

## Clinical Science: Medical Technology Option Success Sheet

<b>Course Requirements</b>	<p>+ Course has a pre-requisite of CHE 108 or Chemistry Placement Exam            * These are pre-clinical courses from which grade point averages are calculated to determine clinical placement eligibility. They must have been taken within the last five years in the United States.</p> <p><b>Lower Division Requirements:</b>            BIO 120/121 Principles of Biology I (3) with Laboratory (1)+            BIO 122/123 Principles of Biology II (3) with Laboratory (1)            BIO 250 Elements of Human Anatomy and Physiology (3)            BIO 220 Molecular Biology (3)            CHE 110 General Chemistry I with Laboratory (5)+            CHE 112 General Chemistry II with Laboratory (5)            CHE 230 Quantitative Analysis with Laboratory (4)*            HEA 201 Health Perspectives (3)            MAT 131 Elementary Statistics and Probability (3)</p> <p><b>Upper Division Requirements:</b>            CHE 316/317 Survey Organic Chemistry (3) with Laboratory (1)            CLS 301 Introduction to Clinical Laboratory Procedures (2)*            CLS 304 Clinical Urinalysis/Body Fluids (3)*            CLS 306 Clinical Immunology and Immunohematology with Laboratory (4)*            CLS 307 Clinical Hematology with Laboratory (4)*            CLS 308 Pathophysiology for Health Professions (3)*            CLS 401 Overview: Virology/Mycology (2)*            BIO 324/325 Microbiology with Clinical Applications (3) with Laboratory (1)            BIO 425/435 Medical Bacteriology (3) with Laboratory (1)*            BIO 458/459 Human Parasitology (3) with Laboratory (1)*            CHE 450/451 Biochemistry I (4) with Laboratory I (1)            CHE 456 Clinical Chemistry with Laboratory (3)*</p>
<b>Notes</b>	<ul style="list-style-type: none"> <li>✓ California state licensure for CLS Medical Technology requires that <b>3 units in Physics</b>, including <i>light and electricity</i>, be completed before issuing the clinical trainee license. <b>PHY 100</b> may be used to clear this requirement. This class is optional for graduation but required for practice.</li> <li>✓ Students need permission numbers for <i>all</i> CLS courses from the <b>Clinical Science Department</b>.</li> <li>✓ If a student requires a permission number for a Biology course, <b>email <a href="mailto:biology@csudh.edu">biology@csudh.edu</a></b>.</li> <li>✓ If a student requires a permission number for a Chemistry course, <b>email the class instructor</b>.</li> </ul>
<b>Advice</b>	<ul style="list-style-type: none"> <li>✓ Take Organic Chemistry as soon as possible because it is an essential pre-requisite for BIO 324/325 Microbiology and BIO 458/459 Parasitology as there is a 2 semester-long waitlist and must contact the Biology Department on the 6th week of the Fall Semester only to get onto it. Must complete Organic Chemistry or have it in progress to get onto this waitlist.</li> <li>✓ The Clinical Science Department will not accept a Microbiology course from another institution as a course substitution for BIO 324/325 Microbiology.</li> <li>✓ Join the Clinical Science Club to receive important updates and resources and make connections with other students, staff, and faculty in the department.</li> <li>✓ Keep up your GPA, obtain relevant lab experience and network with academic/field professionals as eventually you will need to obtain Letters of Recommendation to help prepare you for your application into the Clinical Internship. You have 3 attempts to get in!</li> <li>✓ There is NOT a race to finishing your degree requirements. Your grades are CRITICAL for the internship. Do not overwhelm yourself with lecture and lab units!</li> <li>✓ It is <i>essential</i> that students frequently check their Toromail!</li> <li>✓ Meet with an Advisor at least once per semester.</li> </ul>

### A. Lower Division Requirements (34 units)

BIO 120/121L	Principles of Biology I (3) with Laboratory (1)	<b>Pre-requisite:</b> Students must pass CHE 108 <b>OR</b> pass Chemistry Placement Exam at CSUDH; <i>there is no course equivalent for CHE 108 at CA CC, must take it at CSUDH.</i> The Biology department will accept General Chemistry I (CHE 110) as fulfilling the pre-requisite requirement for BIO 120/121. If you completed General Chemistry I at a CA CC, please request a permission number from the Biology Department.
BIO 122/123L	Principles of Biology II (3) with Laboratory (1)	<b>Pre-requisite:</b> BIO 120/121L or equivalent
BIO 250	Elements of Human Anatomy and Physiology (3)	<b>Pre-requisite:</b> BIO 120/121L or equivalent ✓ <i>Note: No lab required.</i>
BIO 220	Molecular Biology (3)	<b>Pre-requisite:</b> BIO 120/121L, 122/123L and CHE 110 ✓ <i>Note: No lab required. CLS majors must contact the Biology Department for a Permission # to enroll into the class section that does not require the BIO 221 lab.</i>
CHE 110	General Chemistry I with Laboratory (5)	<b>Pre-requisite:</b> Students must pass CHE 108 <b>OR</b> pass Chemistry Placement Exam at DH ✓ <i>Note: There is no course equivalent for CHE 108 at CA CC, must take it at CSUDH.</i>
CHE 112	General Chemistry II with Laboratory (5)	<b>Pre-requisite:</b> CHE 112 or equivalent with a grade of "C" or better ✓ <i>Note: CSUDH will only accept General Chemistry I and II as a sequence. If you took General Chemistry I at another institution, you must complete the series at the same institution OR take CHE 110 and CHE 112 at CSUDH.</i>
CHE 230*	Quantitative Analysis with Laboratory (4)	<b>Pre-requisite:</b> CHE 112 or equivalent with a grade of "C" or better <b>OR</b> approved transfer sequence.
HEA 201	Health Perspectives (3)	
MAT 131	Elementary Statistics and Probability (3)	✓ <i>Note: Some students have taken MAT 132 or MAT 134, which can be used in place of MAT 131.</i>

### B. Upper-Division Requirements (42 units)

CHE 316/317L	Survey of Organic Chemistry (3) with Laboratory (1)	<b>Pre-requisite:</b> CHE 112 or equivalent with a grade of "C" or better ✓ <i>Note: If you have 2 semesters of Organic Chemistry w/ a lab at CA Community College, contact the CLS Advisor.</i>
CLS 301*	Introduction to Clinical Laboratory Procedures (2)	<b>Pre-requisite:</b> BIO 122/123L ✓ <i>Note: Permission number required.</i> ✓ <i>Recommendation: Complete BIO 250 &amp; CHE 110 before enrolling.</i>
CLS 304*	Clinical Urinalysis/Body Fluids (3)	<b>Pre-requisite:</b> BIO 122/123L & CHE 112 ✓ <i>Note: Permission number required.</i> ✓ <i>Recommendation: Complete BIO 250 &amp; CLS 301 before enrolling.</i>
CLS 306*	Clinical Immunology and Immunohematology with Laboratory (4)	<b>Pre-requisite:</b> CLS 301 ✓ <i>Note: Permission number required.</i> ✓ <i>Recommendation: Take during final year. Separate from CLS 307.</i>
CLS 307*	Clinical Hematology with Laboratory (4)	<b>Pre-requisite:</b> CLS 301 ✓ <i>Note: Permission number required.</i> ✓ <i>Recommendation: Complete CLS 304. Separate from CLS 306.</i>
CLS 308*	Pathophysiology for Health Professions (3)	<b>Pre-requisite:</b> BIO 250 & CHE 112 ✓ <i>Note: Permission number required.</i> ✓ <i>Recommendation: Complete CLS 301 before enrolling.</i>

CLS 401*	Overview: Virology/Mycology (2)	<b>Pre-requisite:</b> BIO 324/325 ✓ Note: Permission number required. ✓ Note: Offered once a year in the Spring Semester only.
BIO 324/325L	Microbiology with Clinical Applications (3) with Laboratory (1)	<b>Pre-requisite:</b> BIO 122/123L & Organic Chemistry ✓ Note: This course has a 2 semester-long waitlist and you must contact the Biology Department on the 6 <sup>th</sup> week of the Fall Semester to get onto it. Completion or Fall enrollment of BIO 120/121, 122/123 and Organic Chemistry required. ✓ Note: Offered once a year in the Fall Semester only.
BIO 425/435L*	Medical Bacteriology (2) with Laboratory (2)	<b>Pre-requisite:</b> BIO 324/325L ✓ Note: Once you pass BIO 324/325, you are automatically considered for BIO 425/435. ✓ Note: Offered once a year in the Spring Semester only.
BIO 458/459L*	Human Parasitology (3) with Laboratory (1)	<b>Pre-requisite:</b> BIO 122/123L ✓ Note: This course has a 2 semester-long waitlist and must contact the Biology Department on the 6 <sup>th</sup> week of the Fall Semester only to get onto it. Completion or Fall enrollment of BIO 120/121 & 122/123 required.
CHE 450/451L	Biochemistry I (4) with Laboratory I (1)	<b>Pre-requisite:</b> CHE 230 and Organic Chemistry or equivalent with a grade of "C" or better
CHE 456*	Clinical Chemistry with Laboratory (3)	<b>Pre-requisite:</b> CHE 450/451L or equivalent with a grade of "C" or better

\* **Note:** These are pre-clinical courses from which grade point averages are calculated to determine clinical placement eligibility. They must have been taken within the last five years in the United States.

### COURSE SEMESTER AVAILABILITY & NOTES

	Spring Only	Fall Only	Summer+	1-Year Waitlist	Pre-Clinical*	
Misc.	MAT 131+ MAT 132+ MAT 134+	HEA 201+	PHY 100	GE's+ (and Winter)		
CLS	301*	304*+	306*	307*+	308*  401*	
CHE	108+	110+	112+	230*	316 & 317L 450 & 451L 456*	
BIO	120 & 121L	122 & 123L	250	220+	324 & 325L 425* & 435L*+	458* & 459L*+ (PostBacs take CLS 595* in Spring only)
BIO (Cytotech.)	124 & 125L	320*+	340*	422* & 424* 326 & 327L (can use as replacement for 324 & 325L)		