New Degree Program White Paper

Contact Person: Matthew Kearl & DJ Holt

Degree name: BS in Software Development & Design (SDD)

Department: Computing & Design

College: Science, Engineering, & Technology

Please answer the following questions:

1. Does this degree program include stacked credentials? No
2. How many new courses need to be developed for this program? 0
3. For the baccalaureate degree, how many credits of core courses are required? 48 How many required elective credits? 0? How many open elective credits? 27 Counting 31 credits of GE courses, how many total credits are in this program? 106
4. If seeking external accreditation, please list organization(s) here. N/A

Program Description. Provide a brief description of the proposed program. If stacked credentials are included in the program, identify and describe each one. If one or more emphases are part of the program, identify and describe them.
Response: *This proposed program is for students seeking real-world skills needed to build applications and software. It focuses on a foundation in the software development discipline, providing students with both front and back-end development skills. Not to compete with current Computer Science degrees, this program aims to focus not on the theoretical application, but a practical application of the direct skills demanded by the workforce today. As the lines blur between web, desktop, and mobile applications, there is a need to stay ahead of the curve in developing a degree that teaches skills and processes that model modern software development. This degree has a core of 48 credits that provide the rigor and skills necessary to be a qualified software developer. Additionally, it has required 27 elective credits that allow students various options pursuing interests in back or front-end development, database, security, deployment, user interface design, entrepreneurial, and marketing classes all applicable to develop and launch web or mobile applications.*
Strategic Alignment. Cite specific examples of how this program aligns to the DSU strategic plan, mission, goals, and core themes. Include active learning-active life.
Response: *This program aligns with the mission of Dixie State by providing a rigorous learning environment and enriching the professional and personal lives of its students through a hands-on approach in building the crucial programming skills to needed to be successful in the work-force today. It fits with the strategic plan of DSU by improving student retention by allows students more choice in moving towards a computing degree. It broadens and enhances academic programs with new technology, new teaching methods, and new opportunities for both faculty and students.*
Comparison Benchmarks. List a minimum of five universities whose similar programs were examined to inform the development of this proposal. State how this proposal compares in terms of required credits of core courses, electives, course content, etc. If there are similar programs in other departments at DSU, identify them and describe significant differences between the two.
Response: *The University of Utah led the way by developing a Master of Software Development (MSD) geared specifically for those with no computer science background. It is a comprehensive and rigorous 40 credit program producing capable coders, big data analysts, computer security experts and more for graduates looking to carve out a new career path. Related to the MSD, the proposed SDD program at Dixie State contrasts it with a 75-credit program that allows students to dive deeper and further into required back and front-end development skills. Both address the need of providing practical skills in filling the technical gap in Utah with high-paying software development jobs.* *Credit Summary: 40 Core Credits*

Utah Valley University (UVU) has developed a BS in Web Design & Development degree that allows emphasis in Interaction & Design and Web and App Development. Their degree offers similar options to that of SDD, however primarily focuses on Web Applications. As stated above, we feel there is a merging of web, mobile, and desktop applications and teaching development principles in development and design should apply to all facets of software development. The other difference is that SDD does not have emphasis tracks, but allows the student to choose the path (9 of 39 elective options) that best suits them in their career path and interests.
Credit Summary: 47 Core Credits, 28 Elective Credits

UVU has another complimentary BS degree in Software Engineering. Software Engineering is traditionally similar to Computer Science, but with more emphasis on engineering processes. The SDD curriculum mimics much of its required coursework, however, differentiates from it by exposing students to more practical software development in core classes, including front-end and back-end mobile and web development.
Credit Summary: 61 Core Credits, 24 Elective Credits

Snow College offers a BS in Software Engineering with three emphases including Entrepreneurship, Digital Media Design, and Web Development. This degree offers similar classes to the SDD program but is very rigid on what classes students must take without offering electives or options as they move through.
Credit Summary: 125 total credits (including GE, no break down available)

BYU Idaho offers a BS in Web Design & Development that focuses on building web developers and designers. Much like the Web Design & Development degree from UVU, it focuses on the web, rather than software development as a whole. It focuses on back and front-end development but from a web perspective.
Credit Summary: 27 Core Credits, 27 Elective Credits

Currently, Dixie State has a BS in Computer Science (CS). The CS degree is similar to those in most institutions that focus on the science of programming and principles that drive the discipline. Like the degrees listed above, the SDD program is not intended to replicate the CS program or compete with it. It is structured to complement the degree by focusing less on mathematical foundation and theoretical basis, and more on the application of real-world skills needed today in the software industry.

Timeline (Stacked Credential Programs Only) Describe the timeline and benchmarks that will be met as you add one credential at a time moving forward. Example: This program will start with a 12-credit institutional certificate that can be completed in two semesters. The first two courses have no prerequisites and are the prerequisites for the second two courses. Once we have a minimum of 20 students enrolled in the first two courses, we will add the associate's degree. Or…This program will begin as an emphasis in the BS in Integrated Studies program. Once we have a minimum of 10 students per year working on this emphasis, we will establish the certificate using four of the emphasis courses and begin marketing the associate's degree that will lead to the baccalaureate degree.

Response: N/A

Departmental Capacity for Program. State the capacity that currently exists within the department to support this program in terms of faculty, space, equipment, etc. If building a stacked credential program, describe a tiered approach to build capacity such as identifying the crossover skills for this program you will include as necessary requirements in candidates as new faculty are hired for other programs in the department. If building a non-stacked credential program, briefly describe any new resources including faculty that will be needed in order to launch the program. Complete and attach Appendix D of the USHE form (Budget and Finance section).

Response:
This is a zero-cost degree (at present) due to the current structure, resources, and faculty are in place to support the proposal. Currently, no resources are needed in merging two existing and mature emphasis into their own 4-year degree. Based on growth, additional resources and faculty may be needed after year three to five.
See Appendix D.

Documented Need for Program. What is the rationale for bringing this program forward at this particular time? Validate the need with hard data from reliable sources. Include student demand, regional and national employment needs, economic trends that might add to a need for this program, new directions set forth from external accreditors, etc. (See Resources Packet)
Response: *This proposed degree stems from aggregating two existing programs: Software Development and Web Emphasis, both within the current CIT degree at DSU. To meet changing demands and requirements of the software industry, a restructuring is needed in required coursework. Students looking to meet these industry demands will benefit from an attractive 4-year degree designed to meet the requirements.*
Program Fit. Describe the niche this program fills within the DSU academic portfolio and the contributions it makes beyond simply graduating its students. How might some of the courses accommodate non-majors of the program? Is there a certificate that students from other departments could complete to add depth to their own degrees, etc.? Also describe the fit and uniqueness of this program relative to similar programs within other USHE institutions.
Response: *The niche already exists within the CIT department at Dixie State University, via the existing Web and Software Development emphases.*
Innovation. Describe innovative aspects of the program in terms of delivery mode, instructional design, scheduling, flexibility, removing traditional barriers, etc. (See Resources Packet)
Response: *The SDD program provides active learning elements where skills are applied through real-world opportunities in assignments. Development internships are offered on campus to accelerate learning and application of industry practices. Various coursework has been migrated into both in-class and online learning environments. Classrooms are being migrated into flexible spaces allowing for alternative learning environments. The department has been partnering/building various pipeline feeders over the years such as Code & Design School (8-week intensive courses teaching development and design skills), Code Camp (coding competition), Girls Go Digital & Code Changers (K-12 computer science & tech camps), LEGO robotics, E-Smart, programming clubs, and ACE Academy to attract potential candidates for the SDD program.*
Building University Capacity. Describe how the program will build university capacity in terms of research or creative opportunities, new markets, etc. for both faculty and students and the university as a whole.
Response: *Although our curriculum won't be changing significantly, this new degree program is essentially a repackaged offering that will market better toward students seeking the necessary skills as a 4-year degree. In past years, prospective students been confused by our current CIT degree and its various emphases. By offering a single 4-year degree, students are presented with a clear path toward obtaining the necessary skills and credentials.*

Appendix D: Projected Program Participation and Finance

Part I.

Project the number of students who will be attracted to the proposed program as well as increased expenses, if any. Include new faculty & staff as described in Appendix C.

Three Year Projection: Program Participation and Department Budget						
	Year Preceding Implementation	New Program				
		Year 1	Year 2	Year 3	Year 4	Year 5
Student Data						
# of Majors in Department	423	450	480	520	570	630
# of Majors in Proposed Program(s)		70	100	160	175	190
# of Graduates from Department	45	57	60	66	74	82
# Graduates in New Program(s)		20	22	24	26	28
Department Financial Data						
	Department Budget					
	Year Preceding Implementation (Base Budget)	Year 1 Addition to Base Budget for New Program(s)	Year 2 Addition to Base Budget for New Program(s)	Year 3 Addition to Base Budget for New Program(s)		
Project additional expenses associated with offering new program(s). Account for New Faculty as stated in Appendix C, "Faculty Projections."						
EXPENSES – nature of additional costs required for proposed program(s)						
List salary benefits for additional faculty/staff each year the positions will be filled. For example, if hiring faculty in year 2, include expense in years 2 and 3. List one-time operating expenses only in the year expended.						
Personnel (Faculty & Staff Salary & Benefits)	$442,938	$0	$0	$83,500		
Operating Expenses (equipment, travel, resources)	$108,540	0	0	$10,000		
Other:	0	0 e	0	0		
TOTAL PROGRAM EXPENSES		$0	$0	$93,500		
TOTAL EXPENSES	$551,478	$551,478	$551,478	$644,978		
FUNDING – source of funding to cover additional costs generated by proposed program(s)						
Describe internal reallocation using Narrative 1 on the following page. Describe new sources of funding using Narrative 2.						
Internal Reallocation						
Appropriation	$265,861	$0	$0	$51,425		
Special Legislative Appropriation						
Grants and Contracts						
Special Fees	$68,095					
Tuition	$217,522	$0	$0	$42,075		
Differential Tuition (requires Regents approval)						
PROPOSED PROGRAM FUNDING		$0	$0	$ $93,500		
TOTAL DEPARTMENT FUNDING	$551,478	$551,478	$551,478	$644,978		
Difference						
Funding - Expense	$0	$0	$0	$0		

Part II: Expense explanation

Expense Narrative

Describe expenses associated with the proposed program.

Current structure, resources, and faculty are all in place to support this proposal with no additional funding is needed to launch. However, based on growth, addition funding for faculty and resources may be needed after year three to five. Furthermore, marketing resources under the operating expenses in Appendix D, could be used to gain awareness for new potential students.

Part III: Describe funding sources

Revenue Narrative 1

Describe what internal reallocations, if applicable, are available and any impact to existing programs or services.

Current revenue for the Web & Software Development emphases will be allocated to the new 4-year degree program. Because this is a restructuring of two existing emphases into one degree, no changes are necessary.

Revenue Narrative 2

Describe new funding sources and plans to acquire the funds.

N/A