Attachment I

South Dakota Board of Regents
New Undergraduate Degree Program

University:	**Dakota State University**
Major:	**Web Development**
Existing or New Major (s):	**New**
Degree:	**Associate of Science (A.S.)**
Existing or New Degree (s):	**Existing**
Intended Term of Implementation	**Fall 2017**
Proposed CIP code:	**11.0801**
University Department	**Department of Computer Information Systems**
University Division	**College of Business and Information Systems**

University Approval
To the Board 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.

President of the University	8/12/16 Date

After approval by the President, a signed copy of the proposal should be transmitted to the Executive Director. Only after the Executive Director's review should the proposal be posted on the university web site and the Board staff and the other universities notified of the URL.

1. **What are the purposes of the proposed program?**

Dakota State University (DSU) requests authorization to offer an Associate of Science (A.S.) in Web Development. Web Development is an academic discipline that teaches graduates to, develop, modify and maintain general software applications or specialized software for use on computers, handheld and mobile devices based on analysis of user needs, design specifications, development, testing, deployment, management and maintenance. The Web Development degree will prepare students a wide range of career opportunities in business and industry including applications developer, IT consultant, information systems manager, systems analyst, systems developer, database administrator, network engineer, systems support and others.

DSU has a Software & Web Specialization in the B.S. degree in Computer Information Systems. This A.S. degree will prepare graduates for entry-level work in a variety of fields as well as provide transfer options to the baccalaureate program. The curriculum for this degree has been designed to allow students who complete the 60 credits of coursework to seek immediate employment in the field or to use the degree towards completion of the baccalaureate degree in Computer Information Systems.

The University does not request new state resources. All courses are currently being offered on campus, at the University Center and online.

Workforce Demand for Graduates

Web developers design and create websites. They are responsible for the look of the site. They are also responsible for the site's technical aspects, such as performance and capacity, which are measures of a website's speed and how much traffic the site can handle. They also may create content for the site. About a one in seven web developers were self-employed in 2014. Non-self-employed developers work primarily in the computer systems design and related services industry. The typical education needed to become a web developer is an associate degree in web design or related field. Web developers need knowledge of both programming and graphic design. The median annual wage for web developers was $64,970 in 2015. Employment of web developers is projected to grow 27 percent from 2014 to 2024, faster than the average for all occupations.[1] Demand will be driven by the growing popularity of mobile devices and ecommerce.

The US Department of Labor also provides the following wage information for web developers:[2]

Employment (1)	Employment RSE (3)	Mean hourly wage	Mean annual wage (2)	Wage RSE (3)
127,070	1.5 %	$33.97	$70,660	0.7 %

Percentile wage estimates for this occupation:

Percentile	10%	25%	50% (Median)	75%	90%
Hourly Wage	$16.71	$22.40	$31.23	$43.00	$56.07
Annual Wage (2)	$34,770	$46,600	$64,970	$89,430	$116,620

(1) Estimates for detailed occupations do not sum to the totals because the totals include occupations not shown separately. Estimates do not include self-employed workers.
(2) Annual wages have been calculated by multiplying the hourly mean wage by a "year-round, full-time" hours figure of 2,080 hours; for those occupations where there is not an hourly wage published, the annual wage has been directly calculated from the reported survey data.
(3) The relative standard error (RSE) is a measure of the reliability of a survey statistic. The smaller the relative standard error, the more precise the estimate.

University Mission and Priority

The statutory mission statement for Dakota State University is provided in SDCL 13-59-2.2:

> *The primary purpose of Dakota State University in Madison in Lake County is to provide instruction in computer management, computer information systems, electronic data processing and other related undergraduate and graduate programs. The secondary purpose is to offer two-year, one-year and short courses for application and operator training in the areas authorized by this section.*

[1] http://www.bls.gov/ooh/computer-and-information-technology/web-developers.htm
[2] http://www.bls.gov/oes/current/oes151134.htm

This authorization includes the preparation of elementary and secondary teachers with emphasis in computer and information processing.

Except for degree programs in existence during the 1983-1984 academic year, the unique baccalaureate programs authorized for Dakota State University shall not be duplicated by the Board of Regents.

Board Policy 1:10:5 Dakota State University Mission Statement provides the degrees authorized:

A. Undergraduate Programs: Associate degree programs are approved in allied health care, business, general studies, and information technology.

Baccalaureate programs: allied health care, business, education, information technology, mathematics, and sciences.

B. Graduate Programs: Master's degree programs are approved in education and information technology as well as a Doctor of Science degree in Information Systems.

University Priority and Strategic Plan

The most recent DSU Strategic Plan includes goals that are directly related to this program request:

- Offer innovative and robust academic programs that link to our mission.
- Infuse innovative technology in the delivery of academic programs.
- Optimize undergraduate and graduate enrollments.

The proposed degree in Web Development supports all of these strategic directions for DSU. The proposed program aligns with the Board of Regents Strategic Plan 2014-2020, including but not limited to the following goals:

- Grow undergraduate and graduate degrees awarded.
- Increase the number of graduates from STEM programs.
- Encourage campuses to increase recruitment and retention of undergraduate STEM majors.
- Encourage development of academic programs and certificates that align with existing and future state workforce needs.

2. Rationale

A. What is the rationale for the curriculum?

The curriculum is designed to offer courses that will prepare students for a variety of entry-level jobs and careers in Web Development for business and industry, in the public and/or private sector.

B. <u>Demonstrate</u> that the curriculum is consistent with current national standards. Complete the tables below and explain any unusual aspects of the proposed curriculum.

There are currently no national standards for Web Development, however, standard associate degrees in the discipline include basic and web programming, security fundamentals, and database.

C. If a new degree is proposed, what is the rationale?

This is not a new degree. DSU is already authorized to deliver the Associate of Science degree.

D. Summary of the Degree Program

AS in Web Development	Credit Hours	Credit Hours	Percent
System General Education Requirements	24		
Subtotal, Degree Requirements		24	40%
Required Support Courses (not included above)	6		
Major Requirements	30		
Major Electives			
Subtotal, Program Requirements		36	60%
Free Electives			
Degree Total	60	60	100%

*If the proposed undergraduate degree program is to be available in more than one degree and the number or distribution of credits will vary, provide a separate table for each degree.

Required Support Courses outside the Major *(NOT general education, institutional graduation or technology literacy requirements)*

Prefix	Number	Course Title	Credit Hours	New (yes, no)
ACCT	210	Principles of Accounting I	3	no
BADM	220	Business Statistics	3	no
		Subtotal	6	

Major Requirements

Prefix	Number	Course Title	Credit Hours	New (yes, no)
CIS	130	Visual Basic Programming	3	no
CIS	251	Business Applications Programming	3	no
CIS	275	Web Application Programming I	3	no
CIS	375	Web Application Programing II	3	no
CIS	350	Hardware, Data Comm. and Networking **OR**	3	no
CSC	363	Hardware, Data Comm. And Networking		no
CIS	332	Structured Systems Analysis & Design	3	no
CIS	484	Database Management Systems	3	no
CSC	105	Intro to Computers	3	no
CSC	206	Advanced Applications:	3	no
CSC	245	Information Security Fundamentals	3	no
		Subtotal	30	

Major Electives: List courses that may be taken as electives in the program. Indicate any new courses to be added specifically for the major. *(If the list of existing courses is long, it may be provided as an appendix.)*

Prefix	Number	Course Title	Credit Hours	New (yes, no)
None				

3. Student Outcomes & Demonstration of Individual Achievement

A. What specific knowledge and competencies, including technology competencies, will all students demonstrate be able to demonstrate before graduation? *The knowledge and competencies should be specific to the program and not routinely expected of all university graduates.* Complete Appendix A – Outcomes using the system form. *Outcomes discussed below should be the same as those in Appendix A.* The knowledge and competencies specific to the program must be related to the proposed assessments in B and C below.

See Appendix A.

B. What national instruments (examinations) are available to measure individual student achievement in this field?

Not applicable.

C. How will mastery by individual students be demonstrated? Describe the specific examinations or processes to be used. This is to include external measures.[3] **What will be the consequences for students who do not demonstrate mastery?**

[3] What national examination, externally evaluated portfolio or student activity, etc. will be used to verify that individuals have attained a high level of competence and identify those who need additional work?

Students will demonstrate mastery by passing all courses within the major with a minimum GPA of 2.0. Students will be monitored using Starfish. Students failing to meet minimum standards may be required to retake course work and any student on academic probation will be required to attend a one-on-one probation counseling session. Additionally, tutoring will be made available to all students. Enrollment and retention in the program also will be monitored.

4. What instructional approaches and technologies will be used to teach courses in the program? *This refers to the instructional technologies used to teach courses and NOT the technology applications students are expected to learn.*

All the courses in this degree are existing courses. Three of the courses are not routinely taught at UC-Sioux Falls, but will be added to the rotation schedule for that location. All the courses in this major are routinely taught by distance delivery and on the university campus and supplemented with D2L courseware for virtual networking, submitting assignments, and class discussion. Class presentations may be recorded and the video will be posted to campus video servers to facilitate online delivery.

DSU has invested heavily in a virtualized infrastructure to allow for technical, hands-on experiences for students in the classroom and at a distance. This VMware environment has been instrumental in the online delivery of all undergraduate majors. Educational experiences for students are greatly enhanced through these applied, hands-one technology-based activities.

All of the courses in this degree program will apply towards the BS in Computer for Information Systems, Software/Web Specialization as noted in the table below.

Course by Course Comparison and Delivery			
AS in Web Development	**BS in CIS**	**UC-SF**	**Online**
ACCT 210 Prin of Accounting I	Core	X	X
BADM 220 Business Stats	Core	X	X
CSC 206 Adv. Computer Apps	Elective	XX	X
CSC 245 Info Security Fundamentals	Core	X	X
CIS 251 Business Application Programming	Core	X	X
CIS 275 Web Application Programming I	Software/Web Specialization	X	X
CIS 375 Web Application II	Software/Web Specialization	X	X
CIS 350/CSC 363 Hdw, Data Comm & Networking	Core	X	X
CIS 332 Structured Systems Analysis & Design	Core	XX	X
CIS 484 Database Management Systems	Core	XX	X
CSC 105 Intro to Computers	Core	X	X
CIS 130 Basic Programming	Core	X	X

X – on rotation schedule XX – not currently on rotation at this location

5. Did the University engage any developmental consultants[4] to assist with the development of the curriculum? Were any professional or accrediting associations consulted during the development of the curriculum? What were the contributions of the consultants and associations to the development of curriculum?

No.

6. Are students in the program expected to be new to the university, redirected from other programs or both? Complete the table and explain how the estimates were developed. *If authorization for off-campus or distance delivery is requested in Section 9, add lines to the table for off-campus/distance students, credit hours, and graduates.*

	Fiscal Years*			
	1st	2nd	3rd	4th
Estimates	FY16	FY17	FY18	FY19
Students new to the university	5	5	5	5
Students from other university programs	0	0	0	0
Continuing students		10	10	10
= Total students in the program (fall)	5	10	10	10
Program credit hours (major courses)**	120	240	240	240
Graduates		5	5	5

* Do not include current fiscal year.
** This is the total number of credit hours generated by students in the program per year in the required or elective program courses. The same numbers are used in Appendix B – Budget.

The BS in Computer Information Systems major is offered at the University Center, online and on campus. The enrollment for that major Fall 15 was 55 students (67% online; 24% campus & 9% UCSF). It is anticipated that a subset of these students may double major in the AS in Web Development and the BS in Computer Information Systems. Some students may elect to only complete the Associate degree with the option to complete the bachelor's degree online or some students may start out in the bachelor's degree and then decide to finish with an associate degree.

7. If program accreditation is available, identify the organization and explain whether accreditation is required or optional, the resources required, and the University's plans concerning the accreditation of this program.

Accreditation does not exist for this program.

[4] Developmental consultants are experts in the discipline are hired by the university to assist with the development of a new program (content, courses, experiences, etc.). Universities are encouraged to discuss the selection of developmental consultants with Board staff.

8. Does the University request any exceptions to any Board policy for this program? Explain any requests for exceptions to Board Policy. *If no exceptions are requested, enter "None."*

None.

9. Program Delivery

A. Does the University request authorization to deliver this entire program at any off-campus locations? *If yes, list location(s) and intended start date(s).*

Yes, Fall 2017 – University Center, Sioux Falls

B. Does the University request authorization to deliver this entire program by distance technology? *If yes, identify delivery method(s) and intended start date(s).*

Yes, Fall 2017 – Distance Delivery

C. Include off-campus tuition and site or delivery costs in the next section and in Appendix B. *If off-campus or distance delivery authorization is not requested, enter "None."*

10. Costs, Budget and Resources

Explain the amount and source(s) of any one-time and continuing investments in personnel, professional development, release time, time redirected from other assignments, instructional technology & software, other O&M, facilities, etc needed to implement the proposed major. Address off-campus or distance delivery separately. *Complete Appendix B Budget and Resources and briefly summarize.*

DSU currently offers multiple sections of the courses in this major online, on campus and at the UCSF using full-time and adjunct faculty. The addition of 5 new students each year for this major can easily be managed with current resources. Therefore, no additional costs for faculty will be incurred when this program is implemented.

11. Additional Information. A*dditional information is optional. Use this space for information not requested above. Limit the number and length of additional attachments. Identify with capital letters. Letters of support are not necessary and are rarely included with Board materials. In some cases, response to questions from the Board or the Executive Director may be provided as appendixes to the original proposal. This item may be deleted if it is not used.*

Dakota State University
A.S. in Web Development

Appendix A
Individual Student Outcomes and Program Courses

Individual Student Outcome	Program Courses that Address the Outcomes				
Demonstrate the ability to write code using sequence, selection and repetition.	CIS 130	CIS 251	CIS 275	CIS 375	CIS 361
Understand and effectively manage the process of developing designing, testing, and delivering a program or web page.	CIS 130	CIS 251	CIS 275	CIS 375	CIS 361
Manipulate data efficiently to make optimal use of computing resources.	CIS 251	CIS 375	CIS 363	CIS 484	CIS 383
Identify, analyze, and take user needs into account in the programming process.	CIS 332	CIS 130	CIS 251	CIS 275	CIS 375
Write, test, and maintain computer programs and/or web applications in at least three languages.	CIS 130	CIS 251	CIS 275	CIS 375	CIS 361