



SCHOOL OF HEALTH AND HUMAN SERVICES

# BACHELOR OF SCIENCE IN CLINICAL LABORATORY SCIENCE

## Improve Human Health with Scientific Research

As a clinical laboratory scientist, you'll have the opportunity to conduct research, often using clinical trials, with the goal of improving overall human health. A Bachelor of Science in Clinical Laboratory Science from National University gives you the education needed for this role with the ability to complete your degree online and at your own pace. You'll learn to develop methods, instruments, and procedures for medical applications and data analysis, and to prepare and analyze medical samples.

The program includes all the necessary prerequisites for your application to the Laboratory Field Services Branch of the California Department of Health for a trainee license. After you successfully complete the CLS training, you can apply for the exam for licensure as a Clinical Laboratory Scientist.

### Program highlights:

- Entire program can be completed online
- Assess clinical laboratory practice and procedure by applying both technical skills and theory
- Identify problems in the clinical laboratory and develop a plan to mitigate them
- Explore the range of laboratory methods that include advanced analytics, immunology, microbiology, hematology, and molecular science
- Conduct research both to develop new treatments and to try to prevent health problems
- Produce written work following industry standards to document your findings

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UNIVERSITY**

## MAJOR IN CLINICAL LABORATORY SCIENCE

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The Bachelor of Science in Clinical Laboratory Sciences provides students with diverse laboratory skills and prepares them for employment in a clinical or research setting. The program is designed to increase knowledge of the human body in health and disease with courses that include biochemistry, virology, immunology, physiology, chemistry, microbiology, hematology, quantitative analysis, and molecular diagnostics. Graduates with a degree in clinical laboratory sciences may choose to find employment in areas such as clinical diagnostics, clinical research, medical device industry, or pursue advanced degrees in healthcare-related fields of study.

This degree is also designed for students interested in becoming a licensed clinical laboratory scientist in the state of California. Students with this interest should review the requirements to obtain a trainee license from the Laboratory Field Services Branch of the California Department of Health at the website below: <https://www.cdph.ca.gov/Programs/OSPHLD/LFS/Pages/CLS-Trainee.aspx>

### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Assess clinical laboratory practice and procedure by applying the knowledge of technical skills and theory obtained.
- Identify problems in the clinical laboratory and establish a course of action to correct them.
- Distinguish among laboratory methods which use advanced analytical, immunological, microbiological, hematological, and molecular techniques.
- Evaluate laboratory procedure theory, methodology and results.
- Utilize critical thinking skills in clinical laboratory situations.
- Conduct research using primary literature sources.
- Produce written work of the standards required by employers in the industry or post-graduate programs.

### Degree Requirements

To receive the Bachelor of Science degree with a Major in Clinical Laboratory Science, students must complete at least 180 quarter units as articulated below, 45 of which must be completed in residence at National University. upper-division level must consist of 76.5 quarter units and General Education must be a minimum of 70.5 quarter units. Refer to the section on undergraduate admission procedures for specific information regarding admission and evaluation. All students receiving an undergraduate degree in Nevada are required by state law to complete a course in Nevada Constitution.

### Preparation for the Major

(11 courses; 40.5 quarter units)

BIO 161*	General Biology 1
BIO 201*	Human Anatomy & Physiol I <i>Recommended: Prior completion of: BIO 100, BIO 100A, CHE 101 and CHE 101A or equivalent courses.</i>
BIO 201A*	Human Anatomy & Physiol Lab I (1.5 quarter units) <i>Prerequisite: BIO 201</i>
BIO 203*	Introductory Microbiology <i>Recommended: Prior completion of: BIO 201 and BIO 201A, BIO 202 and BIO 202A, BIO 100 and BIO 100A, CHE 101 and CHE 101A or equivalent courses</i>
BIO 203A*	Introductory Microbiology Lab (1.5 quarter units) <i>Prerequisite: BIO 203</i>
CHE 150	Introductory Organic Chemistry <i>Prerequisite: CHE 101 and CHE 101A, or CHE 141, CHE 142, CHE 143 and CHE 149A</i>
CHE 150A	Introductory Organic Chem Lab (1.5 quarter units) <i>Prerequisite: CHE 150</i>
CHE 141*	General Chemistry 1 <i>Prerequisite: MTH 215 or equivalent and CHE 101</i>
CHE 142*	General Chemistry 2 <i>Prerequisite: CHE 141</i>
CHE 350	Organic Chemistry I <i>Prerequisite: CHE 142</i>
PHS 104*	Introductory Physics <i>Prerequisite: 2 years of high school algebra, and MTH 204 or MTH 215 or MTH 216A and MTH 216B</i>

\* May be used to meet a General Education requirement.

### Core Requirements

(11 courses; 49.5 quarter units)

BST 322	Intro to Biomedical Statistics
HSC 300	Legal/Ethical Issues & Hlth. Pr.
CLS 320	Clinical Lab Management
CLS 301	Clinical Biochemistry <i>Recommended: Prior completion of: CHE 142</i>
CLS 401	Quantitative Analysis <i>Recommended: Prior completion of: CHE 142</i>
CLS 305	Clinical Immunology <i>Recommended: Prior completion of: CHE 101, BIO 161 and BIO 203 or equivalent</i>
CLS 315	Molecular Diagnostics <i>Recommended: Prior completion of: BIO 162 and CHE 142</i>
CLS 310	Clinical Virology <i>Recommended: Prior completion of: CHE 101, BIO 161 and BIO 203 or equivalent</i>
CLS 405	Clinical Microbiology <i>Recommended Preparation: CLS 301 with a minimum grade of B, CLS 305 with a minimum grade of B and CLS 315 with a minimum grade of B</i>
CLS 410	Clinical Hematology <i>Recommended Preparation: CLS 301 with a minimum grade of B, CLS 315 with a minimum grade of B and CLS 305 with a minimum grade of B</i>
CLS 495	Clinical Lab Science Capstone <i>Prerequisite: Must have completed all required core classes.</i>

### Upper-Division Electives

(7 courses; 31.5 quarter units)

Students must complete a minimum of 31.5 quarter units of upper-division electives to fulfill the upper-division unit requirements for the BS with a Major in Clinical Laboratory Science.

The following courses are strongly recommended:

COM 354	Professional Presentations <i>Prerequisite: ENG 101</i>
HSC 410	Informatics for Health Profs.
HSC 400	Mgmt. for Health Professionals
HSC 310	Issues & Trends in Healthcare
HSC 420	Healthcare Research