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	MS : Master of Science
Name of Major	SPHY : Physics
Specialization Required?	*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	3T : SDSU Natural Sciences/SCBP : Chemistry/Biochemistry/Physics (NS)
Intended Date of Full Proposal	Fall 2027
Planned CIP Code	40.0801

Program Description

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

The Master of Science in Physics offers an advanced curriculum designed to deepen students' understanding of the fundamental principles of physics while providing the flexibility to explore emerging fields and specialized areas. This program caters to students with a strong background in physics or related disciplines, preparing them for careers in research, industry, or further academic pursuits. The M.S. in Physics supports a number of career options in industry, education, and applied research. Areas of research concentration for the M.S. include materials science, nuclear science, condensed matter, theoretical physics, image processing, remote sensing, biophysics, chemical physics, gravitational physics, and astrophysics. It serves an important preparation role for students in physics, engineering, math, and other disciplines who want to pursue the Ph.D. in Physics.

Strategic Impact

2. Describe how the program fits in with the institutional mission, strategic plan, existing institutional program array, and academic priorities.

SDBOR Policy 1.2.5 states South Dakota State University's mission is to offer academic programs in the liberal arts and sciences and professional education in agriculture, education, engineering, home economics, business economics, nursing, and pharmacy. The M.S. in Physics is a graduate degree within the liberal arts and sciences.

South Dakota State University offers a rich academic experience through inspired, student-centered education, creative activities and research, innovation and engagement that enhances the quality of life in South Dakota, the region, the nation, and the world. The M.S. in Physics is a graduate degree that delivers academic rigor, diversifies the research portfolio of SDSU, and prepares students to make an impact in industry, higher education, and associated disciplines.

The strategic plan of South Dakota State University, Pathway to Premier 2030, aims to foster innovation and increase research, scholarship, and creative activity. An M.S. program in Physics would contribute to more successful research grant activity and would build the pipeline for Ph.D. programs, including Ph.D. programs in Physics. Roughly 81% of R1 universities offer an M.S. in Physics.

It is SDSU's intent to collaborate with the University of South Dakota and the South Dakota School of Mines and Technology to deliver the M.S. in Physics and pursue research with a variety of external entities, including the Sanford Underground Research Facility (SURF). SDSU currently collaborates with the University of South Dakota and the South Dakota School of Mines and Technology to deliver the B.S. in Physics, and both institutions support the addition of South Dakota State University to the existing statewide M.S. in Physics. Physics at SDSU is already collaborating with state physicists on an NSF e-RISE grant-funded project on the use of Germanium to search for dark matter and to improve medical imaging. In addition, joining the M.S. in Physics would facilitate future opportunities to expand interdisciplinary research with engineering, chemistry, biochemistry, and other areas at SDSU.

If the program does not align to the strategic plan, provide a compelling rationale for the institution to offer the program.

N/A

3. How does the program connect to the Board of Regent's Strategic Plan?

The proposed M.S. in Physics aligns with the South Dakota Board of Regents Strategic Plan 2022–2027 by supporting Goal 3: Academic Excellence, Student Outcomes, and Educational Attainment and Goal 4: Workforce Development and Economic Development. By providing advanced training in physics, the program will develop highly skilled graduates who can contribute to South Dakota's technology, healthcare, and manufacturing sectors. The program strengthens the state's STEM workforce, enhances graduate-level educational opportunities, and supports the development of innovative research and technology that can drive economic growth and job creation within South Dakota.

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 requirements of the Higher Learning Commission (HLC) require Board approval for a university to offer programs off-campus and through distance delivery.

	Yes/No	Intended Start Date
On Campus	Yes	Fall 2027

	Yes/No	Location(s)	Intended Start Date
Off Campus Location	No		(n/a) (n/a)

	Yes/No	Delivery Method(s)	Intended Start Date
Distance Delivery	No		(n/a) (n/a)

	Yes/No	Identify Institutions
Does another BOR institution already have authorization to offer the program online?	No	

6. If the program will be offered through distance delivery, identify the planned instructional modality:

Not Applicable : Program will not be offered through distance delivery.

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 M.S. in Physics at SDSU will be offered as a collaborative program with the University of South Dakota and the South Dakota School of Mines and Technology. While there are no formal national accreditation standards for M.S. in Physics programs, the curriculum will include core graduate-level courses commonly found in peer programs, such as Classical Mechanics, Electromagnetism, Quantum Mechanics, and Statistical Mechanics. SDSU reviewed graduate Physics programs at peer institutions to ensure alignment with national norms and expectations, including:

- Physics (M.S.), South Dakota School of Mines and Technology - https://www.sdsmt.edu/academics/explore-all-programs/physics-ms.html
- Physics (M.S.), University of South Dakota - https://catalog.usd.edu/preview_program.php?catoid=40&poid=9319
- Physics (M.S.), North Dakota State University - https://catalog.ndsu.edu/curriculum/graduate/physics-masters/
- Physics (M.S.), Kansas State University - https://catalog.k-state.edu/preview_program.php?catoid=63&poid=24102&returnto=12869
- Physics (M.S.), Oklahoma State University - https://cas.okstate.edu/physics/graduate_studies/masters_degree_process.html
- Physics (M.S.), Montana State University - https://catalog.montana.edu/graduate/letters-science/physics/ms-physics/
- Physics (M.S.), University of North Dakota - https://und.edu/programs/physics-ms/requirements.html

8. What program accreditation is available, if any?

There is no national accrediting body for the M.S. in Physics.

9. Will the proposed program pursue accreditation or certifications?

No

If no, why has the department elected not to pursue accreditation for the program?

No accreditation is available.

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.***

Yes. The University of South Dakota and the South Dakota School of Mines and Technology currently offer a collaborative M.S. in Physics program. South Dakota State University seeks to join this collaboration.

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

SDSU intends to join the existing collaborative M.S. in Physics program offered by the University of South Dakota and South Dakota School of Mines and Technology, leveraging SDSU's faculty expertise and research strengths to enhance statewide physics education. SDSU currently collaborates with these institutions through the B.S. in Physics and has strong faculty engagement in research areas such as condensed matter and materials physics (e.g., the NSF e-RISE grant on Germanium for dark matter detection and medical imaging). Adding SDSU to the collaborative program will broaden subdiscipline opportunities (particularly in materials and health physics), expand interdisciplinary research potential with engineering, chemistry, biochemistry and others on the SDSU campus, and make efficient use of existing courses and resources in the statewide curriculum. Having a graduate program also has a secondary effect on the undergraduate program, as more bachelor's degrees in Physics are conferred nationally from doctoral-granting programs, almost double those from bachelor's-only programs in 2023-24.

IPEDS Data:
South Dakota School of Mines and Technology – M.S. in Physics
CIP Code: 40.0801
Graduates from 2023-2024: 3 graduates from the degree program, 131 total masters graduates

University of South Dakota – M.S. in Physics
CIP Code: 40.0801
Graduates from 2023-2024: 5 graduates from the degree program, 530 total masters graduates

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

Yes. The program is designed as a collaborative effort with USD and SDSMT.

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 program exists at any non-Regental college or university within 100 miles of SDSU. North Dakota State University is the closest university with an M.S. in Physics. Nationally, enrollment in graduate physics programs has increased by approximately 10% over the past decade, demonstrating sustained interest in advanced physics education.[1] By adding expertise in condensed matter/materials physics and health physics, SDSU's M.S. in Physics would complement the existing USD/SDSMT collaborative program, broaden subdiscipline opportunities within the state, and attract students seeking training in these areas.

[1] AIP ROSTER: Roster of Physics Departments with Enrollment and Degree Data, 2024. Results from the 2024 Survey of Enrollments and Degrees. Starr Nicholson and Patrick J. Mulvey. September 2025. DOI: 10.1063/sr.29a280f5e4

Market Demand

This section establishes the market demand for the proposed program (eg Regental system need, institutional need, workforce need). Use the following sources for your data:

- South Dakota Department of Labor & Regulation
- O-Net
- US Department of Labor Projections Central
- SDBOR Workforce and Degree Gap Analysis Report

12. What is the expected growth of the industry or occupation in South Dakota and nationally?

Include the number of openings, as well as the percentage of growth when possible.

Nationally, the U.S. Bureau of Labor Statistics predicts a 4% increase in employment for physicists between 2024 and 2034.[1] Currently, there are about 26,400 physicists in the nation, with an expectation of adding another 1,000 by 2034. Post-secondary physics teachers are predicted to grow by 2.5% nationally. Materials scientist positions are predicted to grow by 4.9%.

[1] Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Physicists and Astronomers, at https://www.bls.gov/ooh/life-physical-and-social-science/physicists-and-astronomers.htm (Accessed October 4, 2025).

13. What evidence, if any, suggests there are unfilled openings in South Dakota or nationally?

According to the U.S. Bureau of Labor and Statistics, overall employment of physicists and astronomers is projected to grow 4% from 2024 to 2034. About 1,800 openings for physicists and astronomers are projected each year over the same decade.[1]

[1] Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Physicists and Astronomers, at https://www.bls.gov/ooh/life-physical-and-social-science/physicists-and-astronomers.htm (Accessed October 4, 2025).

14. What salaries can program graduates expect to earn in South Dakota and nationally?

According to the U.S. Bureau of Labor and Statistics, the median annual wage for physicists nationally was $166,290.[1] Data from Lightcast estimates the median annual salary for physicists in South Dakota is $87,943.[2]

[1] Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Physicists and Astronomers, at https://www.bls.gov/ooh/life-physical-and-social-science/physicists-and-astronomers.htm (Accessed October 4, 2025).
[2] Modern Campus Pathways data provided by Lightcast (Accessed November 10, 2025)

15. Optional: Provide any additional evidence of regional demand for the program.

e.g. prospective student interest survey data, letters of support from employers, community needs...

Student Demand

16. Provide evidence of student completers/graduates at that degree level at peer institutions that offer the same/similar program using data obtained from IPEDS.

Choose programs not already listed in question 11. Use the most recent year available.

University Name	State	Program Name	Number of Degrees Conferred in Program	Total Number of Conferrals at Level (Undergrad or Grad)
North Dakota State University	ND : North Dakota	Physics (M.S.)	2	435
Minnesota State University - Mankato	MN : Minnesota	Physics (M.S.)	3	606
University of Minnesota - Twin Cities	MN : Minnesota	Physics (M.S.)	11	3100

17. What evidence suggests there is interest from prospective students for this program at the university?

There is demonstrated interest from prospective students for graduate study in physics at SDSU. A number of SDSU physics graduates go on to pursue advanced degrees, indicating a consistent internal pipeline of students who may be interested in completing an M.S. degree through SDSU as part of the collaborative program. Additionally, it is expected that a substantial portion of enrollment will come from out-of-state and international students, consistent with enrollment patterns in many SDSU M.S. programs.

Nationally, the number of conferred baccalaureate degrees in physics continues to increase, indicating a growing pool of prospective applicants for graduate physics programs.[1] This trend aligns with the enrollment growth data cited in question 11b and supports sustained demand for M.S.-level physics education.

The SDSU Department of Chemistry, Biochemistry and Physics surveyed its physics majors regarding interest in graduate education in physics. Of the 24 majors surveyed, 14 responded. Of those respondents, 93.3% indicated interest in attending graduate school, and 86% expressed interest in pursuing an M.S. degree at SDSU. In addition, 100% of respondents indicated interest in an accelerated M.S. option, further demonstrating demand for graduate-level training in physics at SDSU.

Because SDSU is requesting to join the existing collaborative M.S. in Physics program with the University of South Dakota and South Dakota School of Mines and Technology, historical demand for those programs is particularly relevant. Admissions data from USD and SDSM&T indicate that both institutions receive more applicants than they are able to admit, demonstrating unmet student demand that SDSU participation could help address.

[1] U.S. Department of Education, IPEDS / NCES (see “Physics Degrees Across All Institutions”, American Physical Society). https://www.aps.org/learning-center/statistics/education

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.

The program will be expected to primarily enroll students new to the university and graduates of SDSU’s B.S. in Physics who want to pursue a graduate degree in physics. The department does not anticipate significant enrollment from redirection from existing SDSU master’s programs.

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.

The Department of Chemistry, Biochemistry and Physics expects that M.S. program enrollment by year six will be 5-6 students. Several factors were considered when developing this enrollment estimate, including a market analysis from Gray DI, current enrollment in the B.S. in Physics program, enrollment in the M.S. in Physics programs at USD and SDSM&T, and availability of funding to support graduate assistantships.