Biotechnology Program Student Expectations and Responsibilities

The MS in Biotechnology program will provide students with marketable skills and qualifications for work in a high-tech industry, as well as the academic foundation necessary to pursue further medical and professional studies.

Our Promise to You

Upon graduation from the MS in Biotechnology program, you will:

- have mastered the techniques of modern biotechnology;

- have an in-depth foundational knowledge of biological and biochemical systems that will enable you to adapt to emerging technologies in the field of biotechnology;

- be a valuable asset to industry and other organizations requiring biotechnology expertise;

- have attained a level of professional integrity and competency integral to biotechnology research, commerce, and ethics;

- be prepared for a career in the biotechnology industry, biomedical research, or for continuation of your education in a Ph.D. or M.D. program;

- have developed critical thinking and problem-solving skills;

- have honed your ability to communicate effectively, both orally and in writing; and,

- be computer literate.

To accomplish these goals, each course and experience in the program is designed to provide you with a combination of marketable skills that in total will make you a valuable asset to any industry or academic program you join. Some of these Marketable Skills that you will gain and hone while in the program are given on the next page. Keep these handy to include in your resume along with any project-specific technologies or techniques you learn while in the program!

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Marketable Skills

TASKS	Maintain accurate laboratory records and data.
	Design molecular or cellular laboratory experiments, oversee their execution, and interpret results.
	Perform laboratory procedures following protocols.
TECHNOLOGY SKILLS	Analytical or scientific software; Graphics or photo imaging software - GraphPad, ImageJ, Adobe; Office suite software - Microsoft Office; Molecular visualization and drug discovery software and processes – PyMol, Autodock Vina, MGL Tools.
BIO-TECHNOLOGY SKILLS	**Basic –** Media and buffer preparation; pipetting; aseptic technique; centrifugation; dialysis; protein and DNA concentration; ELISA; PCR; restriction digest analysis; cellular transformation. **Advanced –** Radiometric methods; chromatography methods; blots (Southern, northern, western); electrophoresis; nucleic acid gel extraction, ligation, gel analysis, isolation and purification; DNA sequencing; DNA computational analysis; sequence alignment and PCR primer design; DNA fingerprinting; mutagenesis; real-time PCR; flow cytometry; cell sorting; enzyme kinetics; amino acid analysis and sequencing; SDS-PAGE; cloning cDNA libraries; fermentation; protein production and expression; microarrays; mass spectrometry; HPLC and GC; proteomics; ultrafiltration; ultracentrifugation.
SKILLS	**Critical Thinking** — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.
	Writing — Communicating effectively in writing as appropriate for the needs of the audience.
	Reading Comprehension — Understanding written sentences and paragraphs in work-related documents.
	Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
ABILITIES	**Written Comprehension** — The ability to read and understand information and ideas presented in writing.
	Written Expression — The ability to communicate information and ideas in writing so others will understand.
	Oral Comprehension — The ability to listen to and understand information and ideas presented through spoken words and sentences.
	Oral Expression — The ability to communicate information and ideas in speaking so others will understand.
	Inductive Reasoning — The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).
WORK ACTIVITIES	**Documenting/Recording Information** — Entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form.
	Getting Information — Observing, receiving, and otherwise obtaining information from all relevant sources.
	Processing Information — Compiling, coding, categorizing, calculating, tabulating, auditing, or verifying information or data.
	Updating and Using Relevant Knowledge — Keeping up-to-date technically and applying new knowledge to your job.
	Analyzing Data or Information — Identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.
WORK CONTEXT	Wear Common Protective or Safety Equipment such as Safety Shoes, Glasses, Gloves, Hearing Protection, or PPE.
	Importance of Being Exact or Accurate

Your Feedback is Important to Us!

During your time in the program, we want your continual feedback to enable us to provide you with the best possible experience and education. We have developed an anonymous survey tool that is available to all Biotechnology students by mobile or desktop devices with internet access so you can provide us with comments, raise concerns, or even provide praise for any aspect of the program 24 hrs/day.

It Takes Two: Your Role

- Remember that you have the primary responsibility for the completion of your degree.

- Your Graduate Research Assistantship (GRA) is considered an internship training opportunity and will give you two years of work-related experience for your resume upon graduation. Make the most of it. A minimum of 20 hours per week time commitment in the lab is expected, with a maximum of 30 hours that may occasionally be required. Some weeks may require more time in the lab in order to complete experiments required for your thesis project. Overall, you should strive to maintain an average of 20 – 30 hours per week in the lab for the duration of your time in the program.

- Don't be afraid to ask questions.

- Follow all lab and research guidelines and complete all required training as may be needed for your research project and your GRA.

- Adhere to program timelines and deadlines as described in *Thesis Research Process – Guide*.

- Learning time-management skills will be the single most important factor for your success.