2017 Five-Year Capital Outlay Plan
Michigan Technological University

Attachment B

Institution Name: MICHIGAN TECHNOLOGICAL UNIVERSITY

Project Title: HEALTH SCIENCES AND MEDICAL ENGINEERING BUILDING

Project Focus: X Academic      X Research      Administrative/Support
Type of Project: X Renovation       Addition       X New Construction

Program Focus of Occupants: Health-Related Science and Engineering/Teaching and Research

Approximate Square Footage: 125,000
Total Estimated Costs: $52,000,000
Estimated Start/Completion Dates: 2017/2019

Is the Five-Year Plan posted on the institution’s public internet site? X Yes    No
Is the requested project the top priority in the Five-Year Capital Outlay Plan? X Yes    No
Is the requested project focused on a single, stand-alone facility? X Yes    No

Describe the project purpose.

The project’s purpose is to strategically support Michigan Tech’s investment in human health research. This building will bring together key faculty primarily from Biomedical Engineering, Kinesiology and Integrated Physiology, Chemistry, as well as other closely related disciplines. Laboratories will be integrated, allowing students at all levels to work together in a research-intensive environment in a safe facility constructed to modern standards. This project will enable University health-related researchers and educators to work together in a synergistic engineering and science environment to train future practitioners and to develop the future of health treatments, practices, and devices.

Describe the scope of the project.

The proposed project will accommodate health-related science and engineering activities. It involves construction of a new facility with approximately 100,000 square-foot of new space and renovation of approximately 25,000 square-foot at an estimated total cost of $52,000,000.

Please provide detailed, yet appropriately concise responses to the following questions that will enhance our understanding of the requested project:

1. How does the project enhance Michigan’s job creation, talent enhancement and economic growth initiatives on a local, regional and/or state-wide basis?
The Michigan STEM Partnership challenged employers across the state to do just one thing to promote understanding of the many career opportunities in STEM fields and the education required by those jobs. Michigan Technological University, a member of the STEM Partnership, is meeting that challenge. With this project, Michigan Tech brings together research and education efforts at the STEM nexus to advance human health. While some universities are adding new medical schools, much of our proposed research and education efforts are intrinsic to engineering and science and critical to the future of medical and clinical research. Michigan Tech’s commitment to growing health-related research and education was formally established in 2008 with a Strategic Faculty Hiring Initiative (SFHI) in health. This has resulted in an increase from 22 health-oriented faculty in 2007 to 57+ faculty today. In 2014, a partnership with Central Michigan University and UP Health System established a doctorate of physical therapy program that will help fill a critical workforce and health need for additional physical therapists in the Upper Peninsula. A recent partnership with Portage Health Foundation invests an initial $6.7 million into health education and research over the next five years. Through this partnership, three endowed professorships will be established that are critical to addressing Health Professional Shortage Areas (HPSA) in rural communities and to growing remote economies. These include an Endowed Professor of 1) Preventative and Community Health, 2) Medical Informatics, and 3) Technological Innovation in Health. A Health Science, Technology, Engineering, and Mathematics (H-STEM) Task Force is currently deliberating on a strategic roadmap for achieving H-STEM 2035 goals which include personnel, space, and resources.

2. How does the project enhance the core academic and/or research mission of the institution?

Our core academic and research efforts are already strongly supported by DOD, DOE, and NSF, as well as by many corporations. This project will allow us to expand our efforts and take better advantage of key areas supported by NIH.

3. How does the project support investment in or adaptive re-purposing of existing facilities and infrastructure?

As part of the project, our chemical sciences laboratory spaces will see significant improvements in their utilities and energy efficiency. The spaces currently occupied by the Departments of Biomedical Engineering and Kinesiology and Integrative Physiology will be returned to their original purpose in support of the Department of Materials Science and Engineering and the Student Development Complex.

4. Does the project address or mitigate any current health/safety deficiencies relative to existing facilities? If yes, explain.

The space targeted for renovation contains laboratories that were built in the past by adding a ventilation system and fume hoods, water and gas lines, and electric power systems to pre-existing space. These additions, from the early 1980s, have aged. Gas and water lines have become fragile and air movement is now not satisfactory. The project will mitigate these concerns.

5. How does the institution measure utilization of its existing facilities, and how does it compare relative to established benchmarks for educational facilities? How does the project help to improve...
the utilization of existing space and infrastructure, or conversely how does current utilization support
the need for additional space and infrastructure?

The university uses the ASPIRE program (Accounting for Space, People, Indexes, Research and
Equipment) to measure utilization of current space. As mentioned earlier, due to the age of some
buildings, research and hands-on experiential learning opportunities are negatively impacted in
comparison to benchmark institutions. This project will provide updated research and lab space to
address this concern, specifically targeting a high-needs area.

6. How does the institution intend to integrate sustainable design principles to enhance the efficiency
and operation of the facility?

Michigan Tech is dedicated to sustainable building design and construction. Therefore, we will plan for a
LEED silver or better rating for this new facility. We will also investigate in the planning phase how the
new facility could be self-contained with an independent microgrid with electricity, fuel, water, and
airflow inputs as well as heat, wastewater, and waste airflow outputs that will produce more energy for
the campus than the building itself consumes (net-positive exergy design).

7. Are match resources currently available for the project? If yes, what is the source of the match
resources? If no, identify the intended source and the estimated timeline for securing said resources?

There will be a dedicated fundraising effort to raise the match. The difference between funds raised and
funds necessary for the match will be raised through bonds.

8. If authorized for construction, the state typically provides a maximum of 75% of the total cost for
university projects and 50% of the total cost for community college projects. Does the institution
intend to commit additional resources that would reduce the state share from the amounts indicated?
If so, by what amount?

No.

9. Will the completed project increase the operating costs to the institution? If yes, please provide an
estimated cost (annually, and over a five-year period) and indicate whether the institution has
identified available funds to support the additional costs.

Anticipated increased operating costs, including utility projections, custodial, and maintenance are less
than $400,000 annually. For funds to support the additional costs see 10 below.

10. What impact, if any, will the project have on tuition costs?

The additional costs for the new building will be covered through indirect cost return from additional
research grants and through increased enrollment in the health science and biomedical engineering
fields.

11. If the project is not authorized, what are the impacts to the institution and its students?
It will be difficult to deal with the enrollment increases in the health science and biomedical engineering fields and strive to meet our strategic goals for enrollment. We will also be less able to take advantage of funding opportunities in these important and growing fields.

12. What alternatives to this project were considered? Why is the requested project preferable to those alternatives?

There are no good alternatives to this project. The current spaces allocated to the programs in health sciences and biomedical engineering are reaching their capacity and becoming inadequate to meet the growth in these areas.