

**SOUTH DAKOTA BOARD OF REGENTS**

**Academic and Student Affairs**  
**Consent**

**AGENDA ITEM: 4 – E**

**DATE: October 4-6, 2016**

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**SUBJECT: New Certificate: SDSU Certificate in Engineering Graphics**

South Dakota State University (SDSU) requests authorization to offer an undergraduate certificate in Engineering Graphics. The proposed certificate combines traditional drawing skills with advanced computer aided design (CAD) applications and would provide a credential for demonstrated competency in engineering drawing. SDSU reports the Bureau of Labor Statistics projects 2% growth for mechanical drafters in South Dakota. The certificate is expected to appeal to engineering, technology, and design majors seeking industry-specific skills. In addition, 9 of the 12 credit hours in the certificate fulfill requirements for the BS in Operations Management, encouraging certificate completers to continue on to a bachelor's degree. The certificate requires the creation of one new course.

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**DRAFT MOTION 20161004\_4-E:** I move to approve SDSU's undergraduate certificate in Engineering Graphics as described in Attachment I.



**SOUTH DAKOTA BOARD OF REGENTS  
ACADEMIC AFFAIRS FORMS**

**New Certificate**

<b>UNIVERSITY:</b>	<b>South Dakota State University</b>
<b>TITLE OF PROPOSED CERTIFICATE:</b>	<b>Engineering Graphics</b>
<b>INTENDED DATE OF IMPLEMENTATION:</b>	<b>Fall 2017</b>
<b>PROPOSED CIP CODE:</b>	<b>15.1301</b>
<b>UNIVERSITY DEPARTMENT:</b>	<b>Construction and Operations Management</b>
<b>UNIVERSITY DIVISION:</b>	<b>College of Engineering</b>

**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.*

Dennis D. Hedge

8/12/16

Institutional Approval Signature

Date

*President or Chief Academic Officer of the University*

- 1. Is this a graduate-level certificate or undergraduate-level certificate (place an "X" in the appropriate box)?**

Undergraduate Certificate  Graduate Certificate

- 2. What is the nature/purpose of the proposed certificate?**

The proposed certificate in Engineering Graphics will provide a credential to individuals who demonstrate competency in engineering drawing creation, layout, dimensioning, and projections. The certificate will combine traditional drawing layout skills with advanced CAD and modeling applications. The materials science course provides knowledge of materials used in industry and their mechanical properties.

- 3. Provide a justification for the certificate program, including the potential benefits to students and potential workforce demand for those who graduate with the credential.<sup>1</sup>**

The certificate will serve the needs of individuals currently working in manufacturing, construction, and design-related industries who desire a credential documenting their engineering graphics and CAD skills. The Bureau of Labor Statistics projects the need for mechanical drafters, mechanical engineering technicians/drafters to grow an average of 2% for the period 2014 to

<sup>1</sup> For workforce related information, please provide data and examples; data sources may include but are not limited to the South Dakota Department of Labor, the US Bureau of Labor Statistics, Regental system dashboards, etc.

2024.<sup>2</sup> Employment data for South Dakota indicated there were 180 mechanical drafters employed in the state with the concentration of them in the architectural, engineering and related services category.

**4. Who is the intended audience for the certificate program (including but not limited to the majors/degree programs from which students are expected)?**

This certificate will appeal to students in engineering, technology, and related design majors seeking entry-level positions in industry. It will be especially desirable for individuals working while going to school which include those who want to show early progress in skills acquisition. Persons currently working in manufacturing, applied engineering, and construction firms would also be interested in this certificate as a professional development credential. The certificate has been designed to allow students to fulfill nine of the twelve credits towards their B.S. in Operations Management. The current suite of existing courses in engineering design graphics covered most of the content for the certificate. MNET 240 is a new course that will provide depth in 2D and 3D modeling. The certificate will be available to students in Brookings. There is no current plan for online delivery of this certification.

**5. List the courses required for completion of the certificate in the table below:<sup>3</sup>**

Prefix	Number	Course Title	Credit Hours	New (yes, no)
GE	121	Engineering Design Graphics I	1	No
GE	122	Engineering Design Graphics II	1	No
GE	123	Computer Aided Design	1	No
MNET	220-220L	Parametric Modeling & Design and Lab	3	No
MNET	240	Parametric Modeling & Design II	3	Yes
MNET	243	Introduction to Materials Science	3	No
Subtotal			12	

**6. Complete the following charts to indicate if the university intends to seek authorization to deliver the entire certificate at any off-campus location (e.g., UC Sioux Falls, Capital University Center, Black Hills State University-Rapid City, etc.) or intends to seek authorization to deliver the entire certificate through distance technology (e.g., as an on-line program)?<sup>4</sup>**

	Yes	No	If Yes, list location(s)	Intended Start Date
<b>Off-campus</b>		X		
	Yes	No	If Yes, identify delivery methods	Intended Start Date
<b>Distance Delivery</b>		X		

<sup>2</sup> <http://www.bls.gov/ooh/architecture-and-engineering/mechanical-engineering-technicians.htm>

<sup>3</sup> Regental system certificate programs typically are a subset of the curriculum offered in degree programs, include existing courses, and involve 9-12 credits for completion. Deviations from these guidelines require justification and approval.

<sup>4</sup> The accreditation requirements of the Higher Learning Commission (HLC) require Board approval for a university to offer programs off-campus and through distance delivery.