None. |
This course introduces the concepts of direct pharmaceutical patient care and the technicians' role in its delivery. Current direct patient care delivery system and medication distribution systems are emphasized. Topics include dosage calculations, the influence that medication laws, standards and regulations have on practice, and quality assurance in the pharmaceutical setting.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- SLO 1: Understand the role of the Pharmacy Technician in collecting, organizing, evaluating, distributing and storing pharmaceutical goods or services for direct pharmaceutical therapy.
- Explain "direct patient care" and how it is delivered in the various care settings.
- Describe the various systems used to distribute medications.
- Explain the technician's role in preventing and detecting medication errors.
- SLO 2: Understand the federal, state, and local laws; regulations and professional standards related to pharmacy practice.
- SLO 3: Perform math operations, dosage calculations and compounding techniques.
- Explain the pharmacy technician activities associated with measuring, preparation and packaging of medications.

PHARM 315 Pharmaceutical Calculations

Units: 3
Hours: 45 hours LEC; 27 hours LAB
Prerequisite: MATH 100 and PHARM 300 with grades of "C" or better
Corequisite: PHARM 320
Transferable: CSU
Catalog Date: June 1, 2020

This course presents the mathematical concepts and practical experience required for students to pass the math portion of the Pharmacy Technician Certification Examination. Through lecture demonstrations and practice problem sets, students will learn the skills essential for calculating and preparing pharmaceutical dosages in both community and institutional pharmacy settings.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- SLO 1: Understand and perform mathematical calculation methods necessary for daily operational duties in a community or institutional pharmacy.
  a) Determine and validate accurately the drug amount & percentage strength of active ingredient(s) for a given extemporaneous or sterile compounding prescription.
  b) Interpret a given prescription to calculate accurately the dosage amount needed, and conversion of metric system to common household measurement units in the daily processing of a prescription.
  c) Calculate price, profit and discount, and perform other financial calculations relating to insurance reimbursement and business operation of a pharmacy.
- SLO 2: Solve equations and inequalities which come from applied problems and critical thinking.
  a) Interpret accurately from a given word problem (situational) and translate to a mathematical equation to obtain an unknown from the given known variables.
  b) Understand the use of the principles of ratio, proportionality and dimensional analysis as a method to derive an answer for the unknown in a given problem.
- SLO 3: Perform special calculations in compounding which involve admixtures of various concentrations and dilutions.
  a) Perform alligation method of determining portions of stock preparations to compound a prescribed percentage strength of a pharmaceutical product not available commercially.
  b) Determine accurately the least measurable quantity and aliquot measurements in compounding admixtures of a prescription solution or suspension.

PHARM 320 Pharmacology of Therapeutic Agents

Units: 5
Hours: 81 hours LEC; 27 hours LAB
Prerequisite: AH 120 and PHARM 300 with grades of "C" or better
Corequisite: PHARM 315
Advisory: LIBR 318
Transferable: CSU
Catalog Date: June 1, 2020

This course studies the anatomy and physiology of the various human body systems. Students will learn the use and side effects of prescription medications, nonprescription medications, and alternative therapies commonly used to treat diseases affecting the nervous, musculoskeletal, immune, dermatological, hematologic cardiovascular, respiratory, reproductive, gastrointestinal, renal system as well as the eye, ear, nose and throat. This course covers brand and generic names of the therapeutic agents studied, standard pronunciation, dosage forms, routes of administration, medical abbreviation and the role of the Food and Drug Administration in herbal and dietary supplements. The laboratory activities are designed to provide hands-on experiences in pharmacy calculation and compounding medications related to the various body systems.

Student Learning Outcomes

Upon completion of this course, the student will be able to:
PHARM 350 Pharmaceutical Information Management

This course reviews how state laws and regulations determine the activities associated with the collection of patient-specific information by the pharmacy technician. Students learn to secure information from the medical chart, record, patient profile, patient, caregiver, database and health care professional. Technologies used for storing, accessing and recording pharmacy data and proper methods for receiving and authenticating prescription orders are emphasized. Students will also learn safety in medication use and monitoring program of medication therapy and the pharmacy technician's role in the prevention and reporting of medication misadventures. The lab provides hands-on experience with pharmacy distribution software, technology, and prescription processing.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- SLO 1: Analyze the role of the Pharmacy Technician in distributive pharmacy.
- Efficiently secure the prescribe medication or devices from inventory.
- Efficiently and accurately collect pertinent information for use by the pharmacist.
- Identify the need for a referral to pharmacist.
- Accurately create a new patient profile to an established procedure.
- SLO 2: Demonstrate knowledge in federal, state, and local laws; regulations; and professional standards.
- Demonstrate appropriate collection of patient information.
- Apply established laws and protocols to select the appropriate product.
- Apply established protocol to assemble appropriate patient information materials.
- Apply established policies and procedures for recording the preparation of pharmaceutical products.
- SLO 3: Design and relate messages for effective and appropriate oral and written communication.
- Communicate effectively orally and in writing.
- Effectively utilize credible resources.
- Demonstrate skills in the use of technology and internet.

PHARM 360 Retail Operation of Pharmaceutical Practice

This course reviews the process of pharmaceutical purchasing and acquisitions in the retail settings and in emergency situations. Students will learn inventory control including handling of receipts, storage, removal, and documentation. Other topics include: methods of distribution with emphasis on computer database maintenance and the state laws that govern these activities, billing, collection of payment, third-party payment, and the technician's role in the assisting the PharmD in immunization administration. The lab will provide hands-on experience in a simulated retail environment.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- SLO 1: Collect, organize, and evaluate pharmaceutical goods or services for direct patient care, medication use review, or pharmaceutical therapy.
- Process the correct medication, equipment, device, or supplies to the correct patient or patient's representative.
- Monitor utilization of medications to assure that use is congruent with the prescription order for the patient.
- SLO 2: Analyze the role of the Pharmacy Technician in distributive pharmacy.
- Apply the established procedure for processing pharmaceutical purchases.
- Describe various methods of inventory control.
- Apply the established policies and procedures for receiving goods.
- Describe the proper procedures for storage of pharmaceutical goods, equipments, devices and supplies.
- Apply the established policies and procedures for inspecting and removing expired, discontinued, or recalled pharmaceuticals and supplies.
- Apply the established policies and procedures to deter theft and/or medication diversion.
- Systematize the processing of third-party, Medicare and Medicaid payment for prescription orders.
- SLO 3: Apply the federal, state, and local laws; regulations and professional standards to pharmacy practice.
- Apply the established policies and procedures to maintain a record of controlled substances received, stored, and removed from inventory.
- Explain how state laws and regulations determine what activities associated with the administration of immunizations can be delegated by pharmacists to technicians.
- SLO 4: Design and relate messages for effective and appropriate oral and written communication.
- Organize written and oral communication in a logical manner.
- Address all communication on a level appropriate for the audience.
- Demonstrate proficiency with word processing, spreadsheet, and database software.

PHARM 380 Preparation of Sterile Products

Units: 3
Hours: 27 hours LEC; 81 hours LAB
Prerequisite: PHARM 300 and 315 with grades of "C" or better
Corequisite: PHARM 370
Transferable: CSU
Catalog Date: June 1, 2020

This course presents a general study of the usual technician functions associated with an institutional drug distribution system. Students will learn the state laws and regulations pertaining to preparation and dispensing of pharmaceutical products. Hands-on training in medication order processing, pharmacy patient profile maintenance, medication preparation, and inpatient drug distribution using manual and automated systems. Extemporaneous preparations in an inpatient pharmacy with emphasis on aseptic techniques and use of the laminar flow hood in the preparation of sterile products. Includes history of sterile products and parenteral therapy, characteristics of sterile products and sterile products calculations. Also includes introduction to total parenteral nutrition, chemotherapy and hazardous drugs.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- SLO 1: Understand the role of the Pharmacy Technician in distributive pharmacy.
- Apply safety policies and procedures in securing, preparing and packaging of prescribed medications.
- Apply safety policies and procedures in the disposal of all hazardous and non hazardous wastes generated during medication preparation.
- Apply manufacturer's recommendation and/or pharmacy's guidelines for storage of all medications prior to distribution.
- SLO 2: Understand the federal, state, and local laws; regulations and professional standards related to pharmacy practice.
- Apply established laws and protocols to select the appropriate product.
- Apply protocol to assemble appropriate patient information materials.
- Apply established policies and procedures for recording the preparation of bulk, unit dose and controlled substances.
- Assess the correctness of medications produced by other technicians.
- SLO 3: Perform math operations and dosage calculations for institutional facilities
- Accurately calculate parenteral dosages
- SLO 4: Demonstrate the correct techniques and procedure for preparing, packaging and storing parenteral admixtures.
- Demonstrate the proper technique for manipulating syringes, needles, vials and ampules.
- Identify the different types of laminar-flow hoods and state their functions.
- Apply manufacturer's guidelines in trouble-shooting and maintaining equipment and devices used in the preparation and dispensing of medications.
- Demonstrate appropriate skills in compounding sterile products.
- Demonstrate appropriate skills in compounding cytotoxic and other hazardous medication products.

PHARM 400 Pharmacy Technician Profession

Units: 1
Hours: 18 hours LEC
Prerequisite: PHARM 315 and 320 with grades of "C" or better
Transferable: CSU
Catalog Date: June 1, 2020

This course prepares the student for employment as a pharmacy technician. Students learn the scope of practice of a pharmacy technician. Students will also learn professional ethics, attitudes, values, and beliefs of successful pharmacy technicians. Emphasis is placed on projecting an image appropriate to the profession and effective interpersonal relationships with other health care professionals and the appreciation for certification and active involvement in local, state, and national technician organizations.

Student Learning Outcomes
Upon completion of this course, the student will be able to:

- SLO 1: Collect, organize, and evaluate pharmaceutical goods or services for direct patient care, medication use review, or pharmaceutical therapy.
- Discuss the responsibility of a Pharmacy Technician for improving direct patient care.
- Explain the concept of workflow management.
- SLO 2: Demonstrate ethical and professional conduct in all job-related activities.
- Define ethics and compare it with laws.
- Explain ethical codes that pertain to the work function of pharmacists.
- Discuss appropriate and professional appearance.
- Apply personal self-control and professional decorum.
- Explain the necessity and methods for technicians to stay current with advances in pharmacy practices.
- Devise an effective plan for minimizing stress and balancing professional and personal obligations.
- Explain the benefits and the principles of change management.
- Explain the process by which pharmacy technicians can become certified.
- SLO 3: Design and relate messages for effective and appropriate oral and written communication.
- Use effective negotiation skills to resolve conflicts.
- Demonstrate consistent use of a systematic approach to problem solving and consensus building.
- Use effective interpersonal skills to manage working relationships.

PHARM 410 Acute Care Practicum

**Units:**
4

**Hours:**
240 hours LAB

**Prerequisites:**
PHARM 350, 380, and 400 with grades of "C" or better

**Transferable:**
CSU

**Catalog Date:**
June 1, 2020

This course develops practical skills in the didactic and practicum phases of pharmacy technician training in the acute and home care environment. Acute care includes hospital and/or long-term care facilities. Home care includes exposure to infusion therapy. The clinical experience is performed under professional supervision. A preceptor (Licensed Pharmacist or Certified Pharmacy Technician) evaluates the student's performance at the site. Students will directly interact with clients and other healthcare professionals. Students must have a TB clearance and any other immunization required by the clinical facility. Students must have an established Agency Agreement on file with the faculty with a sponsoring site prior to the beginning of the first day of class. Contact the Careers and Technology Main Office for information about the Agency Agreement.

**Student Learning Outcomes**

Upon completion of this course, the student will be able to:

- SLO 1: Collect, organize, and evaluate pharmaceutical goods or services for direct patient care, medication use review, or pharmaceutical therapy.
- Collect pertinent patient information for use by the pharmacist.
- Receive and process prescription/medication orders.
- SLO 2: Analyze the role of the Pharmacy Technician in distributive pharmacy.
- Apply established policies and procedures for purchasing pharmaceuticals, devices, and supplies.
- Apply established policies and procedures for removing expired, discontinued, recalled items, and/or pharmaceuticals from inventory.
- Apply established policies and procedures for documenting repackaging items or pharmaceuticals.
- SLO 3: Demonstrate knowledge in federal, state, and local laws; regulations; and professional standards.
- Apply established policies/procedures for monitoring the practice site and/or service area for compliance with federal, state, local laws, regulations and professional standards.
- Apply the principles of quality assurance to all technician activities.
- SLO 4: Demonstrate knowledge of human anatomy and physiology and pharmacology.
- Monitor utilization of medications to assure that use is congruent with the prescription.
- Identify potential for adverse medical event and participate in the formulation of a strategy for prevention.
- SLO 5: Perform math calculations, dosage calculations and compounding techniques
- Calibrate the weighing or counting device, compounding or pump accurately.
- Maintain, troubleshoot, and use electronic devices appropriately.
- Perform selected monitoring procedures (finger-stick, cholesterol screening, blood pressure, pulse).
- SLO 6: Demonstrate ethical and professional conduct in all job-related activities
- Act ethically in the conduct of all job-related activities
- Consistently maintain personal self-control and professional decorum
- Observe legal and ethical guidelines for safeguarding the confidentiality of patient information
- SLO 7: Design and relate messages for effective and appropriate oral and written communication.
- Organize all written or oral communication in a logical manner and pronounce technical terms correctly.
- Address all communication on the level appropriate for the audience.
- Demonstrate skills in the use of computer, word processing, computerized medication information databases, and internet.

PHARM 420 Retail Practicum

**Units:**
2
This course develops the practical skills for pharmacy technicians in a community/retail environment. The clinical experience is performed under professional supervision. A preceptor (Licensed Pharmacist or Certified Pharmacy Technician) evaluates the student's performance at the site. Students will directly interact with clients and other health care professionals. Students must have a TB clearance and any other immunization required by the clinical facility. Students must have an established Agency Agreement with a sponsoring site on file with the faculty prior to the beginning of the first day of class. Contact the Careers and Technology Main Office for information about the Agency Agreement.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- SLO 1: Collect, organize, and evaluate pharmaceutical goods or services for direct patient care, medication use review, or pharmaceutical therapy.
- Collect pertinent patient information for use by the pharmacist.
- Receive and process prescription/medication orders.
- SLO 2: Analyze the role of the Pharmacy Technician in distributive pharmacy.
- Determine payment due for medication orders.
- Demonstrate sensitivity to patient's concern regarding third party payment coverage and further actions to be taken.
- Record the receipt of payment for pharmaceutical goods and services.
- Apply established policies and procedures for purchasing pharmaceuticals, devices, and supplies.
- Apply established policies and procedures for removing expired, discontinued, recalled items, and/or pharmaceuticals from inventory.
- Apply established policies and procedures for documenting repackaging items or pharmaceuticals.
- SLO 3: Demonstrate knowledge in federal, state, and local laws; regulations; and professional standards.
- Apply established policies/procedures for monitoring the practice site and/or service area for compliance with federal, state, local laws, regulations and professional standards.
- Apply the principles of quality assurance to all technician activities.
- SLO 4: Demonstrate knowledge of human anatomy and physiology and pharmacology.
- Monitor utilization of medications to assure that use is congruent with the prescription.
- Identify potential for adverse medical event and participate in the formulation of a strategy for prevention.
- SLO 5: Perform math calculations, dosage calculations and compounding techniques
- Calibrate the weighing or counting device, compounder or pump accurately.
- Maintain, troubleshoot, and use electronic devices appropriately.
- Perform selected monitoring procedures (finger-stick, cholesterol screening, blood pressure, pulse).
- SLO 6: Demonstrate ethical and professional conduct in all job-related activities
- Act ethically in the conduct of all job-related activities
- Consistently maintain personal self-control and professional decorum
- Observe legal and ethical guidelines for safeguarding the confidentiality of patient information
- SLO 7: Design and relate messages for effective and appropriate oral and written communication.
- Organize all written or oral communication in a logical manner and pronounce technical terms correctly.
- Address all communication on the level appropriate for the audience.
- Demonstrate skills in the use of computer, word processing, computerized medication information databases, and internet.