SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS

New Certificate

UNIVERSITY:	SDSU
TITLE OF PROPOSED CERTIFICATE:	Applied Physics
INTENDED DATE OF IMPLEMENTATION:	2022-2023 Academic Year
PROPOSED CIP CODE:	40.0801
UNIVERSITY DEPARTMENT:	[illegible] Physics
BANNER DEPARTMENT CODE:	SCPH
UNIVERSITY DIVISION:	Graduate School
BANNER DIVISION CODE:	[illegible]

☒ **Please check this box to confirm that:**

- The individual preparing this request has read [illegible], which pertains to new certificate requests, and that this request meets the requirements outlined in the guidelines.
- This request will not be posted to the university website for review of the Academic Affairs Committee until it is approved by the Executive Director and Chief Academic Officer.

University Approval

To the Board of Regents and the Executive Director: I certify that I have read this proposal, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.

[signature] [illegible]

Institutional Approval Signature — Date

President or Chief Academic Officer of the University

1. Is this a graduate-level certificate or undergraduate-level certificate?

Undergraduate Certificate ☐ Graduate Certificate ☒

2. What is the nature/ purpose of the proposed certificate? Please include a brief (1-2 sentence) description of the academic field in this certificate.

South Dakota State University (SDSU) requests authorization to offer a graduate certificate in Applied Physics. The proposed Applied Physics Certificate will provide [illegible] practical experience [illegible] physics, or condensed matter physics. Individuals [illegible] certificate will be well prepared to advance in their careers [illegible] applied areas of physics [illegible] management. Additional [illegible] for those that wish [illegible] field further.

The graduate certificate is designed [illegible] added or stacked credential. The certificate stacks to [illegible] certificates that [illegible] and state [illegible]

SDSU does not request new [illegible] leverage collaborative opportunities with the South Dakota [illegible] (SDSMT) and the University of South Dakota (USD). Students will [illegible] coursework via distance [illegible] using the Dakota Digital Network (DDN).

3. If you do not have a major in this field, explain how the proposed certificate relates to your university mission and strategic plan, and to the current Board of Regents Strategic Plan 2014-2020.

SDSU is currently authorized to deliver a B.S in Physics.

The Applied Physics Certificate supports the mission of SDSU as provided in SDCL 13-58-1: *Designated as South Dakota's land-grant university, South Dakota State University, formerly the state college of agriculture and mechanical arts, shall be under the control of the Board of Regents and shall provide [illegible] programs of instruction in the liberal arts and sciences and [illegible] engineering, home economics, nursing and pharmacy, and [illegible] Board of Regents may determine.*

The proposed certificate also supports the goals stated in the South Dakota Board of Regents Strategic Plan 2014-2020:

Goal 1 – Student Success

- Increase total graduate degrees [illegible]

Goal 2 – Academic Quality and Performance

- Continue to approve new graduate programs.
- Grow the number of students participating in experiential learning.
- Develop and grow high quality and distinct academic programs to meet the needs of diverse students and workforce demands.

Goal 3 – Research and Economic Development

- Increase the number of graduates from STEM programs.

In addition, this graduate certificate aligns with the SDSU's Imagine 2023 strategic plan[1] by offering a student-centered education. Specifically, the proposed certificate will contribute to the attainment of Strategic Goal 1 – *Excellence through Transformative Education*. This will be a distinct and high-quality academic program [illegible] the market demand.

4. Provide a justification for the certificate [illegible] students and potential [illegible] with the credential.

The graduate certificate is designed to be either a stand-alone [illegible] credential. The certificate stacks to the M.S. in Professional [illegible] of seven proposed certificates that would stack to that degree. Many prospective students who [illegible] to this program would already be employed and benefit their career trajectories by obtaining this type of education. Given the trends and the [illegible] physics and engineering, individuals with [illegible] certificate program [illegible] high demand.

[1] https://www.sdstate.edu/imagine2023-[illegible]

program(s) to which the certificate [illegible] certificate that can be applied to the program.

Yes. The Applied Physics Certificate has been designed [illegible] credits will apply towards the [illegible]

7. **List the courses required for [illegible] courses are proposed for the certificate, please attach the new course requests to this form).**

Materials (Condensed Matter) Physics Track

Prefix	Number	Course Title	Prerequisites for Courses	Credit Hours	New (yes, no)
PHYS	521	Electromagnetism	None	4	No
PHYS	539	Condensed Matter Physics	None	4	No
PHYS	581	Mathematical Physics I	None	4	No
			Subtotal	12	

Nuclear/Health Physics Track

Prefix	Number	Course Title	Prerequisites for Courses	Credit Hours	New (yes, no)
PHYS	533	Nuclear and Elementary Particle Physics	None	[illegible]	No
PHYS	537	Foundations in Health Physics	None	3	No
NE	535	Introduction to Nuclear Engineering	None	3	No
		PHYS Elective	None	3	No
			Subtotal	12	

8. **Student Outcome and Demonstration of Individual [illegible]**
Board Policy 2:23 requires certificate programs [illegible] outcomes.

A. **What specific knowledge and competencies [illegible] will all students demonstrate [illegible]**

Students will be able to:

- Understand the fundamentals of [illegible]
- Become proficient in the use of [illegible] systems [illegible]
- Become proficient [illegible] to biological systems (Nuclear Physics Track), and effectively [illegible] information.
- Apply and interpret fundamental physics principles [illegible]
- Demonstrate the ability to [illegible]

B. Complete the table [illegible] competencies for [illegible]

Individual Student Outcomes	Program Courses [illegible]					
	PHYS 521	PHYS 530	PHYS 581	PHYS [illegible]	PHYS [illegible]	PHYS [illegible]
Understand the fundament[illegible] condensed [illegible] physics [illegible]	X	X	X	X	X	X
Become proficient [illegible] mathe[illegible] condensed matter systems (Materials Physics Track) and [illegible] communicate this information.	X	X	X			
Become profic[illegible] tools of [illegible] especially as appli[illegible] systems (Nucle[illegible] Physics Track) [illegible] effectively communicat[illegible] information.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Apply and interpret fundamental [illegible] physics principles [illegible]	X		X	X	X	
Demonstrate the ability to work independently and as a part of a team[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		

9. Delive[illegible]

Note: The accreditation [illegible] univ[illegible] to offer programs [illegible] delivery.

A. Complete [illegible] deliver the entire program [illegible] Falls, Capital University Center[illegible] Black Hills State U[illegible] deliver the entire program throug[illegible]

	Yes/No	*Intended Start Date*
On campus	Yes	[illegible]

	Yes/No	*If Yes, list location(s)*	*Intended Start Date*
Off campus	[illegible]		

	Yes/No	*If Yes, identify delivery methods [illegible] Delivery methods are [illegible] Guide[illegible]*		
Distance Delivery (online/other distance delivery methods)	No	01[illegible]	[illegible]	[illegible] 2021-202[illegible]
		T[illegible]	[illegible]	
		018 Internet Synchronous		
		03[illegible] Blended/Hybrid		
Does another BOR institution already have authorization to offer the program online?	No	If yes, identify institut[illegible]		