STEM coursework that transfers to the Biology BS program at California State University San Bernardino (2020-2021)

Course subject		General biology sequence for majors with lab [1]	General chemistry sequence for majors with lab		Organic Chemistry with lab [2]		Calculus	General physics sequence with lab [3]		Alternate Physics sequence [4]
STEM classes for Biology majors at CSUSB		BIOL 2010 BIOL 2020	CHEM 2100, 2100L	CHEM 2200, 2200L	CHEM 2400, 2400L	CHEM 2500, 2500L	MATH 2210	PHYS 2000, 2000L	PHYS 2010, 2010L	PHYS 2500, 2500L PHYS 2510, 2510L PHYS 2700
Equivalent courses at various Community Colleges	**Barstow Community College**	BIOL 20A BIOL 20B	CHEM 2A	CHEM 2B	CHEM 3A	CHEM 3B	MATH 4A	PHYS 4A	n/a [5]	
	Chaffey College	BIOL 61 BIOL 62 BIOL 63	CHEM 24A	CHEM 24B	CHEM 75A	CHEM 75B	MATH 65A	PHYS 30A	PHYS 30B	PHYS 45, 46, 47
	College of the Desert	BI 5 BI 6	CH 1A	CH 1B	CH 10A	CH 10B	MATH 1A	PHYS 3A	PHYS 3B	
	Crafton Hills College	BIOL 130 or 130H BIOL 131 or 131H	CHEM 150 or 150H	CHEM 151 or 151H	CHEM 212	CHEM 213	MATH 250	PHYS 250, 251, 252		
	Mt. San Antonio College	BIOL 2 BIOL 4 or 4H	CHEM 50 or 50H	CHEM 51 or 51H	CHEM 80	CHEM 81	MATH 180	PHYS 6A, 6B		PHYS 4A, 4B, 4C
	Mt. San Jacinto College	BIOL 150 or 150H BIOL 151 or 151H	CHEM 101	CHEM 102	CHEM 112	CHEM 113	MATH 211	PHYS 201, 202, 203		
	Riverside City College (incl. MVC and Norco)	BIO 61 BIO 62	CHE 1A or 1AH	CHE 1B or 1BH	CHE 12A	CHE 12B	MAT 1A	PHYS 2A	PHYS 2B	PHYS 4A, 4B, 4C
	San Bernardino Valley College	BIOL 205 BIOL 206 BIOL 207	CHEM 150 or 150H	CHEM 151 or 151H	CHEM 212 or 212H	CHEM 213 or 213H	MATH 250	PHYS 150A	PHYS 150B	
	Victor Valley College	BIOL 201 BIOL 202 BIOL 203	CHEM 201	CHEM 202	CHEM 281	CHEM 282	MATH 226 or 226H	PHYS 221	PHYS 222	

Notes:

1. BIOL courses transferred to CSUSB often do not articulate as individual courses. Transfer students are strongly advised to complete the biology sequence at their community college before transferring to CSUSB.
2. Biology students at CSUSB have different options for completing their 2nd year of chemistry requirement beyond a year of organic chemistry. Contact the CSUSB Biology Dept. for more information.
3. Students whose community college campus has a three-semester physics sequence are strongly advised to complete their physics sequence at their community college campus before transferring to CSUSB.
4. This is usually for physics and engineering majors and is generally not recommended for biology majors.
5. As of this writing (Mar 2020), the Barstow Community College catalog does not list a second physics course.

Information on transferrable courses used to generate the table above is available at the www.assist.org website. Brief directions on using this resource are listed below.

- Go to the website https://www.assist.org
- In the "Transfer Information" window, enter your current institution and the institution you might want to transfer to (CSUSB or elsewhere) using the pulldown menus and click on the "View Agreements" button. Leave the Academic Year set to the latest available year for now.
- Then select the Department that you want to find transferrable courses from by clicking on the appropriate radio button in the menu that appears.
- Then click on the "View Agreement" and/or "Download Agreement" buttons to see transferrable courses.
- If no courses are available, you may have to select a different "Academic year" in the Transfer Information window using the pulldown menu.

FAQs for transfer students planning to major in Biology at California State University San Bernardino

• *What classes should I finish before transferring to CSUSB?* **You should complete as many required *lower-division* science courses as possible before transferring to CSUSB.** 'Lower-division' generally refers to classes for freshmen and sophomores. Such classes will have course titles *below* the 3000-level, and these will include:

- A year-long sequence of Biology for majors (lecture and lab)
- A year-long sequence of General Chemistry for majors (lecture and lab)
- A year-long sequence of Organic Chemistry (lecture and lab)
- A year-long sequence of Physics (lecture and lab)
- The first term of calculus, Calculus I (lecture)

Such a schedule can usually be completed in two years if a student conducts their studies full-time and begins with a solid foundation in math and science from high school. It is also common for a full-time student to take three (3) years to complete the above, due to a variety of factors: 1) you might need to take pre-calculus math classes to get ready for calculus; 2) you might earn a grade below a C in one of the above course sequences, requiring a repeated attempt (see below); 3) the intro sequence for a subject at your community college is three semesters instead of two semesters long; or 4) you are likely to also want to complete a selection of general education (GE) classes before transferring to CSUSB.

• *Is it more important to complete my GE classes or science classes before transferring?* **We strongly encourage students to focus on finishing science prerequisites**. Making some progress on GE courses is helpful, but the main factor that will determine your time to graduation will be how fast you make progress in completing your major. *You must start science classes early*, so prioritize these ahead of GE classes. We frequently encounter students who transfer to CSUSB having pursued the strategy of completing all of their GE requirements and saving their science classes to take after transferring. These students are frustrated to discover that this strategy puts them in a position to graduate after transfer in almost four years instead of two.

• *Does it matter what grades I earn in my science classes before transferring?* **Your grades at community college matter for multiple reasons**:

1) Lower-division science courses (e.g. Principles of Biology, General Chemistry, etc.) are prerequisites for other courses, and a minimum grade is required. It is typical to see in the syllabi and course descriptions of CSUSB Biology and Chemistry classes that they require that you have earned a *minimum grade of C* in a previous class in order to satisfy a prerequisite. To be clear, earning a grade of D will earn you course credit on your transcript, but it will not qualify you to move forward in your science classes. For example, if you completed the two semester sequence of Principles of Biology I and II, earning grades of B+ and D+, respectively, you would not yet be eligible to take Biology classes at the 3000 level; you would need to repeat Principles of Biology II and improve the D+ grade to a C or better.
2) Your grades at community college transfer to CSUSB along with your class credits, so your grade point average (GPA) will not reset. Take your community college classes as seriously as you would classes at CSUSB.

• *Are there Biology classes I should avoid taking at my community college?* **In general, you should not take any Biology classes other than the ones listed in the table of this handout**. The most common examples of non-majors Biology courses that should not be confused for majors courses are non-majors GE Biology, and Microbiology and Human Anatomy & Physiology for allied health majors. You may, of course, take these courses for personal interest or as requirements for professional programs, but they do not count toward your four-year biology degree.

• *What if I only finish a few of the recommended lower-division science classes? Can I still transfer?* **Yes, but any lower-division course requirements you have not yet satisfied will still need to be fulfilled after you arrive at CSUSB**. Of the lower-division requirements, the most important to complete will be **the general biology sequence for majors with lab** and **general chemistry sequence for majors with lab**. These courses are immediate prerequisites for numerous upper-division Biology classes. Organic Chemistry is a prerequisite for a subset of Biology classes. Physics and Calculus are not direct prerequisites for any specific Biology classes, but these must be completed before earning the degree.

• *Is it better to take my science classes at CSUSB instead of my community college?* **We recommend you take required lower-division classes at your community college**. Comparing the academic performance of transfer students with students who complete their lower-division science classes at CSUSB, we observe no difference. Transfer students from community colleges seem to be just as prepared for future success in upper-division Biology classes.

• *Can I interrupt a multi-course sequence at my community college and complete it at CSUSB*? **We strongly advise that students complete course sequences in one institution.** It is simplest and safest to complete an entire sequence at your community college before transferring. Using San Bernardino Valley College (SBVC) as an example: a student should not take only BIOL 205 at SBVC, then transfer to CSUSB. Such a student would be far better off completing BIOL 205, 206, and 207 at SBVC, then transfer.