PROGRAM APPROVAL PROCESS
(Revised June 2022)

Highlights of the Program Approval Process:

- The Regent universities shall submit the name and educational level of proposed programs that have already undergone an initial institutional review, are currently undergoing an in-depth institutional review, and are likely to be submitted for program approval by the Board of Regents. The proposed program must reside on the program planning list maintained in the Board office for at least three months prior to submitting a program proposal to allow sufficient time for discussion within the three Regent universities.

- The Board Office and the Council of Provosts shall review the annual program planning list at each Council of Provosts meeting.

- The universities shall complete their in-depth review of the proposed programs and submit their proposals to the Board Office using a program approval format developed by the Board Office (Form A).

- Letters of support from the other universities must be included in the program proposal.

- A review by the Iowa Coordinating Council for Post-High School Education (ICCPHSE) shall also occur prior to being submitted for Board approval. A program with unresolved concerns by the ICCPHSE should be noted.

- The program proposals shall be reviewed in-depth by the Council of Provosts and the Board Office.

- With the recommendation for approval by the Board Office and the Council of Provosts, the program proposal shall be submitted to the Board of Regents Academic Affairs Committee and Board of Regents for discussion and action.

- Substantial expenditures for the proposed program or advertising/marketing of the proposed program shall not occur until after the program is approved by the Board of Regents. This means that the institutions shall not hire any new faculty, secure facilities, develop curriculum, or advertise the program until it has been approved by the Board of Regents.

FORM A
Board of Regents, State of Iowa

REQUEST TO IMPLEMENT A NEW BACCALAUREATE, MASTERS,
DOCTORAL, OR PROFESSIONAL DEGREE PROGRAM

THE PURPOSE OF ACADEMIC PROGRAM PLANNING: Planning a new academic degree program provides an opportunity for a Regent university to demonstrate need and demand as well as the university's ability to offer a quality program that is not unnecessarily duplicative of other similar programs offered by colleges and universities in Iowa.

Institution: _Iowa State University_____

CIP Discipline Specialty Title: _Medical Informatics_____

CIP Discipline Specialty Number (six digits):   ___51.2706_____

Level: B   _____   M   ___X_____   D   _____   P   _____

Title of Proposed Program: _Master of Digital Health_____

Degree Abbreviation (e.g., B.S., B.A., M.A., Ph.D.): _____M.DH. _____

Mode(s) of Delivery (check all that apply): On-campus (face-to-face) ___   Off-campus (face-to-face) ___ Online _X___   Hybrid _____   Other ____

Approximate date to establish degree: Month   __Fall _____   Year   ___2024_____

Contact person: (name, telephone, and e-mail):   Kira Werstein, 515-294-8009, werstein@iastate.edu

College that will administer new program: __College of Human Sciences_____

Please provide the following information (use additional pages as needed). Do not use acronyms without defining them.

1.   Describe the proposed new degree program, including the following:

a.   A brief description of the program. If this is currently being offered as a track, provide justification for a standalone program.

The Master of Digital Health (MDH) Program is an innovative and transformative 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 region.

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, we recognize 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.

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 not only enriches students' learning experiences but also solidifies the program standing as a flagship initiative for the institution.

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 our 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.

b.   A statement of 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.

c.   What the need for the program is and how the need for the program was determined;

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 <u>Digital Health Leadership</u>. 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 <u>Harvard Medical School</u>, <u>Stanford Medicine</u>, and <u>Brown University</u> 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 was recruited to provide 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." The complete Hanover Report is attached in the supplemental documents.

d.   The relationship of the proposed new program to the institutional mission and how the program fits into the institution's and college's strategic plan;

ISU MISSION AND STRATEGIC PLAN
An innovative MDH Program is in direct alignment with the College of Human Sciences and Iowa State University's mission and strategic plan to create, share, and apply knowledge to make our students, Iowa, and the world better.

Vision. The addition of the MDH Program is also in alignment with the vision of Iowa State University to advance the land-grant ideals of putting science, technology, and human creativity to work. As future innovations transform the field of health, it is important that ISU Kinesiology Faculty lead the way in integrating the latest technology in their teaching, research, and outreach.

In addition, the MDH Program fits within the Kinesiology Department's mission and vision by aligning with its core values and enhancing its commitment to promoting health and well-being through the integration of technology and physical activity.

The Department of Kinesiology mission is to "promote health and well-being by creating and disseminating knowledge about physical activity and healthy living to improve the lives of citizens of Iowa, the United States, and the world."

The MDH Program contributes to the mission by equipping students with specialized knowledge and skills in using DH technologies to promote physical activity and healthy living. By integrating technology into research, interventions, and health promotion strategies, graduates can have a significant impact on improving the health and well-being of individuals and communities locally, nationally, and globally.

The Department of Kinesiology vision is to "be among the best kinesiology departments in creating knowledge, translating discoveries into practice, and preparing individuals with expertise in the science of physical activity as it impacts health and well-being."

The MDH Program aligns with the Kinesiology vision by:

- Fostering research in the emerging field of DH within kinesiology. Students will engage in advanced study and capstone projects that contribute to the growing body of knowledge in this interdisciplinary area, including the impact of digital technologies on physical activity, exercise behavior, and health outcomes.

- Translating discoveries into practice by preparing students to apply their technological insights to practical applications. Graduates will be skilled at translating DH discoveries into effective interventions and strategies that can be implemented in various settings, such as healthcare, fitness, and wellness industries.

- Enhancing students' expertise in the science of physical activity by integrating technology as a core component. This prepares students to understand how DH tools can be utilized to assess, monitor, and improve physical activity behaviors, ultimately leading to enhanced health and well-being.

- Offering a cutting-edge MDH Program demonstrates the Kinesiology Department's commitment to staying at the forefront of research and innovation in the field of Kinesiology and Health.

In summary, an MDH Program would directly contribute to the department, college, and university mission by promoting health and well-being through the use of DH technologies. It aligns with the university vision by fostering knowledge creation, translating discoveries into practice, and preparing graduates to become leaders in the evolving landscape of DH, making a meaningful impact on the lives of individuals and communities both locally and globally.

Values. The addition of the MDH embraces the values of Iowa State University's Principles of Community. Specifically, an online MDH would recruit students from all over the world and promote student collaborations with various geographic locations and demographic markets. This outcome is in direct alignment with Iowa State University's values of Cooperation, Richness of Diversity, Access, and Excellence.

e.   The relationship of the proposed new program to other existing programs at the institution; describe how the proposed program will enhance other programs at the university. Will the proposed program duplicate existing programs at the university?

After a thorough search and several meetings with other departments on campus including Human Computer Interaction (HCI), Computer Science (CS), Athletic Training (AT), and Healthcare Analytics and Operations (MSHAO), it was determined that the MDH is a unique program at ISU, in Iowa, and in the Midwest. As stated in question 1.a., while the MDH program shares certain commonalities with other master's programs, its core focus on integrating digital health tools within health systems broadly sets it apart. Following meetings with other

departments (i.e. HCI, CS, MATR, and MSHOA), we contend that the addition of the MDH Program will recruit a unique student population while having a synergistic effect across programs.

f.   Special features or conditions that make the institution a desirable, unique, or appropriate place to initiate such a degree 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.

In their teaching, KIN Faculty also integrate DH tools and solutions. For example, in the course, "Health and Exercise: Behavior Change" (KIN467/567), Dr. Kira Werstein has a unit devoted to teaching students the use of mobile health tools for individual and population-level health-behavior interventions. In the course, "The Sociology of Physical Activity and Health" (KIN360), Dr. Brellenthin has a unit focused on examining the digital divide as a social determinant of health disparities as well as exploring how internet technologies have changed the practice of medicine over time. In the course, "Therapeutic Exercise and Rehabilitation Interventions" (ATR545), Dr. Jacob Moore teaches on topics of informatics and the use of DH tools to gather data to evaluate patient weaknesses and design programs that prioritize objectives of programming. In addition, Dr. Werstein uses a telehealth approach with motivational interviewing for health-behavior change in her health coaching outreach with individuals and organizations.

Digital health has become an integral part of the field of Kinesiology, enhancing research, education, and practical applications related to human movement and physical activity. The following are several ways in which DH intersects with Kinesiology:
1. **Data Collection and Analysis:** DH technologies, such as wearable fitness trackers, smartwatches, and mobile apps can collect immense amounts of data related to an individual's physical activity, heart rate, sleep patterns, and more. Kinesiologists can use this data to gain insights into exercise patterns, performance, and health outcomes.
2. **Physical Activity Monitoring:** DH tools enable real-time monitoring of physical activity levels and sedentary behavior. This data can be used to assess an individual's daily movement patterns in a physical therapy or occupational therapy setting, set personalized activity goals within health coaching and in clinical settings, and provide feedback to encourage active lifestyles.
3. **Biomechanical Analysis:** Motion capture systems and wearable sensors can be used to analyze human movement biomechanics accurately. Kinesiologists, physical therapists, athletic trainers, occupational therapists, coaches, and personal trainers can utilize this technology to study gait analysis, technical performance, rehabilitation, and ergonomics.
4. **Telehealth and Remote Monitoring:** DH facilitates telehealth services, allowing kinesiologists, health coaches, and clinicians to conduct remote consultations,

assessments, and interventions. It can be especially beneficial for individuals in remote areas or those with limited mobility. Telehealth increases the reach and accessibility of exercise interventions and health education resources in order to decrease health disparities.

5. **Health Behavior Interventions:** DH interventions, such as mobile apps and online platforms, can be designed to promote healthy behaviors and physical activity adherence. Kinesiologists and clinicians can develop and evaluate these interventions to help people adopt and maintain active lifestyles.

6. **Virtual Reality and Simulation:** Virtual reality technology can be employed to simulate real-life movement scenarios, providing valuable training opportunities for athletes, fire-fighters, police officers, marines/special ops teams/arm forces, rehabilitation patients, and the general population.

7. **Big Data and Health Analytics:** With the abundance of data generated through DH technologies, kinesiologists, clinicians, health analysts, and data scientists can apply big data analytics to study population-level trends, identify risk factors, and make evidence-based decisions.

8. **Healthcare Integration:** DH tools can be integrated into healthcare settings, facilitating collaboration between kinesiologists and healthcare professionals to optimize patient care and rehabilitation programs.

9. **Health Education and Coaching:** DH platforms can deliver personalized health education materials and coaching programs to individuals seeking guidance on physical activity, exercise routines, and overall well-being.

10. **Research Advancements:** DH accelerates research capabilities by providing new ways to collect data and track outcomes, leading to advancements in kinesiology and related fields.

In addition, it is important that the major of DH "lives" within the Department of Kinesiology, as this would ensure a health-centered view of technological innovation. To provide a rationale and comparison, many teaching platforms, including Canvas, are designed by software engineers. While these engineers have an in-depth understanding of coding and software, they do not have the pedagogical expertise and experience to anticipate problems that instructors and students face. As such, without the expertise of pedagogical experts, they are unable to optimally design effective teaching platforms.

In the same way, expertise in software engineering or IT alone is not enough to design effective DH tools and interventions. Without the knowledge of the biological and psychological underpinnings of the field of Kinesiology and Health, digital technologies lack the ability to sustain adherence and effectively develop health-based solutions. The demand for fluency in both technological health tools and the biological and psychological basis of physical activity and health is critical for the effective design and analysis of practical solutions for disease prevention and enhancing health and well-being.

In summary, 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 Kinesiology.

g.   Describe the personnel, facilities, and equipment necessary to establish and maintain a high quality program. Include any reallocations from other programs or areas of the university.

In order to establish and maintain a high quality MDH program, the Department of Kinesiology will need two additional faculty positions, a program director, faculty summer support to design new courses, a P & S staff position, an advisor, and equipment for recording online lectures. The primary reason that additional faculty positions are needed is due to the need for new course

development. The courses in this new program are not currently offered and would need to be designed and staffed.

The Kinesiology Department will request additional funds to support the needs of the program start-up costs with Phase II of the Degrees of the Future Initiative, which is a part of Iowa State University Strategic Plan. The College of Human Sciences has funding to purchase the recording equipment needed to produce high quality online content. Based on the growing enrollment of peer institutions and demands from industry, it is projected that the program would support itself with student credit revenues within three years.

h. How does student demand for the proposed program justify its development? What are the anticipated sources of students to enroll in this new program?

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 in digital health include health-care 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. More on student demand and workforce needs in question three.

2. Estimate the number of majors and non-majors students that are projected to be enrolled in the program during the first seven years of the program.

a. Undergraduate

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Majors	0	0	0	0	0	0	0
Non-Majors	0	0	0	0	0	0	0

b. Graduate/Professional

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Majors	35	60	90	100	100	100	100
Non-Majors	3	5	5	5	7	10	10

3. Describe the state and/or national workforce need and/or demand for graduates of the proposed program currently and in the foreseeable future (provide the sources of data used to estimate workforce need and 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>U.S. Bureau of Labor Statistics</u>, careers in health information technologies and health management analysts are expected to grow by 17 and 11% respectively, much faster than average, from 2021 to 2031. Therefore, professionals with an expertise in DH possess innovative technological skills for efficient individual health management and will likely become exceptionally valuable as staffing shortages continue to grow.

4. The dean's office in the academic college proposing the new program is required to contact the corresponding dean's offices at the other two Regents universities (if there is no corresponding college, consider related programs in other colleges or contact the Provost's office for guidance). In some cases, such as for an interdisciplinary program, more than one college at the other universities may need to be contacted. Please summarize how this cross-institutional outreach was completed:

    a. Date that Form A was sent to dean's offices at the other two Regents universities.

    Dr. Robert Reason, Associate Dean for Academic Affairs in the College of Human Sciences, and Dean Jolly of the College of Human Sciences, are currently in correspondence with the University of Northern Iowa and the University of Iowa.

    b. Date and format (email, telephone, video, in-person) of discussions between the dean's offices, and names/titles of those who participated.

    c. Summary of feedback received from the other two Regents universities, including any concerns raised. Where relevant, describe current or planned collaborations related to the program.

    d. Was the proposal modified to reflect these discussions? If so, describe.

5. List other public and private institutions of higher education in Iowa currently operating programs similar to the proposed new degree program. (For comparison purposes, use a broad definitional framework, e.g., such identification should not be limited to programs with the same title, the same degree designation, having the same curriculum emphasis, or purporting to meet exactly the same needs as the proposed program.)

    If the same or similar program exists at another institution of higher education in Iowa (other than those Regent universities noted above), respond to the following questions:

    A thorough search of Digital Health programs in the state of Iowa yielded no findings.

    a. Describe collaboration efforts with other institutions.

    We aim to offer the MDH as a standalone program at ISU. We discuss the rationale for this standalone program in question one.

    b. With what representatives of these programs has there been consultation in developing the program proposal? Provide a summary of the response of each institution consulted.

    Please see question one.

    c. Has the possibility of an inter-institutional program or other cooperative effort been explored?

    Please see question one.

    d. Are the other programs similar to the proposed program at comparable quality and cost?

    Please see question one.

6.   If there are plans to offer the program off campus, online, or a blended modality, briefly describe these plans, including potential sites and possible methods of delivery instruction. Will off-campus delivery require additional HLC or other accreditor approval?

>   We anticipate that many students in this program will be working professionals. Therefore, we aim to offer the MDH Program online and asynchronously to provide flexibility students with challenging schedules.

7.   Will the proposed program apply for programmatic accreditation? When?

>   We plan to apply for accredidation from the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM) when we are eligible, have support of our institution's leadership and administration, and have a successful cohort of students graduate from the program.

8.   For undergraduate programs: Will articulation agreements be developed for the proposed program? With whom?

>   At this time, there are no plans for articulation agreements.

9.   Describe any opportunities for experiential learning (e.g. internships, clinicals, research, community engagement/service learning).

>   Students in the MDH Program will complete a capstone project which will focus on the practical preparation of the student for the job market. Faculty in the Kinesiology Department are currently securing partnerships with businesses and organizations in industry to provide students with applied, real-world learning opportunities.

10.   From where will the financial resources to cover the costs for the proposed program come (list all that apply, e.g., department reallocation, college reallocation, grants, new to the university)?

>   Faculty in the Kinesiology Department are submitting Phase II of a proposal to the university to apply for funding through the Degrees of the Future Initiative to support the start-up costs associated with commencement of the program. Therefore, the funds will come from the university and from the College of Human Sciences to begin the program. Based on the growing enrollment of peer institutions and demands from industry, it is projected that the program would support itself with student credit revenues within three years. The proposed program will not be dependent on grants, contracts, gifts, or reallocations.

11.   Include any additional information that justifies the development of this program.