

**Note:** The certificate of achievement is awarded only to students who possess an associate or higher degree in any major prior to completing the paralegal program.

- \* 60 or more hours of on-the-job work experience internship, paid or volunteer, are required in the LEGL 290–293 series. Program faculty and Student Employment assist students with placements, which can consist of as few as four hours per week for students working full-time. Students who are presently employed in a law office may use their employment to fulfill their requirement. These hours must be spread over a minimum of two semesters and can include summer work. The instructor must approve the work experience for application to the program.
- \*\* Native speakers from a Spanish-speaking country who have finished high school or the equivalent in that country will have satisfied the Spanish language requirement. Students who have completed high school in the United States and have completed the fourth-year level of Spanish will have satisfied the Spanish language requirement.

**Note:** The Paralegal Studies Program prepares students to work under the supervision of an attorney in accordance with California law. A paralegal may not engage in the unauthorized practice of law by accepting cases, giving legal advice, appearing in court or setting fees for clients. To do so would be a crime in the state of California.

# PHARMACEUTICAL AND LABORATORY SCIENCE

## SCHOOL OF MATHEMATICS, SCIENCE, AND ENGINEERING

**DEAN:** Michael Odu, Ph.D., Office 215A, 619-482-6344

**FACULTY:** David R. Brown, Ph.D.; David Hecht, Ph.D.;

Tinh-Alfredo V. Khuong, Ph. D.; Joann Um, Ph.D

**DEPARTMENT CHAIR:** Jeff Veal, Ph.D.

### GENERAL DESCRIPTION

The chemical industry is diverse, vast, and touches nearly every aspect of our lives on a daily basis. Pharmaceutical and laboratory science is a discipline in which chemical principles are applied to solve problems or produce materials in a wide range of fields in the areas of high-technology, consumer products, and healthcare. An education in pharmaceutical and laboratory science provides the skills and knowledge essential to carry out the tasks necessary to push forward the progress of the multi-billion dollar chemical industry, including hands-on experience with state-of-the-art analytical instrumentation, small molecule synthesis, computational methods, and protein electrophoresis and purification.

### CAREER OPTIONS

The San Diego region is home to one of the highest concentrations of pharmaceutical, biotechnology, and other chemistry-based industries in the United States. An ever-increasing demand for skilled chemical technicians exists in the local job market. Graduates of the program will have gained the knowledge and skills necessary to perform many of the key laboratory tasks undertaken in a variety of industrial settings where research and development and/or manufacturing take place. Chemical technicians provide valuable support in companies involved in drug discovery, environmental and forensics analyses, development of new materials, petroleum refining, and the manufacturing of plastics, electronic materials, textiles, paints, foods and beverages, and cosmetics, among many others.

### DEGREE/CERTIFICATE OPTIONS

### MAJOR CODE

#### Associate in Science Degree: Career Technical

Pharmaceutical and Laboratory Science	A1532
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#### Certificate of Achievement

Pharmaceutical and Laboratory Science	A1533
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Consult with a counselor to develop a Student Education Plan (SEP), which lists the courses necessary to achieve your academic goal.

Website for Pharmaceutical and Laboratory Science major:  
<http://www.swccd.edu/~chemtech>



## ASSOCIATE IN SCIENCE DEGREE

PHARMACEUTICAL AND  
LABORATORY SCIENCE ASSOCIATE IN SCIENCE DEGREE  
CAREER/TECHNICAL (MAJOR CODE: A1532)

Composed of a comprehensive collection of instructional and laboratory experiences directed toward readying graduates for entry-level positions in a wide variety of chemistry-based industries such as pharmaceutical, biotechnology, paints and coatings, and electronic materials. The program curriculum is structured to equip students with many of the technical skills and competencies identified by the American Chemical Society as essential in the preparation of well-trained chemical technicians.

## Program Student Learning Outcome Statement:

- The student will be able to apply knowledge and skills acquired from courses in chemistry to solve problems connected to the pharmaceutical industry.

## PREREQUISITES

MATH 121	Applied Calculus I (3)	
	OR	3–5
MATH 250	Analytic Geometry and Calculus I (5)	
CHEM 200	General Chemistry I	5
CHEM 210	General Chemistry II	5
<b>Total units</b>		<b>13–15</b>

## FIRST SEMESTER

CHEM 150	Introduction to Chemical Technology	2
CHEM 180	Computational Methods in Chemistry	2
MATH 122	Applied Calculus II (3)	
	OR	3–4
MATH 251	Analytic Geometry and Calculus II (4)	
PHYS 170	College Physics I (3)	
	OR	3
PHYS 270	Principles of Physics I (3)	
PHYS 171	College Physics Laboratory I (1)	
	OR	1
PHYS 271	Principles of Physics Laboratory I (1)	

## SECOND SEMESTER

CHEM 190	Chemical Health and Safety	2
PHYS 172	College Physics II (3)	
	AND	
PHYS 173	College Physics Laboratory II (1)	
	OR	4
PHYS 272	Principles of Physics II (3)	
	AND	
PHYS 273	Principles of Physics Laboratory II (1)	

## THIRD SEMESTER

CHEM 240	Organic Chemistry I	5
CHEM 250	Analytical Chemistry	5

## FOURTH SEMESTER

CHEM 160	Introductory Biochemistry	3
CHEM 242	Organic Chemistry II	5
CHEM 244	Organic Analysis and Spectroscopy	2

<b>Total units</b>	<b>37–38</b>
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To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

## CERTIFICATE

PHARMACEUTICAL AND  
LABORATORY SCIENCE

## CERTIFICATE OF ACHIEVEMENT

## CAREER/TECHNICAL (MAJOR CODE: A1533)

## Program Student Learning Outcome Statement:

- The student will be able to apply knowledge and skills acquired from courses in chemistry to solve problems connected to the pharmaceutical industry.

## GAINFUL EMPLOYMENT:

The U.S. Department of Education requires colleges to disclose a variety of information for any financial aid eligible program that “prepares students for gainful employment in a recognized occupation.”

Students who complete this program will have acquired the necessary analytical tools to successfully secure gainful employment in the field of study.

For more information regarding the data provided for this program and what it means to you as a student, please feel free to visit our SWC Gainful Employment website at: [www.swccd.edu/gainfulemployment](http://www.swccd.edu/gainfulemployment).



**FIRST SEMESTER**

CHEM 150	Introduction to Chemical Technology	2
CHEM 180	Computational Methods in Chemistry	2
MATH 122	Applied Calculus II (3) OR	3-4
MATH 251	Analytic geometry and Calculus II (4)	
PHYS 170	College Physics I (3) OR	3
PHYS 270	Principles of Physics I (3)	
PHYS 171	College Physics Laboratory I (1) OR	1
PHYS 271	Principles of Physics Laboratory I (1)	

**SECOND SEMESTER**

CHEM 190	Chemical Health and Safety	2
PHYS 172	College Physics II (3) AND	
PHYS 173	College Physics Laboratory II (1) OR	4
PHYS 272	Principles of Physics II (3) AND	
PHYS 273	Principles of Physics Laboratory II (1)	

**THIRD SEMESTER**

CHEM 240	Organic Chemistry I	5
CHEM 250	Analytical Chemistry	5

**FOURTH SEMESTER**

CHEM 160	Introductory Biochemistry	3
CHEM 242	Organic Chemistry II	5
CHEM 244	Organic Analysis and Spectroscopy	2

**Total units** **37-38**

# PHILOSOPHY

## SCHOOL OF LANGUAGE, LITERATURE, AND HUMANITIES

**DEAN:** Joel M. Levine, Ed.D., Office 430F, 619-482-6349

**FACULTY:** Peter Bolland, M.A., Alejandro Orozco, M.A.;  
Luke Cuddy, M.A.

**DEPARTMENT CHAIR:** Peter Bolland, M.A.

**GENERAL DESCRIPTION**

Philosophy, humanity's oldest intellectual discipline, explores fundamental questions about the nature of thought and existence from various perspectives. This discipline explores the scope and limits of human knowledge, the ultimate constituents of reality, the sources of value and obligation, and the nature of logic and correct reasoning. Through philosophy, one may think about and develop perspectives on topics as diverse as science, language, logic, truth, ethics, politics, and law.

**CAREER OPTIONS**

Below is a sample of the career options available for the philosophy major. A few of these require an associate degree, some require a bachelor's degree, and most require a graduate-level degree: lawyer, government administrator or personnel, labor relations specialist, minister, publisher, literary critic, research assistant, educational researcher, ethics specialist, high school or college instructor, writer, business manager, journalist, and educational broadcaster.

**DEGREE/CERTIFICATE OPTIONS****MAJOR CODE****Associate in Arts Degree: Transfer Preparation**

Philosophy	01830
Philosophy (SB1440)	01835

Consult with a counselor to develop a Student Education Plan (SEP), which lists the courses necessary to achieve your academic goal.

## ASSOCIATE IN ARTS DEGREE

## PHILOSOPHY

**ASSOCIATE IN ARTS DEGREE****TRANSFER PREPARATION \* (MAJOR CODE: 01830)**

The lower-division requirements give both the philosophy major and the general education student an excellent vehicle for refining his/her skills in critical reasoning and rational decision making. The application of philosophical ideas to the practical problems of life is an essential part of the curriculum. Philosophy majors who plan a career in teaching at the college or university level must complete a bachelor's degree and a graduate-level degree.

**Program Student Learning Outcome Statement:**

- Recognize, analyze, evaluate, and critique philosophical ideas and apply them in decision-making.

PHIL 101	Introduction to Philosophy	3
PHIL 103	Logic and Critical Thinking	3
PHIL 106	World Religions	3
PHIL 120	Ethics: Theory and Practice	3

**Complete 6 units from electives** **6**

**Total units** **18**

**Electives:** HUM 101 and 102 or HUM 104 and 140.

SDSU also requires three consecutive courses in a single foreign language as part of the requirement for the bachelor's degree. Foreign language competency may also be demonstrated by successfully completing four years of one foreign language in high school or by successfully completing a challenge examination. See a counselor for additional information.

