

Proposal for a Ph.D. Program in Biotechnology New Mexico Institute of Mining and Technology

Executive Summary. New Mexico Institute of Mining and Technology (New Mexico Tech, NMT) proposes a multidisciplinary Ph.D. program in Biotechnology to begin in August 2016. The aim of this novel program is to prepare students at the highest level for careers in research, development, and practical applications of the tools of biotechnology, e.g., biomolecular, biochemical, biomedical and bioengineering approaches, as well as in teaching the principles and techniques of biotechnology. Biotechnology has huge potential for solving societal problems and for creating useful products and processes, thereby also creating economic development. It is fully anticipated that this program will not only expand the biotechnological workforce in New Mexico but will also stimulate bioentrepreneurship. New Mexico Tech has placed this bio-related doctoral degree among its highest priorities in its Strategic Plan for 2015-2020. The new program will fill significant needs in the state of New Mexico and also within New Mexico Tech's research community. The new program will involve the Departments of Biology, Chemistry, Psychology, Computer Science, Mathematics, Earth and Environmental Sciences, Chemical Engineering, Mechanical Engineering, Materials Engineering, Environmental Engineering and Management. Faculty members in each of these departments have solid records in research grantsmanship and in publishing the results of their research. Being a STEM institution and as such both specialized and applied, the academic and research program at New Mexico Tech has very little overlap with New Mexico's other research universities or even at other universities in the region, such as Northern Arizona University and the University of Texas at El Paso. While some fundamental overlap is inevitable, New Mexico Tech's Biotechnology Program aims to complement the research and the coursework offered at the related Ph.D.-granting departments at the University of New Mexico and New Mexico State University. The new program will be a rigorous one, requiring a range of coursework from various disciplines, including four core courses in Biotechnology, along with completion of a significant body of research leading to a dissertation and first authorship on at least one accepted, peer-reviewed publication. Students will be recruited from within New Mexico and also nationally and internationally. We plan to ramp the program up gradually so as to begin graduating about two students per year in five years. Biotechnology Ph.D. students will be supported by existing and new teaching assistantships as well as by externally funded research assistantships. The physical facilities and library resources at New Mexico Tech are sufficient for at least the first five years of the program. New upper-level courses will be created, requiring additional faculty members. New Mexico Tech's administration has committed to one new tenure-track biotechnology-relevant faculty recruitment during year one, with further hires being projected as the program grows. Additionally, Biology is currently recruiting two new faculty members and is giving priority to applicants engaged in applied interdisciplinary research. A Biotechnology Advisory Panel consisting of one representative of each of the above-named departments will provide leadership for the program. The Biotechnology Graduate Faculty, consisting of faculty members eligible to advise Biotechnology Ph.D. students, will make decisions regarding acceptance of new students, changes in degree requirements, appeals of decisions, etc. The program will be assessed regularly for quality, both internally and with the aid of external reviewers.