

*California State University, Fresno*  
*Professional Science Master's in Biotechnology*

BIOTC 275  
Industrial Experience (Internship) Overview

**Professional Science Master's in Biotechnology - Mission**

Biotechnology is a multidisciplinary endeavor that increasingly requires employees fluent in both science and business to enable the development of new technologies and products based on the unique applications of the cellular and molecular life sciences. The Professional Science Master's Degree in Biotechnology at California State University, Fresno offers students, who are fundamentally educated in various scientific disciplines, opportunities to acquire the knowledge and skills required to comprehend and commercialize these emerging technologies and their products.

**Biotechnology Program Goals**

1. Support the mission of California State University, Fresno and the Regional Jobs Initiative.
2. Educate and train students for mid-level and professional careers in biotechnology and related fields locally, nationally, and globally.
3. Strengthen ties between the University and regional businesses, companies, organizations in the biotechnology industry and related fields.
4. Engage more than 20 students into the Biotechnology Professional Master's Program per calendar year.

**Our Biotechnology Graduate Students**

1. Students must possess an appropriate undergraduate science degree with a minimum 3.0 GPA in Science and Math coursework prior to being accepted into the Biotechnology Master's Program.
2. Specific Coursework Requirements (California State University, Fresno equivalent courses). A minimum of three categories of prerequisites is required for admission/classification into the program, but all six categories of courses must be completed prior to awarding of the degree:

General Genetics (BioSc 140A)

Microbiology including a laboratory (Micro 140)

Biochemistry including a laboratory (Chem 150 or 155 and Chem 156)

Immunology including a laboratory (PhyAn 160 and 160L)

Analytical Chemistry (Chem 105 or Chem 102)

Statistics (Math 101)

3. Prior to initiating the Industrial Experience, students must have completed the program's core courses which provide theoretical knowledge of both modern molecular biology and biotechnology and exposure to business fundamentals.

### **The Role of the PSM in Biotechnology Program in the Internship Process**

1. Provides academic and administrative advisement for students engaged into the PSM in Biotechnology program.
2. Provides guidance and coordination to students, faculty, employers and potential employers engaging in the program.
3. Provides individual assistance to students to ensure program requirements are satisfied in a timely manner.
4. Facilitates communications and all paperwork necessary for student enrollment, program development, implementation, and evaluation for students, faculty, potential employers and employers.
5. Monitors the activities of students who are enrolled in BIOTC 275 (Industrial Experience).
6. Provides assistance to students and employers with concerns and issues that arise within the Industrial Experience.

### **Important Details for Sponsors**

**Planning** – Addressing the needs of your student in advance improves the chances for a successful outcome for you and your student. Things to consider include workload expectations in light of the time availability of the project, staff support, office space, and other resources. You may want to research to determine how often your organization can support students and set appropriate timelines. Establishing and communicating the goals of the sponsoring organization for entering into an Industrial Experience partnership also improves the likelihood of a desirable outcome for all parties.

**Effective Hiring** – Equal Employment opportunity laws apply to the hiring of students. You will want to check with your state to see if workers' compensation laws cover interns. Just as you would a regular employee, it is important to provide students with information on your safety and harassment policies, as employers may be held liable for student safety and harassment issues. In general, students fall into an "at will" employment status and may be terminated for poor conduct.

**Provide an initial orientation** to the company and introduce to all personnel to the student they may work with. This helps make the student feel more comfortable and prevents others from wondering "who are you?" in casual encounters. With a designated work

space, the student has a sense of where they can conduct their job responsibilities, and co-workers and administrators know where to locate them.

Specific experience objectives are a good basis to establish what is expected in the overall outcome of the work experience. These objectives are required by the class curriculum and should be developed with the involvement of the supervisor, faculty member, and student so all parties are clear as to the purpose of the project and its anticipated outcomes. Effective learning objectives are concise and measurable.

Appropriate Documentation is very important for effective learning to take place. It is strongly advisable that an employer, student, and academic advisor document mutually agreed upon learning objectives to provide clear direction and targeted goals for the student. This ensures both parties envision the same experience and reduces the possibility of misunderstanding and disappointment.

Outcomes that the student can show to future employers as evidence of their work and accomplishments provide wonderful testimonies to your company, organization or business and helps set the foundation for attracting future students.

Provide opportunities for students to be involved in training and learning experiences. Student should be encouraged to attend training courses and professional meetings, be allowed to sit in on management or staff meetings, and be encouraged to read professional and company publications. Knowing how professionals learn helps the student to develop further.

Effective Supervision – Due to the nature of the Industrial Experience, sufficient supervision is imperative. Time needs to be invested in the student, especially on the front-end to plan for and implement necessary training. It is recommended that the supervisor plan weekly meetings to stay up-to-date with the student's progress. Care should be taken to identify a seasoned staff member who understands the importance of engaging students.

Evaluation – An Industrial Experience can only be a true learning experience if constructive feedback is provided. An effective evaluation will focus on the student's learning objectives that were identified at the start of the Industrial Experience. Supervisors should take time to evaluate both a student's positive accomplishments and weaknesses. If a student is unable to meet their learning objectives, suggestions for improvements should be given.