

CLINICAL LABORATORY SCIENCE

This is a four-year program of mostly biology and chemistry followed by a one-year hospital laboratory internship. It prepares a student for a career working in a hospital diagnostic lab.

The program below meets all requirements for a BS degree in biology and satisfies the California Trainee License requirements. Some modifications are possible with advising.

Course Number	Course Title	Units
BIOL 1A, 1B/1BL	Introductory Biology	8
BIOL 101	General Ecology	4
BIOL 102	Genetics	3
BIOL 103	Cellular Biology	3
BIOL 104	Genetics and Cellular Biology Lab	1
BIOL 105	Evolution	3
BIOL 120	Microbiology	4
BIOL 157 (157L optional)	Immunology	3
BIOL 160	Microbial Physiology	4
BIOL 121	Medical Microbiology	3
BIOL 164	Hematology	3
BIOL 131 or 119	Parasitology or Virology (optional)	4 or 3
CHEM 1A/AL & 1B/BL	General Chemistry	10
CHEM 128A/B & 129A	Organic Chemistry (better option)	8
Or – CHEM 8 & 129A	Organic Chemistry (will work but not preferred)	5
CHEM 150	Biochemistry	3
CHEM 105	Quantitative Analysis Laboratory	4
PHYS 2A/2B	General Physics	8
MATH 70 or 75	Calculus	4
MATH 101 or PSYCH 42	Statistics	4
General Education		51

You **must** take three upper division lab courses, normally BIOL 120, 157/157L, and 160. However, if you are unable to get a space in the immunology lab (157L), then you can take 131 as your third lab course. Both tend to fill rapidly. In either case, you **must** take 157 because the state requires at least immunology lecture.

After you finish your B.S. degree, you should apply to the state for a CLS trainee license.

The CLS trainee license allows you to apply to the hospitals of your choice for admission to the one-year internship. Many hospitals take one trainee every six months. The cost ranges from free to several thousand dollars.

Children's Hospital and Fresno Community Hospital are free, but they are currently accepting only in-house applicants. All other programs have varying amounts of fees. Some of them have become quite expensive.

Important State of California web site you should consult! It is a recently rewritten site and has all the important links that you need.

<https://www.cdph.ca.gov/Programs/OSPHLD/LFS/Pages/ClinicalLaboratoryPersonnel.aspx>

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HOSPITAL MEDICAL TECHNOLOGY AS A CAREER

Hospitals have recently begun offering training for diagnostic laboratory technicians. The establishment of these training programs is due to the fact that significant retirements will be occurring soon. A hospital like Children's Hospital employs about 100 Clinical Laboratory Scientists (CLS) so the number of CLS needed state wide is going to be substantial.

Why should you consider Clinical Laboratory Science as a career? There are several reasons why this could be an attractive option for you.

1. You may be able to get all of your training right in the Fresno area. The Biology Department at California State University Fresno offers the state-required courses that you must have to enter the hospital training program. Right now, there are two hospitals in Fresno/Madera offering in-house laboratory training. Many other local hospitals have at least part of their training in the Bay Area and you will pay for training at an associated university.
2. Because Clinical Laboratory Scientists are in short supply, salaries have increased significantly in recent years. Current starting salaries average about \$50,000 a year and top salaries after 10 years are about \$80,000.
3. Finally, a career as a CLS has an extremely favorable cost benefit ratio as compared to some other medically-related careers. Going to medical, dental, or pharmacy school involves three or four years of training. CLS hospital internships last one year. After graduation from professional school, a person can easily have \$200,000 of schooling debt. Currently, two valley CLS training programs are free. Other internship programs vary in cost, some economical and some expensive. Medical, dental, and pharmacy salaries are much higher than CLS salaries but have to be in order to cover significant debt.

There are a few other things to think about. If you are a "people person" then CLS is may not be attractive to you. CLS is laboratory work. While you are surrounded by numerous coworkers in the lab and frequent conversation is possible, interaction with people is not the primary focus of your work. You also need to be willing to work nights or weekends at least some of the time. A hospital lab needs to be available 24 hours 7 days a week.

A well prepared high school student will take the following courses: One year of biology, chemistry and physics, four years of math up through calculus, and four years of English.

A well prepared community college student will take freshman biology, chemistry, physics, and one semester of calculus.

In both high school and community college, human anatomy and physiology courses should be considered optional; physics, if it is available, is more important.

Clinical Lab Assistant jobs are available in most hospital clinical laboratories. Contact your local hospital about these jobs. Working in a lab is a good way to see if CLS is a good career choice for you. The lab gets to know you too. It may increase chances of internship acceptance.