Pharmacy Technology
| Cosumnes River College

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.

Dean: Collin Pregliasco
Program Director: Veneece Awad

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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 qualifies students for 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
<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1st Semester (Fall):</strong></td>
<td>Pharam 300</td>
<td>Introduction to Pharmacy Practice</td>
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<tr>
<td><strong>2nd Semester (Spring):</strong></td>
<td>PHARM 315</td>
<td>Pharmaceutical Calculations</td>
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<td></td>
<td>PHARM 320</td>
<td>Pharmacology of Therapeutic Agents</td>
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<tr>
<td><strong>3rd Semester (Fall):</strong></td>
<td>PHARM 350</td>
<td>Pharmaceutical Information Management</td>
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<td></td>
<td>PHARM 360</td>
<td>Retail Operation of Pharmaceutical Practice</td>
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<td></td>
<td>PHARM 380</td>
<td>Preparation of Pharmaceutical Products</td>
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<td></td>
<td>PHARM 400</td>
<td>Pharmacy Technician Profession</td>
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<tr>
<td><strong>4th Semester (Spring):</strong></td>
<td>PHARM 410</td>
<td>Acute Care Practicum</td>
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<td></td>
<td>PHARM 420</td>
<td>Retail Practicum</td>
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<tr>
<td></td>
<td>COMM 301</td>
<td>Introduction to Public Speaking</td>
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</table>

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.
Pharmacy Technology (PHARM)

PHARM 300 Introduction to Pharmacy Practice

<table>
<thead>
<tr>
<th>Units:</th>
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<tbody>
<tr>
<td>Hours:</td>
<td>54 hours LEC</td>
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<tr>
<td>Prerequisite:</td>
<td>None.</td>
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<tr>
<td>Transferable:</td>
<td>CSU</td>
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<tr>
<td>Catalog Date:</td>
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</table>

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.
- 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.
- SLO 4: Demonstrate ethical and professional conduct in all job-related activities.
- SLO 5: Design and relate messages for effective and appropriate oral and written communication.

PHARM 315 Pharmaceutical Calculations

<table>
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<tr>
<th>Units:</th>
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<tbody>
<tr>
<td>Hours:</td>
<td>45 hours LEC, 27 hours LAB</td>
</tr>
<tr>
<td>Prerequisite:</td>
<td>MATH 100 and PHARM 300 with grades of &quot;C&quot; or better</td>
</tr>
<tr>
<td>Corequisite:</td>
<td>PHARM 320</td>
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<tr>
<td>Transferable:</td>
<td>CSU</td>
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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:

- 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.
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:

- SLO 1: Demonstrate knowledge in federal, state, and local laws; regulations; and professional standards.
- Explain the role of the Food and Drug Administration.
- Describe how state laws and regulations determine the role and scope of practice for the pharmacy technician.
- Describe quality assurance methods in pharmacy.
- SLO 2: Demonstrate knowledge of human anatomy and physiology and pharmacology.
- State the definitions of medical terms commonly used in the range of patient care setting.
- Describe the basic anatomy of the nervous, skeletal, muscular immune, endocrine, dermatological, and hematologic system.
- Describe the application of pharmaceuticals in treating conditions of the various body systems.
- Determine the dosage forms of prescription and non-prescription medications commonly used to treat diseases of the various body systems.
- SLO 3: Perform math operations, dosage calculations and compounding techniques.
- Calculate the proper dose and strength for compounding medications.
- Demonstrate proper compounding techniques.
- Demonstrate proper preparation and labeling of repackaged medications.
- Accurately calculate expiration date for medications.
- Accurately measure out various forms of medication.
- Demonstrate proper use of lab equipments.
- Demonstrate accurate record keeping.
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.
PHARM 380 Preparation of Pharmaceutical Products

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

This course presents the methods of preparing non-compounded, compounded, non-sterile, and sterile products for distribution. Students will learn the state laws and regulations that determine the role of a pharmacy technician in measuring, preparing, packaging, and storing of medications. Medication preparation, profiling, calculation, measuring, safety, labeling and quality assurance procedures will be emphasized.

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.
- Secure the prescribed medications or devices from inventory.
- Complete dosage forms as specified by the prescription order.
- Apply safety policies and procedures in the preparation and packaging of all medications.
- Apply safety policies and procedures in the disposal of all hazardous and non-hazardous wastes generated during medication preparation.
- Apply established procedures to generate accurate and complete product labels.
- Apply manufacturer's recommendation and/or pharmacy's guidelines for storage of all medications prior to distribution.
- Compound non-sterile products.
- Compound sterile products.
- Compound cytotoxic and other hazardous medication products.
- SLO 2: Understand the federal, state, and local laws; regulations and professional standards related to pharmacy practice.
- Explain how state laws and regulations determine what activities associated with preparing medications for distribution can be delegated to the technicians.
- 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, special doses of medications for immediate or in anticipation of future use.
- Assess the correctness of medications produced by other technicians.
- SLO 3: Perform math operations, dosage calculations and compounding techniques.
- Clean laminar flow biological safety cabinets appropriately.
- Calibrate device, compounder or pump appropriately.
- Apply manufacturer's guidelines in trouble-shooting, maintaining, and repairing electronic devices used by the pharmacy in the preparation and dispensing of medications.

### 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 benefits of obtaining technician certification.
- 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  
**Prerequisite:** 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 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 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, 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.

PHARM 420 Retail Practicum

| Units | 2 |
| Hours | 120 hours LAB |
| Prerequisite | PHARM 350, 360, and 400 with grades of "C" or better |
| Transferable | CSU |
| Catalog Date | June 1, 2020 |

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.

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Program Director, Pharmacy Technology

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