



TEXAS A&M UNIVERSITY
Master of Biotechnology
Program

BIOT 684
Directed Professional Internship

Professional Portfolio
Handbook

December 2017

INTRODUCTION

BIOT 684 Directed Professional Internship is possibly the most important course in your career as a biotechnology student because it allows you to apply your training and learn from real-world work experiences. The objectives of the internship course are two-fold. First, it is of value because it allows you to use your training to make an identifiable contribution of practical concern to the organization offering the internship. That is, you will be solving a problem or creating a new product or knowledge for the biotech industry. Secondly, this internship will allow you to function in a non-academic environment with a different culture and approach to management, public relations, and other endeavors. This awareness of the work world will give you confidence as you begin the process of seeking a job. And some internships will result in job offers!

The Master of Biotechnology (MBIOT) Program requires a minimum of 10 weeks of full-time employment (40 hours/week) for successful completion of the internship requirement. Internships cannot be for part-time positions, even if the number of weeks worked is extended beyond ten. The internship can be paid or unpaid. Our preference is for students to obtain internship employment in the biotech industry; however, employment at other academic institutions or Texas A&M University affiliates, such as the Institute of Biosciences and Technology or the Office of Technology Commercialization, is acceptable.

The internship is normally scheduled for the summer between the first and second years of study in the program. This is to take advantage of the fact that almost all formal, dedicated internship programs of companies are offered in the summer. There are a limited number of internships and coops offered during the fall and spring semesters for those students unable to obtain a summer internship. Note, however, that a student may not be employed at Texas A&M University as a teaching assistant and serve an internship in the same semester. Students may take a longer coop experience over two semesters, with the second semester of BIOT 684 counting as a program elective, or a student may take a second semester of an elective BIOT 684 at a different site. To be approved, the elective internship must be off-campus, under the supervision of the same faculty chair, and must not cause a delay in graduation past two academic years. Prior to the internship, whether required or elective, the student sets goals for the internship, and these are formalized in the MBIOT Learning Agreement along with a listing of responsibilities for all parties to the agreement.

An additional degree requirement for the MBIOT program is the creation of a professional portfolio. This portfolio contains a section in which you reflect on program competencies and a section reflecting on the internship. Upon completion of your portfolio, you will give a public presentation on your internship experience followed by an oral exam by your faculty committee members. They will quiz you on what you did and the science and business principles behind applications. Students doing two internships at different sites will be required to reflect on both experiences in the portfolio and include both experiences in the presentation given during the final exam.

This handbook is designed to clarify the internship process and to gather in one place all the paperwork and tools needed to create a successful portfolio and presentation. You will find information on obtaining an internship, paperwork requirements, how to write learning objectives, portfolio guidelines, and evaluation of both BIOT 684 and the portfolio examination.

OBTAINING AN INTERNSHIP

One of the biggest mistakes of most students is waiting too long to begin their internship search. Especially in today's economic climate, you need to begin your search nine months before the anticipated start date for the internship. That is, for a summer internship, you must begin searching in your first semester in the program.

The first step in a search is to decide on the *kind* of internship you want. Are you more interested in the business aspects of biotechnology, or do you want to be working at the lab bench doing your magic? Research the different types of jobs and employers in the biotech industry. You can begin this exploration on the web, but I highly recommend you check out the resources offered by the Texas A&M Career Center, located in 209 Koldus Building on main campus. They offer appointments with career counselors, workshops on everything from resume building to job interviews, and an extensive career resources library. Finally the Career Center hosts the annual Sciences Career Fair held each September. Do not miss this opportunity to meet and gather information from industry recruiters that attend the fair.

Early on you should also decide *where* to focus your internship search. Most companies hire interns locally from colleges and universities. So it makes sense to focus intensively on the Austin and Houston biotech markets closest to campus. That said, do not ignore East and West coast areas where the majority of biotech firms are located. If you have family or other contacts in those areas that can share lodging for the tenure of the internship, that is an important consideration. It can allow you to work in areas with high cost-of-living and still make ends meet.

Once you have decided what you would like to do and where you would like to do it, you need to begin networking in earnest. Networking is one of the most effective tools in a job search. Be persistent and pursue any leads that come up. Ask professors, friends, and family for names of people to contact about an internship. Second year and former MBIOT students can be incredibly helpful in your search. If they don't know of anything, ask if they know of someone who could help. Join a professional organization or social networking site. Organizations that have offered internships to BIOT students in the past are more likely to offer internships to our program students again.

Once you have a master list of companies to pursue, rank the companies, and focus your efforts initially only on the top 10-20. Check to make sure they accept interns, and if you are an international student, that the company will sponsor international workers. Find out if the company offers paid or unpaid internships and when their internships are available. Searching for an internship or job takes a lot of time, and it makes sense not to spread yourself too thin in the beginning. If none of your most sought after jobs work out, drop down to other choices. As you research and network, stay organized in your search by keeping a spreadsheet of all the companies you contact, when the contact was made and any resulting follow-up, etc. needed. Please be aware that indiscriminately posting your resume on every biotech website out there will be a waste of your time.

Lastly, pay attention to program emails! We will be sending forward all internship and job announcements we receive from industry contacts plus educational and networking opportunities you won't want to miss. Although this Handbook is designed to include all you'll need to successfully complete BIOT 684, we anticipate that there may be changes in processes external to the program, which will require us to update the information periodically. Be sure to save all program emails in a folder for future reference.

INTERNSHIP PAPERWORK REQUIREMENTS

Before you will be allowed to register for BIOT 684, you will need to complete two documents and return them to the program coordinator via email attachment: 1) the Internship Description Form; and 2) the MBIOT Learning Agreement. The Internship Description Form contains basic information about the internship, such as job title and when and where the internship will take place, plus contact information for the student, mentor and company. We ask that you scan your offer letter and attach it to the same email as your Internship Description Form.

The MBIOT Learning Agreement is a little more complicated. This document provides a listing of all the responsibilities of the various parties—the student, faculty advisor (committee chair), onsite supervisor, and program office—during the internship experience. Furthermore, it provides the nature of the goals of the internship, what we call the “learning objectives.” These are written as broad objectives with specific activities or tasks that will accomplish the objective. How your mentor will evaluate your goals, and deadlines for accomplishing the tasks, are written into the agreement. It is signed by all parties to the agreement and returned to the program coordinator. Like the Internship Description Form, it must be received by the program office before you will be allowed to register for BIOT 684.

Half-way through, and at the conclusions of the internship, your site supervisor will complete an evaluation of your performance. The intent of the evaluations is to provide the student with information that can be used to improve their work, and it also provides a basis for counseling and guidance of the student. Once you and your mentor have signed these evaluations, scan them and send as an email attachment to the program coordinator and to your faculty advisor. Lastly, complete the Student Evaluation of Site. This feedback will ensure that only quality internship sites are offered to students.

International students have some additional paperwork. If the internship is in the summer, off-campus and paid, Curricular Practical Training (CPT) forms must be submitted to International Student Services (ISS) by F-1 students. J-1 (sponsored) students have similar requirements to get permission for off-campus employment. Instructions and forms are at <http://iss.tamu.edu/Current-Students/F-1-Status/Curricular-Practical-Training> If an F-1 international student is completing an internship in the fall or spring, they must submit CPT forms and apply for a full course waiver, either from the Registrar’s Office or ISS, since they will be dropping below the required 9 credit hours of enrollment. Please read the Compliance with Full Time Enrollment Rules section and obtain an F-1 Reduced Course Load form, if necessary.

WRITING LEARNING OBJECTIVES

Stating your learning objectives or goals for your internship experience formally is important because it requires you to examine what you know, what you hope to learn, and how the internship experience will contribute to your future career goals. It is a personal plan for you, but the process is no different than the planning that all successful companies and institutions employ. Thus, the *process* of delineating your learning objectives will give you valuable planning experience, and is one of the learning objectives of the Biotechnology Program.

In devising your learning objectives, you need to think first in terms of broad goals— such as improving your communication skills or learning a new, advanced molecular technique—and then in specific ways that can accomplish that goal. As in all real world, practical planning, you also need to consider *how* you will know you have accomplished the goal. That is, you must be able to *measure* the outcome of the specific activity. This product or contribution to the employer is called a *deliverable*. *When* you need to accomplish a goal is an essential aspect of the planning process; thus, you must set *deadlines*.

Once you have accepted an internship and have an idea of your employer's needs, you will need to formulate your learning objectives to be inserted in the MBIOT Learning Agreement. These learning objectives should incorporate the employer's needs and also any personal growth objectives you have. Begin by sharing your ideas with your faculty advisor. Your faculty advisor (committee chair) should be able to evaluate whether your goals are feasible for a 10 week internship, if they represent new or complementary activities for you, and whether you have written up the objectives properly. Some examples of properly written objectives are given below. Once you have discussed your objectives with your advisor, you need to run these by your site supervisor/mentor for their approval or further revision.

Some examples:

Learning objective: Improvement of presentation skills

Learning activity: Give a 15 minute PowerPoint presentation on the limitations of various cloning techniques to co-workers

Deliverable: Co-workers complete a presentation skills evaluation form; a summary of feedback is included in the portfolio along with the slides

Deadline: End of semester

Learning objective: Improvement of written communication

Learning activity: Create a 500 word article for the summer edition of the company newsletter

Deliverable: The newsletter article is included in the portfolio

Deadline: July 1st

Learning objective: Learn new technical skills

Learning activity: Perform Real-Time PCR on at least 10 samples using an ABI 7700

Deliverable: A detailed protocol for the procedure and results included in portfolio

Deadline: 1 month into internship

Learning objective: Understand company organizational structure and function

Learning activity: Interview at least one person in each division regarding the purpose of the division and its relationship to other divisions

Deliverable: An explanation of functions and a diagram of company organization are included in the portfolio

Deadline: 2 weeks into internship

PROFESSIONAL PORTFOLIO GUIDELINES

The purpose of the portfolio assignment is to gather together in one place all of the accomplishments of your biotechnology career. Much of the portfolio consists of reflection on the skills and competencies you have obtained through coursework, informal learning experiences, and your internship. Having thought about and documented what you have done will be a tremendous help when you are in a job interview. For instance, you will quickly be able to detail times when you solved an ethical problem or worked productively as part of a team to solve a problem.

The MBIOT Program has some specific content requirements for your portfolio. The Portfolio must contain a cover sheet, a table of contents, certain internship preparation documents, a section reflecting on biotechnology program professional competencies, another section reflecting on the internship experience itself, evaluations from the internship, and the PowerPoint presentation slides given at the final exam.

The portfolio should be double-spaced, in 10-12 font, and with numbered pages. Do not include the Internship Description Form containing your UIN. Your portfolio will be available for review by future students and others interested in our program unless you indicate you do not wish to share the contents with others. Once you have completed all editing, send an electronic copy to all your committee members and the program office.

Internship Preparation Documents

The following items should be included:

Resume—2-3 pages max; include educational background, honors or recognition achieved, work experience, special skills, membership in organizations or other relevant information.

References—provide a list of 3-4 people that would be willing to provide a reference for you. These should be people knowledgeable about you professionally and personally. Include all contact information. Examples would be your faculty advisor or other faculty you interacted with and former employers.

MBIOT Learning Agreement—this is the agreement that lists the learning objectives for your internship

Internship Evaluations

Section 1—Reflection on Competencies

You should thoughtfully reflect on your experiences in the biotechnology graduate program. There are several competencies that the BIOT curriculum is designed to develop in our students. These competencies are essential for success in business and other professional endeavors. Upon graduation we expect that students will have:

1. an ability to apply knowledge of advanced biological sciences and to use the scientific techniques and tools necessary for biotechnology practice
2. an ability to apply knowledge and skills of leadership, business and management in the biotechnology profession
3. an ability to analyze and interpret data
4. an ability to function on multidisciplinary teams
5. an ability to identify, formulate, and solve problems important in biotechnology practice
6. an understanding of professional and ethical responsibility
7. an ability to communicate effectively
8. an understanding of the impact of biotechnology practice in a scientific, economic and societal context

For *each* of these program competencies, you should complete a short, 2-3 page essay explaining how you have acquired the competency during your time in the biotechnology program. You may describe experiences from any class and also from student work and organizational experiences at Texas A&M University. For example, you might want to reflect on how you analyzed a problem in biotechnology lab, solved an ethical problem encountered as a teaching assistant, or how you organized and worked as a team on a Biotechnology Society project.

Section 2—Reflection on Internship

Your reflection should begin with an introduction that describes the company or institution where you worked, and what your responsibilities were during the internship. Next examine each of your learning objectives and the activities associated with each goal. Describe the methods or procedures you used and the success or outcomes that followed. Provide the results of your experiments, the protocols you devised, or the newsletter article you produced. Discuss any limitations or failures to attain your goals. If applicable to your situation, you should analyze the accounting, finance, marketing, and management principles you used or observed in action at your internship site. Also be sure to connect concepts learned in classes with your internship experience, and times when you used your teamwork, analytical, and communication skills or knowledge of bioethics. Lastly, critique your experience, consider any additional learning that would be helpful, and give your recommendations for future students interning at your site.

The reflective nature of the portfolio means that you will be mostly describing activities, the outcome of those activities and what you personally learned. If you introduce background information or other materials, be extremely careful to document your sources. If you represent ideas or words from another source as your own, you are committing plagiarism, a serious infraction of the Aggie Honor Code. Many faculty members utilize resources such as turnitin.com to check for plagiarism. If your advisory committee detects plagiarism, depending on the situation, consequences can range from re-submission of your portfolio to failure to meet degree requirements for the MBIOT degree.

BIOT 684 GRADING AND FINAL EXAM BIOT 684

Your grade (S/U) for BIOT 684 will be awarded by your faculty advisor on the basis of satisfactory/unsatisfactory completion of the following: 1) portfolio as described in this handbook; 2) positive site supervisor evaluations; and 3) a PowerPoint presentation of your internship experience. These items will be the basis for your program final exam.

In order to insure confidentiality of data and business initiatives, have your onsite supervisor preview your PowerPoint presentation and contact the program office to verify that they have reviewed the presentation and found no material of a confidential nature. We must have this employer information before the final exam will be allowed to commence.

Because in most instances you will not complete these requirements until the semester following an internship, your instructor will initially assign an incomplete (I) grade for BIOT 684. Once the committee signs off on the final exam, the I grade will be automatically changed to an S grade for BIOT 684.

Please see the following grading rubric for your final exam.



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Final Exam Evaluation Form

Student Name _____

Final Exam Committee Member _____

Please use the following scale: “4” Outstanding, “3” Exceeds Expectations, “2” Meets Expectations, “1” Below Expectations

Please check one box for each question for new graduates according to their ability to:

Student Skills	Scale			
	4	3	2	1
1. apply knowledge of advanced biological sciences and to use the scientific techniques and tools necessary for biotechnology practice				
2. apply knowledge and skills of leadership, business and management in the biotechnology profession				
3. analyze and interpret data				
4. function on multidisciplinary teams				
5. identify, formulate, and solve problems important in biotechnology practice				
6. have an understanding of professional and ethical responsibility				
7. communicate effectively				
8. have an understanding of the impact of biotechnology practice in a scientific, economic and societal context				

Program Final Exam

You must submit a "Request and Announcement of Final Examination" by the semester deadline to the Office of Graduate and Professional Studies <http://ogaps.tamu.edu/>

The request must be received 10 working days before the exam. As you complete sections of your portfolio during the semester, send them to your faculty advisor for editing and revision comments. It is a good idea to discuss deadlines for drafts of the portfolio, which will aid in scheduling time for a thoughtful review of your portfolio and will contribute to a high quality portfolio and learning experience for you. The completed portfolio must be submitted in proper format to all committee members and the program coordinator one week prior to the final oral exam and portfolio presentation.

Creating the professional portfolio is time-consuming. You will likely have other course and work responsibilities, plus you will be preparing for your final oral exam. Thus, it is highly recommended that you complete your reflections on program competencies (section one) *soon after completion of the activity*, and that you submit them to your faculty advisor for comment *during the internship semester*. This kind of advance planning process is the best strategy to produce a high quality portfolio, a friendly committee, and the confidence to shine in a future job interview.

Following the public presentation of your internship experience, your committee will meet alone with you and question you about what you did, why you did it, why it did or didn't work, and technical questions regarding your reagents, media, equipment, and so on. They may ask you about the science and business principles applicable to your work. They may ask about coursework or competencies you discussed in your portfolio and their relationship to your internship. When the committee is satisfied they have enough information to make a decision, you will be excused while the committee decides. If all is satisfactory, the committee will sign off on the exam. If the committee feels you were unprepared and performed poorly, they can request a second examination.



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Internship Description Form

Student	
Name:	
UIN:	
Internship semester:	
Mobile phone:	
e-mail address:	
Company	
Name:	
Address 1:	
Address 2:	
City, state, zip code:	
Web address:	
Telephone:	
Supervisor	
Name:	
Title:	
Telephone:	
e-mail:	
Internship	
Dates:	
Position title:	
Position description:	
Salary:	

Please complete the required information in the second column of the form. As you type in the table it will enlarge the cell to fit the contents. Save your document and send as an e-mail attachment to the program coordinator. Also attach a copy of your internship offer letter.



Learning Agreement

This agreement between _____

(insert student and company names) and the Texas A&M MBIOT Program provides a listing of responsibilities of the various parties involved and the specific learning objectives of the student during the internship experience.

RESPONSIBILITIES UNDER THIS AGREEMENT:

Faculty Advisor (Committee Chair):

- Help formulate the student's learning objectives.
- Meet with the student to provide guidance and support prior to the internship.
- Assess the student's learning based on predetermined objectives and evaluation criteria outlined in the BIOT 684 Internship and Portfolio Handbook.
- Provide telephone and e-mail follow-up as needed throughout the internship to provide guidance and support.

Site Supervisor:

- Help formulate the student's learning objectives.
- Provide direction to help the student achieve the learning objectives.
- Complete a midterm and final evaluation of the student and return forms to the program.
- Assume responsibility for the student's supervision during the internship.
- Review student presentation for confidential material and send memo to the program.

Student:

- Register for BIOT 684 after providing the Internship Description Form, offer letter, and signed Learning Agreement to the program.
- Perform the tasks and responsibilities assigned by your site supervisor.
- Follow the rules and regulations of the business or agency.
- Consult with your faculty advisor regarding any changes or problems that arise during your internship experience.
- Complete the Student Evaluation of Site form and return to the program.

Professional Program in Biotechnology Office:

- Help formulate the student's learning objectives.
- Add section of BIOT 684 for student once paperwork is received.
- Act as a liaison for the university, work site, faculty advisor, and student.
- Assist faculty advisor, site supervisor, and student with any difficulties.

LEARNING OBJECTIVES: (Insert a list of the broad learning objectives you will achieve during your internship, including specific activities, due dates, and evaluation methods that will be used. Set realistic goals that can be documented.)

Your signature means you have read and agreed to the responsibilities listed for your role in this Learning Agreement.

Student Intern _____ Date: _____

Site Supervisor _____ Date: _____

Faculty Advisor/Chair _____ Date: _____

Program Coordinator _____ Date: _____

After obtaining the Faculty Advisor and Site Supervisor signatures, the student should e-mail the MBIOT Learning Agreement as a pdf attachment to the Program Coordinator to sign and distribute.

Midterm Site Supervisor Evaluation of Student Form

Student Name _____

This is a formative evaluation because it is intended to provide information that a student can use to improve his/her work. The supervisor should evaluate and discuss the results with the student midway and at the conclusion of the internship. The evaluation provides a basis for counseling and guidance of the student.

Please use the following scale: “4” Outstanding, “3” Exceeds Expectations, “2” Meets Expectations, “1” Below Expectations

PART I: Please check one box for each question for a MBIOT student according to his/her ability/performance to:

Student Skills	Scale			
	4	3	2	1
1. apply knowledge of advanced biological sciences and use the scientific techniques and tools necessary for biotechnology practice				
2. apply knowledge and skills of leadership, business and management in the biotechnology profession				
3. analyze and interpret data				
4. function on multidisciplinary teams				
5. identify, formulate, and solve problems important in biotechnology practice				
6. have an understanding of professional and ethical responsibility				
7. communicate effectively				
8. have an understanding of the impact of biotechnology practice in a scientific, economic and societal context				

PART II: Please comment on the following:

1. Student's greatest strengths

2. Areas that need improvement

Signatures:

Site Supervisor: _____ **Date** _____

Student Intern: _____ **Date** _____



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Final Site Supervisor Evaluation of Student Form

Student Name _____

This is a formative evaluation because it is intended to provide information that a student can use to improve his/her work. The supervisor should evaluate and discuss the results with the student at the conclusion of the internship.

Please use the following scale: “4” Outstanding, “3” Exceeds Expectations, “2” Meets Expectations, “1” Below Expectations

PART I: Please check one box for each question for a MBIOT student according to his/her ability/performance to:

Student Skills	Scale			
	4	3	2	1
1. apply knowledge of advanced biological sciences and use the scientific techniques and tools necessary for biotechnology practice				
2. apply knowledge and skills of leadership, business and management in the biotechnology profession				
3. analyze and interpret data				
4. function on multidisciplinary teams				
5. identify, formulate, and solve problems important in biotechnology practice				
6. have an understanding of professional and ethical responsibility				
7. communicate effectively				
8. have an understanding of the impact of biotechnology practice in a scientific, economic and societal context				



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Student Evaluation of Site

Please complete this form. We will use your feedback to ensure that only quality internship sites are offered to our students. Save the form and return as an email attachment to the program coordinator at the completion of your internship. Thank you for your response.

Semester:	Date:
Student:	Faculty Advisor:
Onsite mentor:	Organization/Company:

Please use the following rating system to answer questions:

1=Agree, 2=Neutral, 3=Disagree, 4=Not Applicable

A. My internship enhanced my confidence in a non-academic setting.

1 2 3 4

B. The goals and objectives of my internship were sufficiently defined.

1 2 3 4

C. The tasks I performed during my internship closely related to the activities I planned to undertake.

1 2 3 4

D. I was satisfied with the direction and motivation provided by my site mentor.

1 2 3 4

E. I would recommend this site to future students.

1 2 3 4

Any additional comments you would like to share?

Would you be willing to share the benefits of your internship experience with students currently attending Texas A&M University by participating in a panel presentation or other means of communication?

YES NO

Sample Table of Contents

Internship Preparation Documents

Resume
References
MBIOT Learning Agreement

Section 1. Reflection on Professional Competencies

1. an ability to apply knowledge of advanced biological sciences and to use the scientific techniques and tools necessary for biotechnology practice
2. an ability to apply knowledge and skills of leadership, business and management in the biotechnology profession
3. an ability to analyze and interpret data
4. an ability to function on multidisciplinary teams
5. an ability to identify, formulate, and solve problems important in biotechnology practice
6. an understanding of professional and ethical responsibility
7. an ability to communicate effectively
8. an understanding of the impact of biotechnology practice in a scientific, economic and societal context

Section 2. Reflection on Internship

Introduction—Company Description and Responsibilities
Learning Objective 1
Learning Objective 2
Learning Objective 3
Learning Objective 4
Critique and Recommendations

Internship Evaluations

Mid-term Evaluation by Supervisor
Final Evaluation by Supervisor

Internship PowerPoint Presentation Slides