

Contact: Rachel Boon

**REQUEST FOR NEW PROGRAM AT IOWA STATE UNIVERSITY: MASTER OF DIGITAL HEALTH**

**Action Requested:** Consider approval of the request by Iowa State University for a Master of Digital Health in the College of Human Sciences.

The Council of Provosts and Board office support approval of this program.

**Description of proposed program.** The Master of Digital Health (MDH) program is an innovative endeavor that addresses the intersection of healthcare, technology and data analytics. While closely related to programs within the Kinesiology Department, the MDH program distinctively focuses on leveraging digital tools and data analytics to enhance human health outcomes. This unique emphasis differentiates it from existing programs and marks it as a pioneering initiative in the state of Iowa and the Midwest.

Specifically, the MDH program includes the use of information and communications technologies in health professions to manage illnesses and health risks, enhance efficiency of treatment delivery, make interventions more personalized and precise, and promote health and wellness. Digital health has a broad scope and includes the use of wearable devices, mobile health, telehealth and health information technology. Students in the MDH program will learn to incorporate digital technologies into the delivery of exercise and health interventions, analyze individual and population-level data to develop efficient solutions for target populations, and integrate innovative technologies to target multiple layers of influence to empower patients and populations in the self-management of their health and the health of their families.

The MDH program's primary objective is to equip students with specialized knowledge and skills needed to navigate the evolving landscape of digital health, where technology-driven interventions are becoming increasingly pivotal. By offering the MDH as a standalone program, ISU recognizes the profound impact of digital health technologies on healthcare and health systems broadly and the imperative for a comprehensive curriculum that addresses this rapidly growing field.

The MDH program's distinctiveness, focus and potential for interdisciplinary collaboration position it as a pioneering force within the healthcare and technology domains. Offering it as a standalone program reflects a commitment to providing students with a dedicated platform to engage with the evolving landscape of digital health, while also fostering synergistic collaborations that elevate the program's impact across multiple disciplines.

**Academic objectives.** The Master of Digital Health program learning objectives aim to:

- Incorporate digital technologies such as mobile applications, sensors, wearables and telehealth into the delivery of health interventions (e.g., exercise, injury prevention, physical therapy and rehabilitation, cardiovascular health, sleep improvement, chronic disease management, smoking cessation).
- Analyze individual and population-level data to develop efficient solutions for target populations.
- Integrate innovative technologies to target multiple layers of influence including patients, providers, programs, environments, and policies as to empower patients in the self-management of their physical activity and health and the health of their families.

Need for program. Health innovation in the digital domain is happening at an extraordinary rate. According to the World Health Organization (WHO), due to digital technologies, the world's population has never been more interconnected. As such, WHO aims to “harness the power of digital technologies and health innovation to accelerate attainment of health and well-being” ([WHO, 2023](#)).

In 2017, the Department of Health and Social Care in England called for the “need to develop and invest in the capability and capacity of digital change leaders.” In response, Imperial College London, in partnership with Harvard Medical School, developed the Master's of Digital Health Leadership. The program has a strong (60+ students) and growing annual enrollment.

While the degree name, “Digital Health,” is not yet mainstream, degree programs are emerging throughout the country. This evidence of a growing industry in health technologies has prompted an increase in student demand. Therefore, leading health-focused universities including Harvard Medical School, Stanford Medicine and Brown University are examples of recently developed programs and certificates in Digital Health (DH).

In order to determine the need for the program, KIN faculty completed a thorough search of DH programs in each state across the United States, followed by a search of programs in the world. Faculty reached out and consulted with the director of the Digital Health program at the University of Denver (UD) to learn about the demand for the program from students and the need for graduates with a DH expertise in the marketplace. The UD opened enrollment into their program in 2020 with a cohort of 35 students. As of August of 2023, the UD has more than 350 students enrolled in their DH program which demonstrates strong demand and growth in this field of study. In addition, Hanover Research, an external research organization provided an academic program assessment by reviewing student and labor market demand metrics to assess program viability, in addition to competitor trends among similar programs to inform program design. Hanover reported that since this is a fairly new field of study there is no CIP code for this field. Therefore, Hanover used the following methodological approach:

- As metrics of student demand, Google search and graduate publication trends were reviewed
- As metrics of labor market demand, national job postings analytics and relevant secondary literature were reviewed
- To understand programmatic trends, seven relevant programs were benchmarked, based on the market analysis data

Hanover stated that based on a holistic review of this data, they recommend to move forward with the proposed MDH program. Furthermore, they reported that “student interest in the digital health field is growing based on trends in online searches for digital health topics and graduate publications using the keyword ‘digital health.’ Additionally, a review of national job postings and secondary literature suggests a positive employment outlook for graduates of digital health programs.”

Relationship to existing programs at the institution. While the MDH program shares certain commonalities with other master's programs at ISU such as human computer interaction (HCI), computer science (CS), athletic training (AT), and healthcare analytics and operations (MSHAO), its core focus on the integration of digital health tools within health systems broadly sets it apart. The program encompasses a wider spectrum that encapsulates wellness promotion, disease

prevention, telehealth, and information technology, allowing students to engage with multifaceted aspects of digital health that extend beyond the domains of these related programs.

Furthermore, collaborating between departments and colleges is essential to fostering interdisciplinary perspectives, enabling students to cultivate a holistic understanding of digital health's transformative potential. We have established an openness to collaboration between the MDH program and each of the related master's programs. The willingness of departments like HCI, CS, MATR and MSHOA to collaborate by allowing cross-enrollment will enrich students' learning experiences.

The placement of the MDH program within the Kinesiology Department is imperative to synergize the dynamic intersection of digital innovation and health sciences. This unique positioning not only ensures the development of effective digital health interventions but also reflects a holistic approach that is optimally addressed in the Department of Kinesiology.

Relationship to existing programs at other colleges and universities. No similar program exists at another college or university in Iowa. Faculty at UNI noted interest in creating pathways for undergraduate kinesiology students to pursue the MDH. Faculty in the College of Liberal Arts and Sciences at SUI with research interests in digital health indicated opportunity for future research collaborations.

Resources to establish a high-quality program. The MDH program is an appropriate fit for the current world-renowned faculty in the Kinesiology Department who are engaged in high-impact research areas including biomechanics, exercise physiology, exercise psychology, physical activity epidemiology, motor learning and control, ergonomics, athletic training and health promotion.

Kinesiology faculty currently integrate DH approaches in their teaching, research and outreach. A few specific examples include research by Dr. Elizabeth Stegemoller, who examines virtual treatment interventions for Parkinson's patients; Dr. Ann Smiley, who examines virtual physical activity sessions and effects on motor control and sequencing in youth; Dr. Jason Gillette, who examines ergonomic techniques with emerging technology; Dr. D.C. Lee, who examines high-tech treadmills and weightlifting machines on aerobic, strength and health-outcomes; Dr. Angie Brellenthin, who uses the UK Biobank accelerometer, hospital admissions and death registry data to examine associations between physical activity and health behaviors and chronic disease outcomes; and Dr. Greg Welk who examines the use of social media apps in health promotion.

Student demand. Professionals with an interest in the intersection of health and technology aim to grow their careers with a degree in digital health. Examples of career paths include healthcare IT, clinicians, tele-medicine, telecare (e.g., activity monitoring, remote medication management), mHealth apps (e.g., wearables, glucose monitors, activity trackers, medical apps, fitness apps), monitoring services (e.g., independent aging solutions, chronic disease management, post-acute care), health analytics (e.g., health insurance companies), software engineers, web application developers and product engineers.

Workforce need/demand. National staffing shortages in health-care are estimated to grow. According to Mercer, an industry market analytic firm, by 2025, it is estimated that there will be a shortage of approximately 446,000 home health aides, 95,000 nursing assistants, 98,700 medical and lab technologists and technicians, and more than 29,000 nurse practitioners. While a health app, in itself, cannot replace a healthcare provider, the use of digital technologies can increase efficiency and reduce the need for repeat follow up visits with providers. For example, virtual telesitters reduce the need for a one to one nurse to patient ratio by using digital technologies to

monitor multiple patients at once and thereby significantly reducing the total number of healthcare providers needed in a hospital or clinic.

In addition, according to the U.S. Bureau of Labor Statistics, careers in health information technologies and health management analysts are expected to grow by 17% and 11%, respectively, from 2021 to 2031. Professionals with expertise in DH possess innovative technological skills for efficient individual health management and will likely become exceptionally valuable as staffing shortages grow.

Funding and Cost. Funding for this program will come from internal reallocations. Based on the growing enrollment of peer institutions and demands from industry, it is projected that the program will be self-supporting via tuition revenues within three years.

Projected student enrollment.

Graduate	Y1	Y2	Y3	Y4	Y5
Majors	35	60	90	100	100
Non-Majors	3	5	5	5	7

Accreditation. The department plans to apply for accreditation from the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM) when eligible (which requires a successful cohort of students graduating from the program).

Date of implementation. Fall 2024.

Letter of Support



March 20, 2024

To the Board of Regents:

The Council of Provosts discussed the Iowa State University proposal for a Master of Digital Health and reviewed associated documentation. The university has the resources and expertise for this program already in place, and there is evidence of student demand and workforce benefit in the state of Iowa and throughout the Midwest in this emerging field. The plan indicates due diligence with the other Regent universities regarding related programs and the possibility for future collaborations in research and opportunities for students. Based on the evidence and documentation, this program is likely to benefit the Iowa State University and the state of Iowa.

The Council of Provosts is supportive of the program and wishes Iowa State the best in its implementation.

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