Intent to Plan for a New Program
South Dakota Board of Regents
Academic Affairs Forms

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Use this form to request authorization to plan a new baccalaureate major, associate degree program, or graduate program; formal approval or waiver of an Intent to Plan is required before a university may submit a related full proposal request for a new program. The Executive Director and/or their designees may request additional information. After the university President approves the Intent to Plan, submit a signed copy to the Executive Director through the System Academic Officer through the proper process. Only post the Intent to Plan to the university website for review by other universities after approval by the Executive Director, System Academic Officer or designee. This form is meant to capture critical elements for stakeholders to review prior to a full proposal.

University	SDSU - South Dakota State University
Degree	BS : Bachelor of Science
Name of Major	X999 : New Major Requested **Healthcare Systems Engineering**
Specialization Required?	No *Note: If the new proposed program includes specific specializations within it, complete and submit a New Specialization Form for each proposed specialization and attach it to this form. Since specializations appear on transcripts, they require Board approval.*
College/Department	3E : SDSU JeromeJ Lohr College Engr/SMEC : Mechanical Engineering
Intended Date of Full Proposal	Fall 2024
Planned CIP Code	14.2701

Program Description

1. Provide the working program description that may appear in the university catalog.

Healthcare Systems Engineering is a multidisciplinary field that encompasses a wide range of technologies to enhance human health and well-being. As healthcare is becoming increasingly complex under technological, economic, social, and regulatory impacts, there is a pressing need for a holistic approach in addressing these challenges through convergent research and education and train future professionals who are ready to serve the healthcare industry. Healthcare Systems Engineering integrates engineering, computer science, data science, and health sciences. The B.S. in Healthcare Systems Engineering program will prepare students for rapidly emerging technologies in artificial intelligence (AI) and machine learning (ML), big data, and cybersecurity
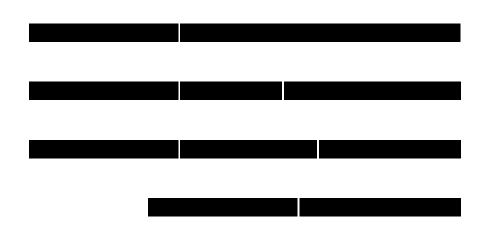
Program Summary

4. If a new degree is proposed, what is the rationale?
This question refers to the type of degree, not the program. For example, if your university has authorization to offer the Bachelor of Science and the program requested is a Bachelor of Science, then the request is not for a new degree.

This is not a new degree.

5. What modality/modalities will be used to offer the new program?
Note: The accreditation requir

Academic Quality

7. What peer institutions and current national standards will be referenced to develop the curriculum for this program? Include links to at least 3 comparable programs at peer institutions and links to national or accreditation standards, if any.

The proposed program is an innovative and transformative engineering program, that is not currently being offered at any of the Regental universities or peer institutions. Healthcare systems engineers must complete an undergraduate, graduate, or certification program to be eligible for work in this field. Degree and certificate programs provide knowledge and the skills necessary to achieve such vital results in healthcare.

SDSU will complete a review of other related systems engineering programs and the standards and requirements outlined by Accreditation Board for Engineering and Technology (ABET) to develop the curriculum.
• Accreditation Board for Engineering and Technology (ABET) -https://www.abet.org/accreditation/
• Healthcare Engineering Technology Management (B.S.), Indiana University - Purdue University Indianapolis (IUPUI) - https://et.iupui.edu/departments/ent/programs/hetm/
• Healthcare Systems Engineering (M.S.), Johns Hopkins University- https://ep.jhu.edu/programs/healthcare-systems-engineering/
• Healthcare Systems Engineering (M.S), Lehigh University - https://engineering.lehigh.edu/hse
• Medical Sciences and Engineering (B.S.), Indian Institute of Technology, Madras (one of the premier engineering institutions of India) - https://mst.iitm.ac.in/bs-in-medical-sciences-engineering/

To ensure the success of the proposed program, the foundation has been laid for collaboration across a broad spectrum of institutions and industry partners. Within SDSU, the university anticipates robust collaborations involving the Jerome J. Lohr College of Engineering, College of Nursing, College of Natural Sciences, College of Pharmacy and Allied Health Professions, College of Education and Human Sciences, and College of Agriculture, Food & Environmental Sciences. Beyond SDSU, the university has initiated dialogues with Dakota State University and several potential industry partners about this program. Once approval for this initiative has been secured, the university will actively engage with all BOR system institutions and private partners. Significant stakeholders like Sanford and Avera, who are already in collaboration with SDSU on a project focusing on data and AI-driven decision support tools for healthcare, will be pivotal in shaping the final curriculum. SDSU's overarching goal is to accr   echnology (ABET) -https://www

Duplication and Competition

10. Do any related programs exist at other public universities in South Dakota?
*A list of existing programs is available through the university websites and the RIS Reporting: Academic Reports Database. If there are no related programs within the Regental system, indicate **none**.*

The proposed Healthcare Systems Engineering program is an innovative and transformative engineering program, that is not currently being offered at any of the six Regental universities. It is important to distinguish the proposed program from the traditional Biomedical Engineering (BME) programs. The University of South Dakota (USD) and South Dakota School of Mines and Technology (SDSMT) offer a B.S. in Biomedical Engineering and SDSU offers a minor in Biomedical Engineering. Unlike these traditional BME programs, which combine engineering sub-disciplines (typically electrical engineering, mechanical engineering, and material sciences) to develop prosthetics, medical devices, and instrumentation for the medical industry, the proposed program will prepare engineers who will adopt a systems approach – combining engineering and health sciences. Healthcare systems engineering is a field that focuses on optimizing and improving healthcare delivery systems. Through a systems approach healthcare systems engineering focuses on the use of data, interoperability of systems, and improvement in patient safety and healthcare outcomes.

A. If yes, defend the need for an additional program within the state, Include IPEDS enrollment data and additional data as needed.

N/A

B. If yes, would this program be a candidate for Regental system collaboration?

As mentioned above in question 7 to ensure the success of the proposed program, the foundation has been laid for collaboration across a broad spectrum of institutions and industry partners. The university has initiated dialogues with Dakota State University and several potential industry partners about this program. Once the intent to plan has been approved, the university will actively engage with significant stakeholders to shape the final curriculum. SDSU's overarching goal is to harness the strengths and expertise within the Regental system and in South Dakota's healthcare systems, ensuring the development and delivery of a truly groundbreaking program.

11. Do any related programs exist at any non-Regental college or university within 150 miles of the university?
List those programs here:

No

A. If yes, use IPEDS to identify the enrollment in those programs.

N/A

B. What evidence suggests there is unmet student demand for the proposed program, or that the proposed program would attract students away from the existing program?

No programs exist at any non-Regental college or university within 150 miles of SDSU. The proposed program, Healthcare Systems Engineering, would serve an emerging industry and is not currently available in the region. SDSU's major would be one of a few in the nation. The Jerome J. Lohr College of Engineering conducted a student interest survey. Of the 63 participants that completed the survey, 18 students (28.5%) indicated if they were starting their education today, based on the program description, they would be interested in majoring in Healthcare Systems Engineering.

Enrollment

18. Are students enrolling in this program expected to be new to the university or redirected from existing programs at the university?
Include the number of openings, as well as the percentage of growth when possible.

SDSU anticipates that the program will include both students who will have been redirected from existing programs, as well as new students.

19. Narrative Description of the preliminary estimates on annual enrollment in this program by year six
Include all students within the program, not just those new to the program.

As mentioned above in question 17, over 980 students were enrolled in related undergraduate engineering programs at SDSU. Based on the survey results the college estimates year 1 enrollment at 5 students and growing the program to 24 students by year 6.